

# HERRAMIENTAS DE CORTE

# 2020-21



Industria aeroespacial



Industria automotriz



Industria médica

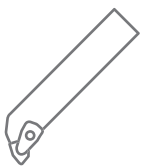


Industria ferroviaria





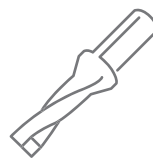
# 2020 ▶ 2021 KORLOY HERRAMIENTAS DE CORTE



Torneado



Fresado



Taladrado



Fresas solidas

# CONTENIDO

## Grados & Rompevirutas

### **A** Grados

**A02** Sistema de Grados

#### **Grados de Torneado**

- A04** Selecciones de grados torneados
- A05** Recubrimiento CVD
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- A18** Grados de carburo sin recubrimiento
- A20** Grados Cermet
- A23** Grados cermet con recubrimiento

#### **Grados de Fresado**

- A26** Selecciones de grado de fresado
- A27** Recubrimiento CVD
- A29** Recubrimiento PVD
- A37** Grados de carburo sin recubrimiento
- A38** Grados Cermet

### **A** Fresas Sólidas y Grados de Brocas Sólidas

**A39** Selecciones de grados de Endmills Sólido

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- A43** Grados con Recubrimiento de Diamante
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### **Rompevirutas**

- A52** Rompeviruta Para Torneado
- A56** Rompeviruta Para Fresado
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## Torneado

### **B** Rompevirutas Torneado

- B02** Rango de Aplicación de las Rompevirutas
- B04** Recomendada según pieza de trabajo
- B12** Características rompe virutas

#### **Insertos**

- B26** Insertos para Torneado Sistema de Codificación (ISO)
- B28** Insertos para Torneado (Negativo)
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- B98** Insertos cBN
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- B137** Multi Turn

#### **Solución en Rodamientos**

- B140** Información Técnica para Solución en Rodamientos
- B147** Formato para Inserto Rodamientos Especial

### **B** Portainserto Externo

- B148** Sistema Codificación para Portalinsertos (ISO)
- B153** Características Doble Brida / Sistema de Palanca
- B154** Sistema de Brida Doble
- B159** Sistema de Palanca
- B167** Sistema Brida Amplia
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- B185** Portaherramientas insertos de cerámica

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- B187** Información técnica para KHP Coolant

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- B191** Sistema de Codificación (ISO)
- B195** Sistema de Brida Doble
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- B201** Sistema de Brida
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- B220** Herramienta con Sistema HSK
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#### **Cartuchos**

- B230** Sistema de Codificación de Cartuchos (ISO)
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## Herramientas multifuncionales

### **C** Ejemplo de aplicación

- C02** Ejemplo de aplicación
- C04** Información técnica para herramientas multi función

### **KGT**

- C07** Información técnica para KGT
- C24** Tipo de lama para tronzado

### **MGT**

- C25** Información técnica para MGT
- C30** Portaherramienta de MGT

### **Cartucho de KGT/MGT**

- C38** Información técnica para cartuchos KGT/MGT
- C40** Tipo de cartucho KGT/MGT

### **MGT Serie de ruedas de aluminio**

- C42** Información técnica para MGT Rueda de aluminio

### **TB/TB-M**

- C46** Información técnica para TB/TB-M
- C53** Portaherramienta de TB/TB-M

### **C** K Notch

- C54** Información técnica para K Notch
- C58** Portaherramienta de K Notch

### **Saw-man**

- C59** Saw-man

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- C62** Saw Man-X

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## Roscado

### **D** Sistema de Codificación Roscado

- D02** Sistema de Codificación de Insertos de Roscado
- D02** Sistema de Codificación Externo/Interno

### **Información Técnica para Roscado**

- D03** Información Técnica para Roscado
- D09** Insertos de Roscado con Rompeviruta

### **Inserto para Roscado**

- D10** Perfil parcial de 60°
- D11** Perfil parcial de 55°
- D12** ISO Métrico
- D16** American UN
- D18** Whit worth
- D22** Rosca BSPT/Rosca NPT
- D23** Rosca NPT - Dry seal
- D23** DIN405 Redondo
- D24** DIN103 Trapezoidal/American ACME
- D25** Stub ACME
- D26** UNJ (Constante Unificación Roscado)
- D28** American Buttress (ABUT)
- D28** British Buttress (BBUT)
- D29** Métrico Buttress (SAGE)/API

### **D** Inserto para Roscado

- D30** API Buttress Casing (BUT)
- D30** API Round Casing & Tubing (APIRD)
- D30** Extreme Line Casing (EL)

### **Portalinsertos para Roscado**

- D31** Porta Externo
- D32** Porta Interno
- D33** Porta Verticales

### **Insertos de Roscado por Fresado**

- D34** Información Técnica de Roscado por Fresado
- D44** Insertos de Roscado por Fresado
- D49** Porta Herramientas de Roscado por Fresado

### **Fresas Integrales de Roscado por Fresado**

- D50** Información Técnica de Fresas Integrales de Roscado por Fresado
- D50** Fresas Integrales de Roscado por Fresado

### **MACHOS**

- D61** Información Técnica Sobre Machos
- D65** Macho Metal Duro
- D69** Macho HSS

# CONTENIDO

## Fresado

### **E** Insertos de Fresado

- E02** insertos fresado: Codificación (ISO)
- E04** Listado insertos de fresado
- E32** Fresas/platos KORLOY
- E38** Fresas mango KORLOY
- E42** Adaptador Modular KORLOY

### **Fresado en Careado**

- E44** Mill-max (ISO)/Mill-max Plus (E43, E49)
- E54** Mill-max Heavy
- E56** Turbo Mill
- E59** Double Mill
- E61** Power Buster
- E68** Rich Mill
- E132** Aero Mill/Aero Mill-Plus/Aero Mill-Mini
- E141** Cortador careado PCD

### **Fresado de Moldes**

- E142** Alpha Mill
- E183** Sistema adaptador BT y HSK
- E184** Adaptadores BT (un solo filo de corte)
- E189** Adaptadores HSK (un solo filo de corte)
- E194** Adaptadores BT (filo de corte múltiple)
- E200** Adaptadores HSK (filo de corte múltiple)
- E205** Adaptadores BT (modular)
- E206** Adaptadores HSK (modular)
- E207** Información técnica Future Mill/  
FMR P-Positive
- E222** Future Mill
- E248** FMR P-Positive
- E260** HFMD
- E268** HFM
- E276** Información técnica HRMDouble
- E281** HRMDouble
- E292** HRM
- E299** Tank Mill
- E300** TP2P
- E309** Laser Mill/GBE/BRE
- E329** HAVE
- E331** HAVE (filo único, múltiples fillos)

### **E** Fresas para Moldes

- E333** O-Ring Cutter
- E335** Cortador de chaflán (Multifuncional y sólido)

### **Fresado de Aluminio**

- E344** Información técnica Pro-A Mill/  
Pro-X Mill/Pro-L Mill/Pro-XL Mill/Pro-V Mill
- E354** Pro-A Mill
- E357** Pro-X Mill
- E363** Pro-L Mill
- E367** Pro-XL Mill
- E368** Pro-V Mill
- E371** Adaptador modular (MAT)

### **Fresas de Disco (corte lateral)**

- E373** Información técnica fresas de disco
- E375** Fresa de disco para corte lateral
- E379** Disco para corte lateral
- E382** Wind Mill

### **Fresado de Alto Avance de Fundición**

- E386** Fresado de alto avance de fundición
- E388** Información técnica Cube Mill
- E389** Información técnica Cuple Mill
- E391** Información técnica Storm Mill
- E392** Información técnica Shave Mill/Shave Mill Ultra
- E395** High Avance Cutter
- E397** Shave Mill/Shave Mill Ultra

### **Información Detallada de Platos de Fresado y Adaptadores**

- E400** Designaciones de platos de fresado y adaptadores

### **Herramientas para Engranajes**

- E403** Herramientas para engranajes
- E413** Modelo orden especial de herramientas para engranajes
- E414** HOB indexable
- E415** Modelo orden especial de HOB indexable
- E416** Modelo orden especial de herramientas especiales de mandrinado

## Endmills

### **F** Información Técnica para Fresas Sólidas Endmills

- F02** Sistema Codificación Endmills
- F04** Índice de fresas enterizas

### **Fresas Sólidas Endmills**

- F09** H Endmill
- F14** V Endmill

### **F** Fresas Sólidas Endmills

- F17** Z Endmill
- F24** F Endmill
- F27** T Endmill
- F30** D Endmill
- F37** Fresas sólidas para Aluminio
- F40** C-Max
- F44** Super Endmill
- F51** Composite Router Endmill

## Endmills

### **F** Fresas Sólidas Endmills

- F57** I<sup>+</sup> Endmill
- F72** Z<sup>+</sup> Endmill
- F89** S<sup>+</sup> Endmill
- F92** R<sup>+</sup> Endmill
- F103** A<sup>+</sup> Endmill
- F114** PCD Endmill

### **F** Fresas Enterizas Cementadas

- F116** Brazed Endmill

### Formato Pedido Fresas Enterizas Especiales

- F123** Formato Pedido Fresas Enterizas Especiales

## Brocas

### **G** Información Técnica para Brocas

- G02** Índice de Brocas
- G04** Placa Disponibles

### Brocas Indexables

- G06** King Drill
- G21** King Drill (Para el sistema de refrigerante perforante)
- G25** King Drill (para taladrado de diámetro grande)
- G27** TPDC
- G34** TPDB Plus
- G44** TPDB-H
- G51** Información Técnica para WPDC
- G54** Center Drill
- G55** WPDC

### Brocas Solidas

- G57** Mach Solid Drill Plus

### **G** Brocas Solidas

- G64** Mach Solid Drill Plus-S
- G70** Mach Solid Drill plus CFRP
- G73** Mach Solid Flat Drill
- G82** Mach long Drill Plus
- G87** Modelo orden Mach step Drills
- G88** Vulcan Drill
- G91** ESD Plus
- G98** Carbide Drill (SSDP)
- G101** Burnishing Drill/Top Solid Drill
- G103** PCD Drill
- G104** Gun Drill

### Escariadores

- G110** Indexable Reamer
- G116** Chucking/Machine Reamer
- G119** PCD Reamer
- G120** Cermet Reamer
- G121** Broach Reamer

## Herramienta Cementada

### **H** Información Técnica para Herramientas Cementadas

- H02** KORLOY Grado Ultrafino: Serie F
- H03** Pruebas de Corrosión y Magnetismo: Serie IN

### Herramientas de Corte

- H04** Cemented Carbide, Cermet Blank
- H07** Barra Redonda/Anillos
- H08** Helices/Buriles
- H10** Auto Tool Bits
- H11** Chuck Jaw

### **H** Fresado & Construcción

- H12** Cuchillas de carburo cementado para placas con ángulo
- H13** Cuchillas de carburo cementado para placas cruzadas
- H13** Placas con ángulo/Corona de Boreado
- H13** Para la Construcción

### Cortadores Cementados

- H14** Tipos de Cortadores Cementados
- H15** Formato Orden Especial

## Herramientales

### **I** Sistema de Herramientales

- I 02** Serie DBT
- I 03** Herramientas con Sistema HSK
- I 04** Sistema de Balanceo
- I 05** Indice
- I 06** Serie DHE
- I 09** Serie DSC
- I 17** Serie CPM

### **I** Sistema de Herramientales

- I 19** Serie NPM
- I 21** DCS/DC/TC
- I 22** Serie Collet Chuck
- I 24** Serie SDC
- I 29** Serie GSK
- I 31** Serie DSK

# CONTENIDO

## Herramientales

### I Sistema de Herramientales

- I 34 GERC
- I 37 Serie DST
- I 39 NPU
- I 40 Serie DTN
- I 42 TCA/TER
- I 44 Conos con Sujeción Lateral
- I 46 Cono para Fresado
- I 49 Serie Cabeza Angular

### I Sistema de Herramientales

- I 57 Serie FBH/B
- I 61 Serie TBC/FBC
- I 65 DBC/KMB
- I 67 SMB/SMH
- I 69 Sistema Modular/Adaptador modular
- I 72 Barra Extensión/Barra de Reducción
- I 74 DAMPING PRO
- I 81 Otros

## Ejemplos de Maquinados

### J Ej. de Maquinados Industriales

- J02 Solución en Maquinado de Engranajes
- J04 Solución Industria Marítima
- J07 Solución Maquinado de Rodillos
- J08 Solución Industria Ferroviaria
- J10 Solución Tubería Industrial
- J12 Solución Maquinado de Rodamientos
- J13 Solución para el Desarrollo Industrial
- J14 Solución Industria Aeronáutica
- J18 Cuchillas

### J Ej. Maq. Industria Automotriz

- J19 Cigüeñal
- J20 Sist. de Frenos
- J22 Bielas
- J24 Connecting Rod
- J26 Monoblock
- J28 Cabezas

## Partes

### K Partes

- K02 Placa
- K03 Cartucho/Rompeviruta
- K03 Cuvier Rompeviruta/Brida
- K04 Perno P/Refrigerante
- K04 Llave Perno/Palanca
- K05 Cartucho/Tuerca

### K Partes

- K05 Perno/Tornillo
- K06 Perno Placa
- K07 Muelle/Llave
- K07 Candados/Washer
- K07 Stopper/Boquilla

## Información Técnica

### L Información General I

- L02 Grados y Piezas de Trabajo
- L06 Simbología: Acero, Metales No-Ferrosos
- L07 Tabla de Conversión materiales
- L08 Tabla para Cálculo de Dureza
- L09 Propiedades grados de KORLOY

### L Información Técnica

- L20 Información Técnica Fresado
- L24 Información Técnica Tapers
- L27 Información Técnica Endmills
- L30 Información Técnica Brocas

### Información Técnica

- L10 Información Técnica Torneado

### Información General II

- L36 Comparación de Rompevirutas
- L37 Tabla de Grados KORLOY
- L40 Comparación de Grados Torneado/Grados Fresado

## Información de Productos

### M Información de Productos

- M02 Grado
- M02 Holder Externo
- M03 Fine Tools
- M03 Roscado

### M Información de Productos

- M03 Mill-Max
- M04 Cen-Mill
- M04 Jip Drill
- M04 LPD/SPD/NPD

## Índice

### N Índice



# GUIA DE SEGURIDAD PARA PRODUCTOS DE CARBURO

**KORLOY Inc. continuamente trata de desarrollar productos seguros y de buena calidad.**

**Antes de usar los productos KORLOY Inc., lea la siguiente guía de seguridad.**

- A continuación se presenta una guía de manejo para las herramientas de carburo. Para mayor información, contáctenos.
- KORLOY no se hace responsable por cualquier daño causado por alteraciones inapropiadas de las herramientas o por abuso de las mismas

## 1. Responsabilidad por productos

De acuerdo a la ley de Responsabilidad por productos, hemos adjuntado una etiqueta de advertencia en todos los empaques de los productos KORLOY, pero no hay advertencias en la superficie directa de las herramientas. Lea esta guía de seguridad antes de usar las herramientas de carburo, y proporciónela a los usuarios de las mismas.

## 2. Características básicas de las herramientas de carburo

Las herramientas de carburo están hechas a base de carburo, nitruro, nitruro de carbono, óxidos de W, Ti, Al, Si, Ta, B etc. y componentes metálicos tales como Co, Ni, Cr, Mo como aglutinante. Las herramientas de carburo tienen una gran dureza y peso específico. Generalmente carecen de olor, pero de acuerdo al uso y trato recibido, puede cambiar tanto su color como olor.

## 3. Precauciones al usar herramientas de carburo

- 1) Los carburos son extremadamente duros, pero a la vez son quebradizos. Los impactos constantes o apretar la herramienta con demasiada fuerza pueden resultar en fracturas.
- 2) Los carburos tienen un alto peso específico de manera que requieren de atención especial cuando se manejan piezas muy grandes o en grandes cantidades.
- 3) Los carburos tienen diferentes coeficientes de expansión térmica que el acero y otros materiales féreos. Los productos ajustables pueden causar problemas si se emplean en condiciones desfavorables, como en temperaturas extremas.
- 4) Hay muchos productos de carburo que tienen bordes afilados. Tenga cuidado de no manejar las herramientas con las manos descubiertas para evitar heridas. Preste especial atención al extraer las herramientas de su empaque, no toque los bordes y tenga cuidado de no tirarlas.
- 5) Almacenar las herramientas de carburo en una atmósfera corrosiva puede producir erosión en las herramientas, lo cual resultaría en una baja resistencia.
- 6) Antes de usar las herramientas, lea la guía de seguridad del catálogo.
- 7) No use las herramientas en condiciones inapropiadas.

## 4. Precauciones para maquinado (Rectificado, Soldadura, EDM) de herramientas de carburo

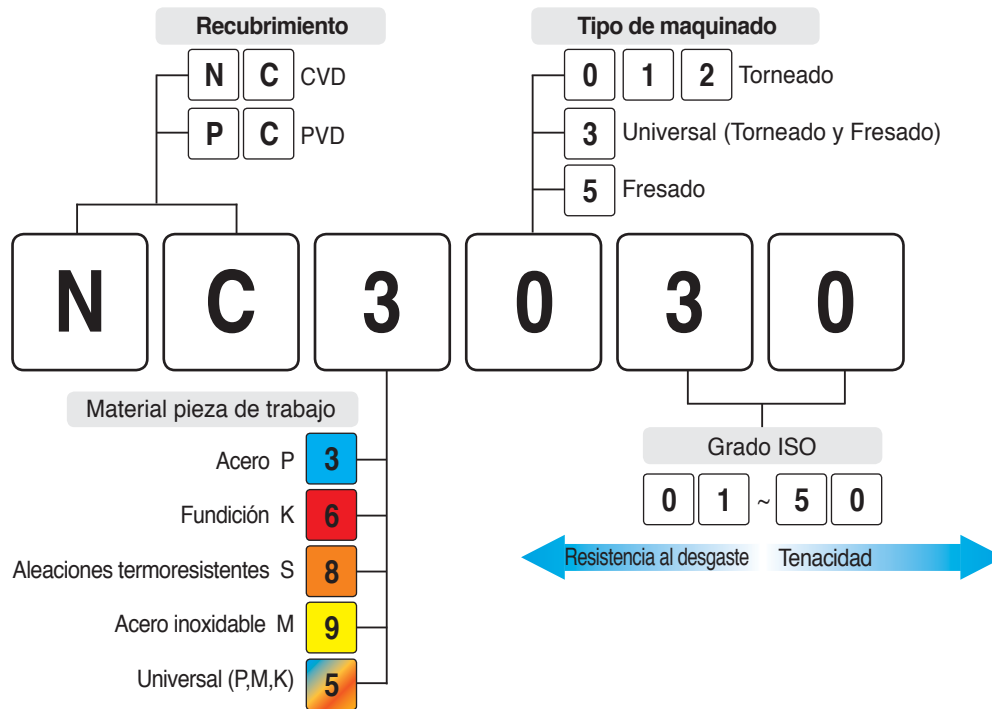
- 1) La condición de la superficie puede afectar la resistencia de la herramienta, así que es recomendable usar un esmeril de diamante.
- 2) La rectificación de elementos de carburo produce humos o polvos dañinos para la salud, de manera que es recomendable usar máscara u otro equipo de protección. Si el polvo entra en contacto con la piel o los ojos, lave inmediatamente con agua corriente.
- 3) En caso de rectificado con refrigerantes, el refrigerante contiene componentes metálicos dañinos que pueden causar problemas ambientales. Haga buen uso del refrigerante.
- 4) Después de rectificar las herramientas de carburo, revise que no haya grietas.
- 5) El marcado con láser o pluma eléctrica puede producir grietas en la herramienta y acortar la vida útil de la misma.
- 6) Someter a una herramienta de carburo a un proceso de EDM puede producir grietas, de ser necesario, elimínelas con una rectificación.
- 7) Soldar las herramientas de carburo a muy altas temperaturas en comparación de la soldadura puede aflojar la herramienta o romperla.
- 8) El uso de refrigerantes a base de aceite puede producir fuego como resultado del sobrecalentamiento, tome precauciones

## 5. TIPS DE SEGURIDAD

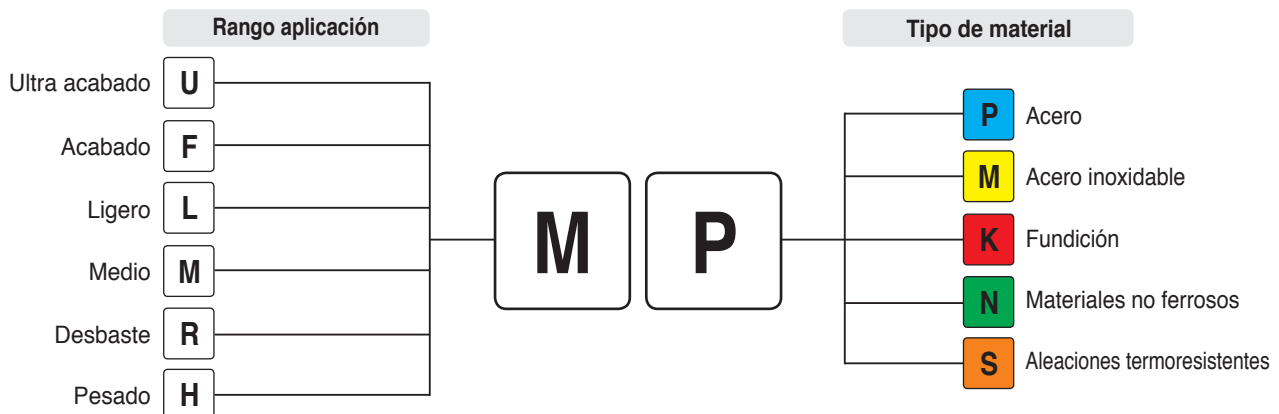
|                         | SEGURIDAD AL MAQUINAR METAL  | PLAN DE SEGURIDAD  |
|-------------------------|--|--|
| Herramientas de Corte   | • El filo de las herramientas puede cortar   | • Use guantes al extraer los insertos del empaque o al montarlos en la máquina   |
|                         | • El uso incorrecto o bajo condiciones inapropiadas puede resultar en fragmentación de la herramienta y el desprendimiento de las piezas puede causar daño   | • Use lentes o equipo protector<br>• Use las herramientas dentro del rango recomendado<br>• Primero consulte la guía de seguridad del catálogo |
|                         | • El uso excesivo de un filo produce desgaste, el cual puede ocasionar una fractura en la herramienta  | • Use lentes o equipo protector<br>• Cambie la herramienta cuando sea apropiado  |
|                         | • Las virutas producidas por el corte son filosas y se encuentran a altas temperaturas, pueden causar quemaduras o cortaduras  | • Use lentes o equipo protector<br>• Detenga la máquina primero, use guantes y elimine las virutas   |
|                         | • Tocar la pieza de trabajo inmediatamente después del corte puede producirle quemaduras   | • Use lentes o equipo protector  |
|                         | • Tenga en cuenta que las chispas y virutas generadas por el corte pueden producir un incendio o explosión   | • No se emplee en lugares donde hay materiales explosivos<br>• Prepárese con equipo para combatir incendios                                    |
|                         | • En caso de maquinado a altas RPM, se pueden presentar vibraciones y chirridos si existen problemas de balanceo   | • Use lentes o equipo protector<br>• Antes de hacer el corte, revise que no haya vibraciones o chirridos                                       |
|                         | • Las rebabas en la pieza de corte pueden ocasionar heridas o quemaduras   | • No se maneje con las manos desnudas. Use lentes o equipo protector   |
|                         | • Dejar la pieza de trabajo mal apretada puede fracturar la herramienta y producirle un daño al operador   | • Apriete bien la pieza  |
| Herramientas Indexables | • Generalmente las herramientas se operan en sentido derecho, operarlas en sentido izquierdo puede fracturar la herramienta y dañar al operador  | • No use el sentido izquierdo inadvertidamente<br>• Consulte en el empaque si es posible operar en el sentido izquierdo                        |
|                         | • Un inserto mal apretado puede soltarse de la herramienta durante su uso y dañar al operador<br>• Si sobre aprieta los insertos éstos pueden fracturarse y soltarse de la herramienta. (No utilizar palanca para apretar) | • Revise que los insertos y otras piezas estén bien fijos, y use únicamente partes originales<br>• No sobreapretar                             |
| Herramientas Giratorias | • La fuerza centrífuga del maquinado de alta velocidad puede desprender las partes o insertos de la herramienta  | • Use únicamente bajo las condiciones recomendadas<br>• Use lentes o equipo protector  |
|                         | • Tocar los filos de la cortadora puede dañar al operador  | • Use lentes o equipo protector  |
|                         | • Es peligroso usar guantes con una máquina rotatoria. También es peligroso el contacto del cuerpo o ropa con las partes rotatorias  | • No use guantes cuando trabaje con máquinas rotatorias<br>• Mantenga el cuerpo y ropa alejados de la máquina                                  |
|                         | • Las vibraciones generadas por problemas de balanceo pueden fracturar la herramienta  | • Las RPM deben permanecer bajo las condiciones recomendadas<br>• Revise periódicamente el balance de la pieza rotatoria                       |
| Htas. cementadas        | • Al barrenar, la viruta puede salir a gran velocidad  | • Use lentes o equipo protector  |
|                         | • Los bordes de las brocas pequeñas son filosos y se rompen fácilmente   | • Use guantes u otra protección  |
| Etc.                    | • Al fragmentarse una punta de carburo puede dispararse y dañar al operador  | • Revise la punta antes de usarla<br>• No use a altas temperaturas   |
|                         | • La punta de carburo se puede romper después de soldarse varias veces<br>• El mal uso de las herramientas puede fracturar la maquinaria o herramienta   | • No usar puntas de carburo que se han usado varias veces<br>• Apéguese a las regulaciones de seguridad  |

# Sistema de Codificación KORLOY Inc.

## Nomenclatura para Recubrimiento del Carburo



## Rompe virutas



El mismo rompe virutas puede ser usado en insertos positivos y negativos

## Terminología

| Termino                     | Codigo | Unidad            |
|-----------------------------|--------|-------------------|
| Diámetro de la herramienta  | D      | mm                |
| Velocidad corte             | vc     | m/min             |
| R.P.M.                      | n      | min <sup>-1</sup> |
| Avance por Minuto           | vf     | mm/min            |
| Avance por Revolución       | fn     | mm/rev            |
| Avance por Diente           | fz     | mm/diente         |
| Diente                      | z      |                   |
| Profundidad de corte Axial  | ap     | mm                |
| Profundidad de corte Radial | ae     | mm                |
| Avance Máximo               | pf     | mm                |

| Termino                          | Codigo         | Unidad |
|----------------------------------|----------------|--------|
| H.P. Requeridos                  | Pc             | kW     |
| Resistencia Especifica del Corte | kc             | MPa    |
| Torque                           | Mc             | N.m    |
| Thrust                           | Tc             | N      |
| Tiempo del ciclo                 | tc             | min    |
| Vida de la Herramienta           | T              | min    |
| Desgaste Lateral                 | V <sub>B</sub> | mm     |
| Desgaste del Cráter              | Kt             | mm     |
| Radio Punta                      | r              | mm     |

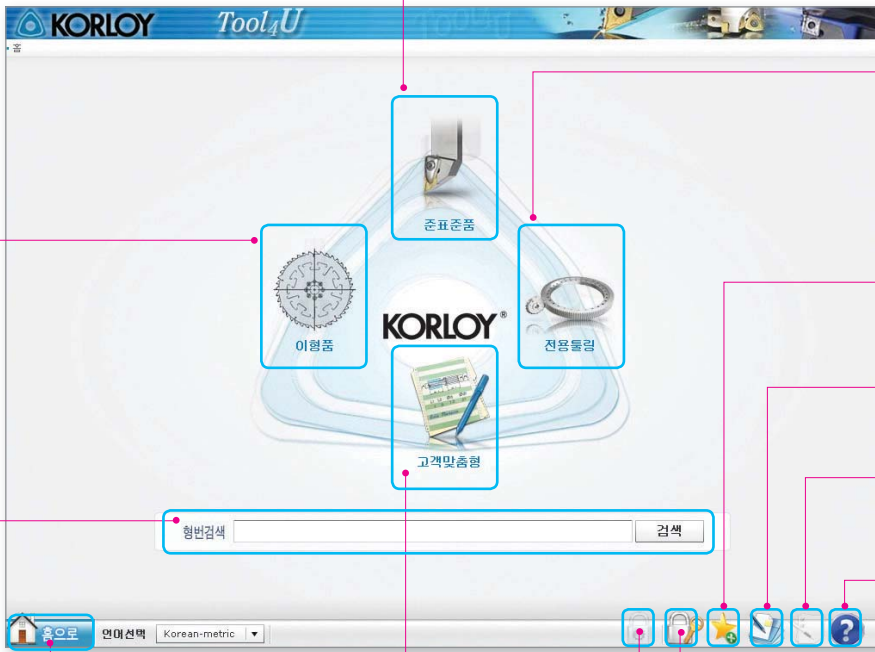
# Como usar el Tool4U (Web quotation requirement)

## 1. Contactenos

<http://www.korloy.com> (Korloy Homepage)

## 2. Click en el Banner

## 3. Pagina principal



**1 Semi estándar**  
Herramienta estándar pero con tamaño distinto

**2 A medida**  
Para ítems no estándar

**3 Herramental especial**  
como, por ejemplo, ruedas o vías de ferrocarriles, engranajes de barcos o coches, industria petrolífera, etc

**4 A medida, especial**  
Herramienta hecha a medida

**5 Búsqueda**  
Puede buscar por designación

**6 Inicio**  
Regrese al principio

**7 Administrador**  
Para los administradores de la página

**8 Login/Logout**  
Regístrese como miembro aquí

**9 Favoritos**  
organice sus favoritos

**10 Anotaciones**  
Guarde anotaciones

**11 Cotización**  
Para comprobar sus cotizaciones

**12 Ayuda**  
Menú explicatorio

## 4. Captura de pantalla

**Captura de pantalla 1.**  
**Paso 3: detalle de productos**



1. **Step:** Seleccione categoría del producto vea los detalles del producto
2. **Next step:** Abre una nueva ventana
3. **Print:** Imprima los detalles del producto
4. **Search:** Búsqueda de productos por código

**Captura de pantalla 2.**  
**Tamaño de herramienta**



Introduzca la información esencial necesaria para cotizar y haga clic en "Quote" para enviar por e-mail

# A

## Grados & Rompevirutas

Los nuevos grados de Korloys son diseñados con sustratos óptimos por cada aplicación y son PVD recubiertos para temperaturas altas, alta dureza y resiste oxidación. Adicionalmente, la mejora de posttratamiento de recubrimiento proporciona acabados superficiales superiores para garantizar los mas altos niveles de calidad y productividad.





### **Grados**

A02 Sistema de Grados

### **Grados de Torneado**

A04 Selecciones de grados torneados  
A05 Recubrimiento CVD  
A14 Recubrimiento PVD  
A18 Grados de carburo sin recubrimiento  
A20 Grados Cermet  
A23 Grados cermet con recubrimiento

### **Grados de Fresado**

A26 Selecciones de grado de fresado  
A27 Recubrimiento CVD  
A29 Recubrimiento PVD  
A37 Grados de carburo sin recubrimiento  
A38 Grados Cermet

### **Fresas Sólidas y Grados de Brocas Sólidas**

A39 Selecciones de grados de Endmills Sólido  
A41 Selecciones de grado de brocas Solidas

### **Otros (torneado / fresado / fresas)**

A43 Grados con Recubrimiento de Diamante  
A44 Grados con Recubrimiento DLC  
A46 Grados de insertos cBN  
A51 Grados de insertos PCD

### **Rompevirutas**

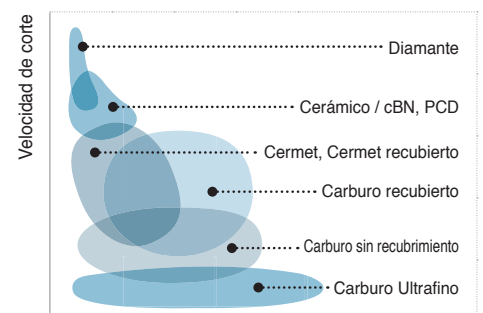
A52 Rompeviruta Para Torneado  
A56 Rompeviruta Para Fresado  
A61 Rompeviruta Para Brocas

## Sist. Clasificación de Grados

### Herramientas de corte

|   |          |                              |        |        |        |        |        |        |        |        |        |        |  |
|---|----------|------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| Carburo sin recubrir                            | <b>P</b> | Acero                        | ST10   | ST20   | ST30A  |        |        |        |        |        |        |        |  |
|   | <b>M</b> | Acero inoxidable             | U20    |        |        |        |        |        |        |        |        |        |  |
|   | <b>K</b> | Fundicion                    | H01    | H05    | G10    |        |        |        |        |        |        |        |  |
|   | <b>S</b> | Aleaciones termorresistentes | H01    | H05    |        |        |        |        |        |        |        |        |  |
|   | <b>N</b> | Material no ferroso          | H01    | H05    |        |        |        |        |        |        |        |        |  |
|   | <b>H</b> | Acero endurecido             | H01    |        |        |        |        |        |        |        |        |        |  |
| Carburo recubierto                              | <b>P</b> | Acero                        | NC3215 | NC3225 | NC3120 | NC3030 | NC5330 | PC5300 | PC5400 |        |        |        |  |
|   | <b>M</b> | Acero inoxidable             | PC8105 | PC8110 | PC8115 | NC9115 | NC9125 | NC5330 | NC9135 | PC5300 | PC9030 | PC5400 |  |
|   | <b>K</b> | Fundicion                    | NC6310 | NC6315 | NC5330 | PC5300 | PC5400 |        |        |        |        |        |  |
|   | <b>S</b> | Aleaciones termorresistentes | PC8105 | PC8110 | PC8115 | NC9125 | NC9135 | PC5300 | PC5400 |        |        |        |  |
|   | <b>N</b> | Material no ferroso          | ND3000 | PD1005 | PD1010 |        |        |        |        |        |        |        |  |
|   | <b>H</b> | Acero endurecido             | PC8105 | PC8110 | PC8115 |        |        |        |        |        |        |        |  |
| Carburo recubierto para fresado                 | <b>P</b> | Acero                        | NC5330 | NCM535 | PC3600 | PC3700 | PC5300 | PC5400 | NCM545 |        |        |        |  |
|   | <b>M</b> | Acero inoxidable             | NC5330 | PC5300 | PC9530 | PC5400 | PC9540 |        |        |        |        |        |  |
|   | <b>K</b> | Fundicion                    | PC6510 | NC5330 | NCM535 | PC5300 | PC5400 | NCM545 |        |        |        |        |  |
|   | <b>S</b> | Aleaciones termorresistentes | PC5300 | PC5400 | PC9540 |        |        |        |        |        |        |        |  |
|   | <b>N</b> | Material no ferroso          | ND3000 | PD1005 | PD1010 |        |        |        |        |        |        |        |  |
|   | <b>H</b> | Acero endurecido             | PC2005 | PC2010 | PC2015 | PC210F | PC2505 | PC2510 |        |        |        |        |  |
| Carburo recubierto para fresas solidas y brocas | <b>P</b> | Acero                        | PC3700 | PC5300 | PC5335 | PC5400 | NC5330 | NCM535 |        |        |        |        |  |
|   | <b>M</b> | Acero inoxidable             | PC5300 | PC5335 | PC5400 |        |        |        |        |        |        |        |  |
|   | <b>K</b> | Fundicion                    | PC6510 | PC5300 |        |        |        |        |        |        |        |        |  |
|   | <b>S</b> | Aleaciones termorresistentes | PC5300 | PC5400 |        |        |        |        |        |        |        |        |  |
|   | <b>N</b> | Material no ferroso          | H01    |        |        |        |        |        |        |        |        |        |  |
| Cermet torneado                                 | <b>P</b> | Acero                        | CN1500 | CN2000 | CN2500 |        |        |        |        |        |        |        |  |
|   | <b>K</b> | Fundicion                    | CN1500 | CN2500 |        |        |        |        |        |        |        |        |  |
| Cermet torneado recubierto                      | <b>P</b> | Acero                        | CC1500 | CC2500 |        |        |        |        |        |        |        |        |  |
|   | <b>K</b> | Fundicion                    | CC1500 | CC2500 |        |        |        |        |        |        |        |        |  |
| Cermet fresado recubierto                       | <b>P</b> | Acero                        | CN2000 | CN30   |        |        |        |        |        |        |        |        |  |

### Rango de Aplicaciones



Avance



## Sist. Clasificación de Grados

### Herramientas de corte

|                       |              |                              |        |        |        |        |        |       |        |
|-----------------------|--------------|------------------------------|--------|--------|--------|--------|--------|-------|--------|
| <b>Fresas sólidas</b> | <b>P M K</b> | General                      | PC203F | PC215F | PC303S | PC310U | PC315E | PC320 | PC320S |
|                       | <b>S</b>     | Aleaciones termorresistentes | PC320  | PC320S |        |        |        |       |        |
|                       | <b>H</b>     | Acero endurecido             | PC203F | PC303S | PC310U |        |        |       |        |
|                       | <b>N</b>     | Material no ferroso          | ND3000 | ND2100 | PD1005 | PD1010 | PC210C | H01   | H05S   |

|                       |              |                              |        |        |        |        |
|-----------------------|--------------|------------------------------|--------|--------|--------|--------|
| <b>Brocas sólidas</b> | <b>P M K</b> | General                      | PC325U | PC215G | PC315G | PC230F |
|                       | <b>S</b>     | Aleaciones termorresistentes | PC325T |        |        |        |
|                       | <b>N</b>     | Material no ferroso          | FG2    | FA1    | ND2100 |        |

|            |          |                              |        |         |        |        |        |        |
|------------|----------|------------------------------|--------|---------|--------|--------|--------|--------|
| <b>cBN</b> | <b>K</b> | Fundicion                    | DBN500 | DBN700A |        |        |        |        |
|            | <b>S</b> | Aleaciones termorresistentes | DB7000 |         |        |        |        |        |
|            | <b>H</b> | Acero endurecido             | DB1000 | DB2000  | DBNX20 | DBN250 | DBN350 | DBN400 |

|                       |          |                  |        |        |        |        |
|-----------------------|----------|------------------|--------|--------|--------|--------|
| <b>cBN recubierto</b> | <b>H</b> | Acero endurecido | DNC100 | DNC250 | DNC400 | DNC350 |
|-----------------------|----------|------------------|--------|--------|--------|--------|

|            |          |                     |      |       |       |
|------------|----------|---------------------|------|-------|-------|
| <b>PCD</b> | <b>N</b> | Material no ferroso | DP90 | DP150 | DP200 |
|------------|----------|---------------------|------|-------|-------|

### Herramientas resistentes al desgaste

|  |          |                                   |     |     |     |
|--|----------|-----------------------------------|-----|-----|-----|
| <b>Carburo Cementado Grano ultrafino</b> | <b>Z</b> | Carburo Cementado Grano ultrafino | FS1 | FA1 | FCC |
|--|----------|-----------------------------------|-----|-----|-----|

|                             |          |                           |      |      |      |    |
|-----------------------------|----------|---------------------------|------|------|------|----|
| <b>Carburo sin recubrir</b> | <b>V</b> | Resistente al desgaste    | D1   | D2   | D3   | G5 |
|                             | <b>I</b> | Resistente a la corrosión | IN10 | IN20 | IN40 |    |

### Industria minera

|                             |          |         |      |      |      |      |      |
|-----------------------------|----------|---------|------|------|------|------|------|
| <b>Carburo sin recubrir</b> | <b>E</b> | General | GR10 | GR20 | GR30 | GR35 | GR40 |
|-----------------------------|----------|---------|------|------|------|------|------|

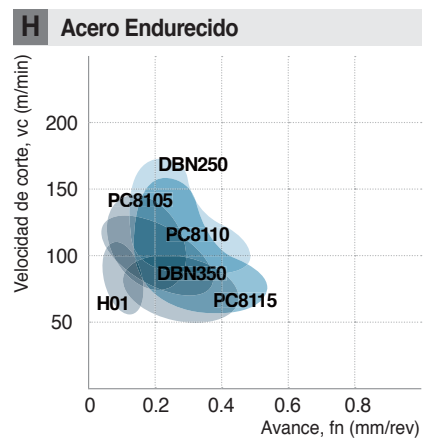
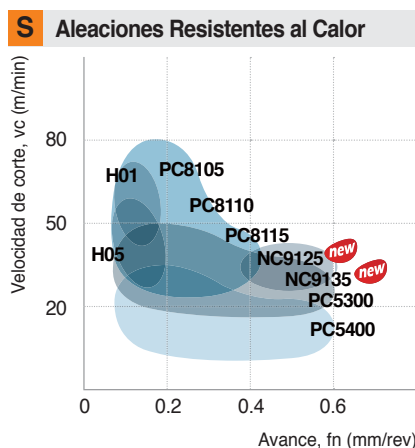
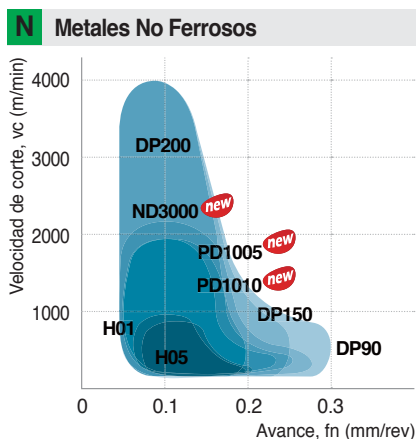
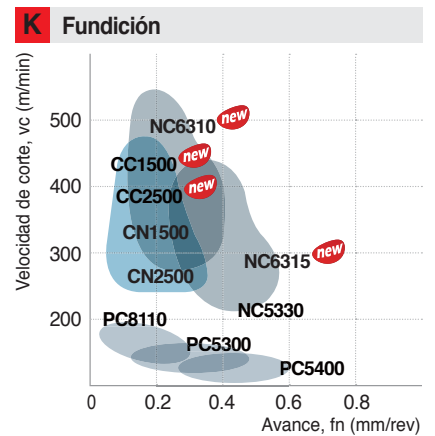
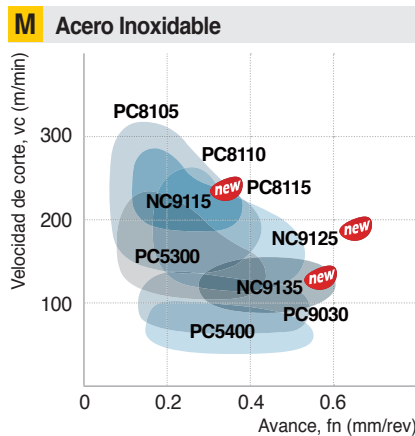
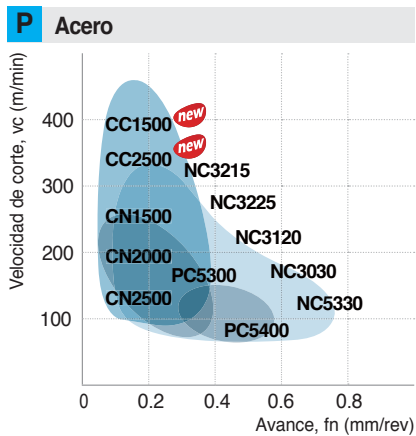


## Selecciones de grados torneados

### Tabla de Selección

| Pza.Trabajo               | P Acero |                   |        |     |     | M Acero Inoxidable |                   |     |     | K Fundición |                   |     |     | S HRSA |                   |     |     | N No Ferrosos |                   |     |     | H Endurecido |        |     |     |     |
|---------------------------|---------|-------------------|--------|-----|-----|--------------------|-------------------|-----|-----|-------------|-------------------|-----|-----|--------|-------------------|-----|-----|---------------|-------------------|-----|-----|--------------|--------|-----|-----|-----|
| ISO                       | P01     | P10               | P20    | P30 | P40 | P50                | M10               | M20 | M30 | M40         | K01               | K10 | K20 | K30    | S01               | S10 | S20 | S30           | N01               | N10 | N20 | N30          | H01    | H10 | H20 | H30 |
| Carburo Recubierto        |         |                   | NC3215 |     |     |                    | PC8105            |     |     |             | NC6310 <i>new</i> |     |     |        | PC8105            |     |     |               | ND3000 <i>new</i> |     |     |              | PC8105 |     |     |     |
|                           |         |                   | NC3225 |     |     |                    | PC8110            |     |     |             | NC6315            |     |     |        | PC8110            |     |     |               | PD1005 <i>new</i> |     |     |              | PC8110 |     |     |     |
|                           |         |                   | NC3120 |     |     |                    | NC9115 <i>new</i> |     |     |             | NC5330            |     |     |        | PC8115            |     |     |               | PD1010 <i>new</i> |     |     |              | PC8115 |     |     |     |
|                           |         |                   | NC3030 |     |     |                    | NC9125 <i>new</i> |     |     |             | PC5300            |     |     |        | NC9125 <i>new</i> |     |     |               |                   |     |     |              | PC8115 |     |     |     |
|                           |         |                   | NC5330 |     |     |                    | NC9135 <i>new</i> |     |     |             | PC5300            |     |     |        | NC9135 <i>new</i> |     |     |               |                   |     |     |              |        |     |     |     |
|                           |         |                   | PC5300 |     |     |                    | PC5300            |     |     |             | PC5400            |     |     |        | PC5300            |     |     |               |                   |     |     |              |        |     |     |     |
|                           |         |                   | PC5400 |     |     |                    | PC9030            |     |     |             |                   |     |     |        | PC5400            |     |     |               |                   |     |     |              |        |     |     |     |
|                           |         |                   |        |     |     |                    | PC5400            |     |     |             |                   |     |     |        |                   |     |     |               |                   |     |     |              |        |     |     |     |
|                           |         |                   |        |     |     |                    |                   |     |     |             |                   |     |     |        |                   |     |     |               |                   |     |     |              |        |     |     |     |
|                           |         |                   |        |     |     |                    |                   |     |     |             |                   |     |     |        |                   |     |     |               |                   |     |     |              |        |     |     |     |
| Cermet                    |         | CC1500 <i>new</i> |        |     |     |                    |                   |     |     |             | CC1500 <i>new</i> |     |     |        |                   |     |     |               |                   |     |     |              |        |     |     |     |
|                           |         | CC2500 <i>new</i> |        |     |     |                    |                   |     |     |             | CC2500 <i>new</i> |     |     |        |                   |     |     |               |                   |     |     |              |        |     |     |     |
|                           |         | CN1500            |        |     |     |                    |                   |     |     |             | CN1500            |     |     |        |                   |     |     |               |                   |     |     |              |        |     |     |     |
|                           |         | CN2000            |        |     |     |                    |                   |     |     |             | CN2500            |     |     |        |                   |     |     |               |                   |     |     |              |        |     |     |     |
|                           |         | CN2500            |        |     |     |                    |                   |     |     |             |                   |     |     |        |                   |     |     |               |                   |     |     |              |        |     |     |     |
| cBN/PCD                   |         |                   |        |     |     |                    |                   |     |     |             | DBN700            |     |     |        | DB7000            |     |     |               | DP90              |     |     |              | DNC100 |     |     |     |
|                           |         |                   |        |     |     |                    |                   |     |     |             | DBN800            |     |     |        |                   |     |     |               | DP150             |     |     |              | DNC250 |     |     |     |
|                           |         |                   |        |     |     |                    |                   |     |     |             | DBN500            |     |     |        |                   |     |     |               | DP200             |     |     |              | DNC400 |     |     |     |
|                           |         |                   |        |     |     |                    |                   |     |     |             |                   |     |     |        |                   |     |     |               |                   |     |     |              | DNC350 |     |     |     |
| Carburo Sin Recubrimiento |         | ST10              |        |     |     |                    | U20               |     |     |             | H01               |     |     |        | H01               |     |     |               | H01               |     |     |              | H01    |     |     |     |
|                           |         |                   | ST20   |     |     |                    |                   |     |     |             | H05               |     |     |        | H05               |     |     |               | H05               |     |     |              |        |     |     |     |
|                           |         |                   | ST30A  |     |     |                    |                   |     |     |             | G10               |     |     |        |                   |     |     |               |                   |     |     |              |        |     |     |     |

### Rango de aplicación Grados para Torneado





# Recubrimiento CVD

## NC3215 / NC3225

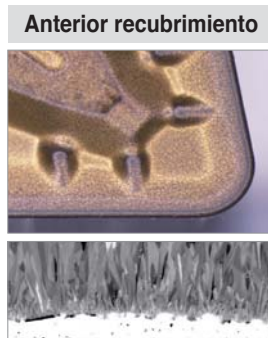
- Grado universal diseñado especialmente para el mecanizado de componentes de automóviles forjados y rodamientos de acero tanto en corte continuo como interrumpido.
- Disponible para todo tipo de aceros: acero al carbono, acero aleado, acero laminado, acero para herramientas, acero dulce y otros tipos especiales de acero.
- La nueva tecnología de recubrimiento aumenta la resistencia a la soldadura y la resistencia al astillado, lo que aumenta la vida útil de la herramienta.

### Características

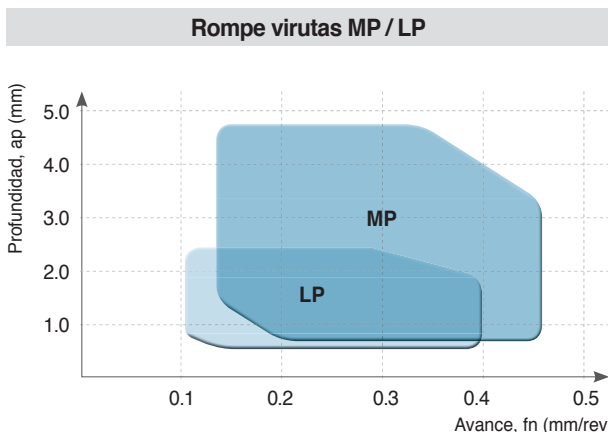
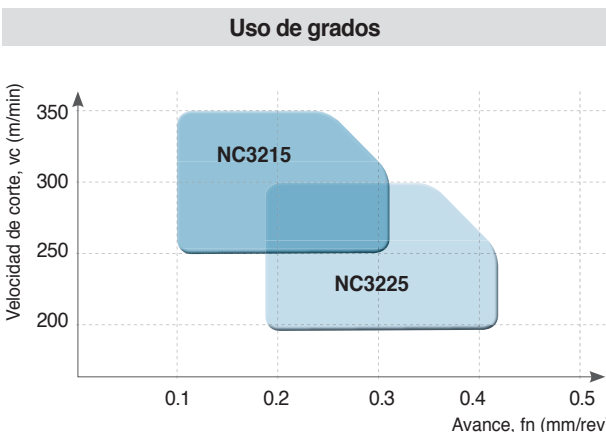
- Mayor vida útil & mayor cantidad de viruta cortada
  - Mejores condiciones de corte, reduciendo tiempo de maquinado
- Vida estable
  - Mayor productividad
- Combinación ideal de grado y rompe virutas
  - Prolongando vida
  - Ampliando aplicaciones y rango de maquinado



• Dispersión carga de corte → Menos fractura → Mayor vida útil → Más productividad



### Rango de Aplicaciones



## Recubrimiento CVD

Grado recuberto de CVD para la alta eficiencia y la calidad del torneado de fundición

# NC6310 <sup>new</sup> / NC6315

- Recubrimiento CVD con mayor resistencia al desgaste y al astillamiento
- Soluciones para los problemas más comunes en el mecanizado de hierro fundido, para prevenir el desgaste excesivo en la superficie y filo del inserto, la astilladura y la formación de rebabas

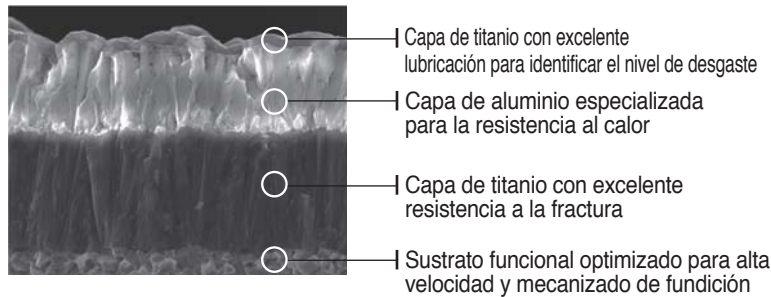
### Características de NC6310

Desgaste normal en cara de ataque y el radio de la punta

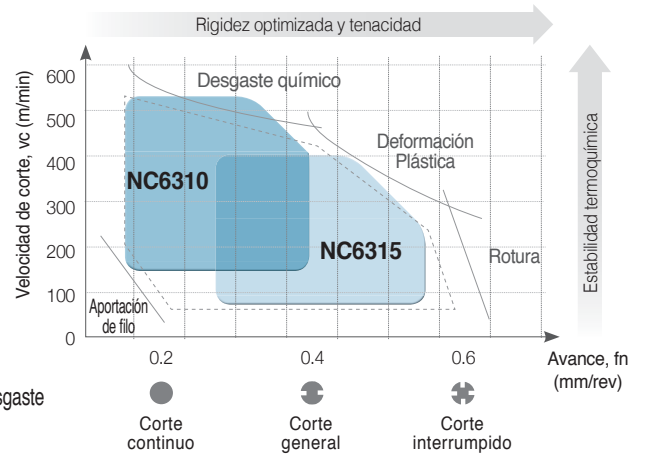


NC6310

Grado Existente (K10)

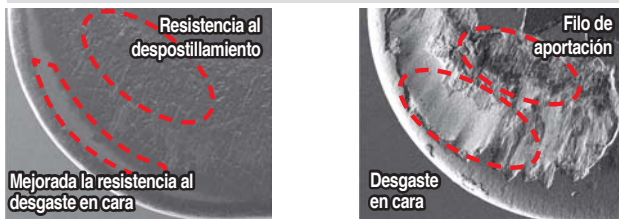


### Rango recomendado de maquinado para cada grado



### Características de NC6315

Mejorada la resistencia al desgaste y al despostillamiento



NC6315

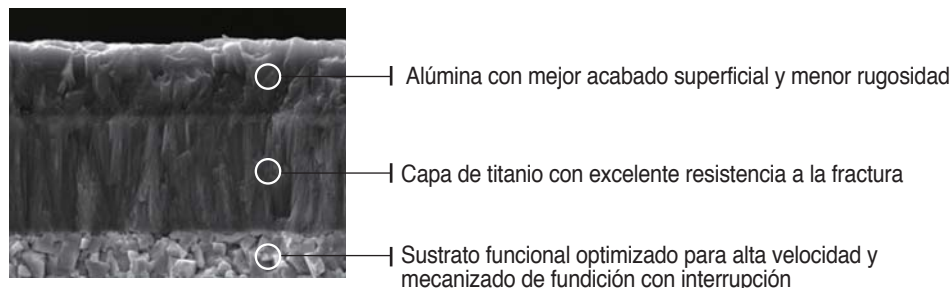
Grado existente (K15)

Desgaste en flanco normal



NC6315

Grado existente (K15)



# Recubrimiento CVD

## Insertos de torneado para acero inoxidable

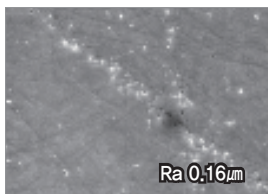
NC9115 **new** / NC9125 **new** / NC9135 **new**

- Evita la formación de filo de aportación, el desgaste en entalla, la deformación plástica y la formación de rebabas
- Vida extendida de la herramienta a altas velocidades, altos avances y grandes profundidades de corte
- Combinación ideal con rompe virutas MM y RM para una vida estable y cubrir muchas aplicaciones, desde desbaste a acabado
- Vida estable a alto avance y alta velocidad (para inoxidables STS316, vc de 150m/min)
- Excelente versatilidad y adaptación al cambio en la pieza de trabajo
- NC9115 también está diseñado para mecanizado de acero P20, acero dulce y acero forjado.

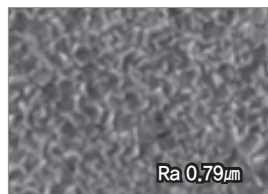
### Características

- Mejor superficie gracias al nuevo tratamiento lubricativo para la capa CVD

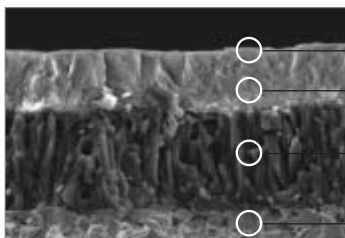
#### Capa CVD lubricada que ayuda a impedir el filo de aportación



NC9100 Series



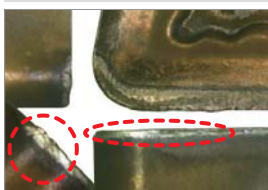
Recubrimiento antiguo



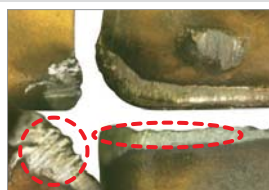
- Capa superior con rugosidad mejorada
- Al<sub>2</sub>O<sub>3</sub> estable y de alta dureza
- Carbonitruro de titanio de alta dureza
- Substrato tenaz, optimizador para corte continuo, ligero y pesado

- Recubrimiento lubricativo → mejora la resistencia al filo de aportación

#### Inhibición de filo de aportación y daño del filo



NC9125 (M25)



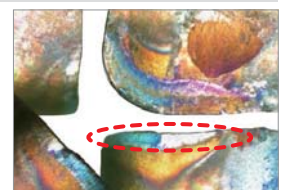
Competidor (M25)

- Recubrimiento con buena resistencia a fracturación y sustrato tenaz → disminuye la aparición de desgaste en entalla

#### Inhibición de desgastes en entalla y en superficie del inserto



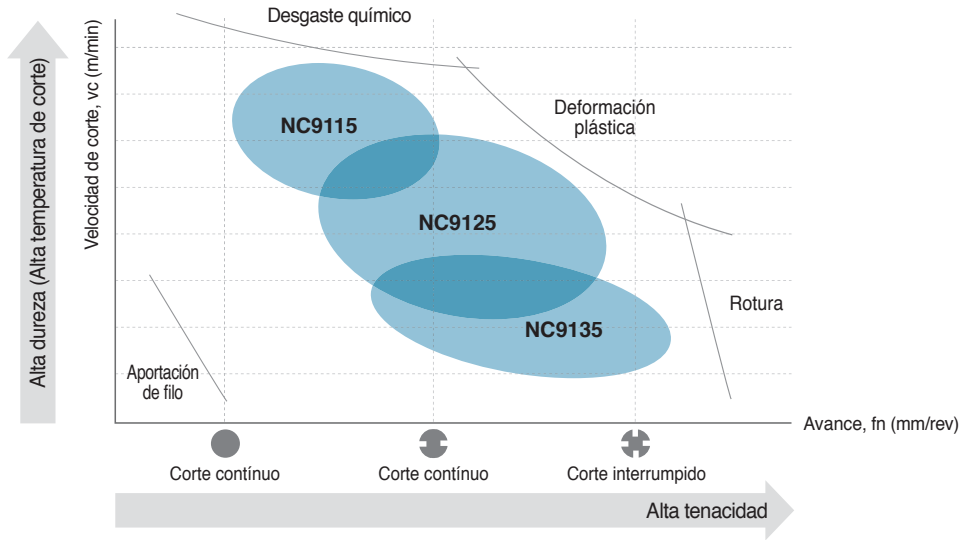
NC9135 (M35)



Competidor (M35)

## Recubrimiento CVD

### ➤ Alineación grados



### ➤ Grados recomendados para maquinados de aceros inoxidables

#### [Austenítico]

| Grado  | Velocidad corte (m/min) |     |     |     |     |
|--------|-------------------------|-----|-----|-----|-----|
|        | 50                      | 100 | 150 | 200 | 250 |
| NC9115 |                         |     | 160 | 220 |     |
| NC9125 |                         |     | 150 | 200 |     |
| NC9135 |                         | 100 | 150 |     |     |

#### [Acero inoxidable duplex]

| Grado  | Velocidad corte (m/min) |     |     |     |     |
|--------|-------------------------|-----|-----|-----|-----|
|        | 50                      | 100 | 150 | 200 | 250 |
| NC9115 |                         |     | 120 | 160 |     |
| NC9125 |                         |     | 100 | 140 |     |
| NC9135 |                         | 60  | 100 |     |     |

#### [Ferrítico y martensítico]

| Grado  | Velocidad corte (m/min) |     |     |     |     |
|--------|-------------------------|-----|-----|-----|-----|
|        | 50                      | 100 | 150 | 200 | 250 |
| NC9115 |                         |     | 150 | 250 |     |
| NC9125 |                         |     | 120 | 220 |     |
| NC9135 |                         | 100 | 150 |     |     |

#### [Inoxidable endurecido por precipitación]

| Grado  | Velocidad corte (m/min) |     |     |     |     |
|--------|-------------------------|-----|-----|-----|-----|
|        | 50                      | 100 | 150 | 200 | 250 |
| NC9115 |                         | 50  | 110 |     |     |
| NC9125 |                         | 40  | 110 |     |     |
| NC9135 |                         | 30  | 100 |     |     |



**Sistema de seleccion de grados CVD**

| Pieza de trabajo | Tipo de maquinado  | Grado recomendado     | Velocidad de corte recomendada (m/min) | ISO             | Rango de aplicación     |                         |
|------------------|--------------------|-----------------------|--|-----------------|-------------------------|-------------------------|
| <b>P</b>         | Acero              | Corte continuo        | NC3215                                 | 295 (170 ~ 420) | P10                     |                         |
|                  |                    | Corte interrumpido    | NC3225                                 | 260 (150 ~ 370) | P15                     | ← NC3215                |
|                  | NC3120             |                       | 260 (120 ~ 370)                        | P20             | ← NC3225                |                         |
|                  | NC3030             |                       | 205 (120 ~ 290)                        | P25             | ← NC3120                |                         |
|                  | NC5330             | 205 (120 ~ 290)       | P30                                    | ← NC3030        |                         |                         |
| NC5330           | 205 (120 ~ 290)    | P35                   | ← NC5330                               |                 |                         |                         |
| <b>M</b>         | Acero Inoxidable   | Corte continuo        | NC9115 <sup>new</sup>                  | 240 (220 ~ 260) | M10                     | ← NC9115 <sup>new</sup> |
|                  |                    | NC9125 <sup>new</sup> | 210 (190 ~ 230)                        | M20             | ← NC9125 <sup>new</sup> |                         |
|                  | Corte interrumpido | NC9135 <sup>new</sup> | 180 (160 ~ 200)                        | M30             | ← NC9135 <sup>new</sup> |                         |
|                  |                    | NC9135 <sup>new</sup> | 180 (160 ~ 200)                        | M40             | ← NC9135 <sup>new</sup> |                         |
| <b>K</b>         | Fundición          | Corte continuo        | NC6310 <sup>new</sup>                  | 380 (300 ~ 500) | K10                     | ← NC6310 <sup>new</sup> |
|                  |                    | NC6315                | 280 (200 ~ 400)                        | K20             | ← NC6315                |                         |
|                  | Corte interrumpido | NC5330                | 190 (110 ~ 270)                        | K30             | ← NC5330                |                         |
| <b>S</b>         | HRSA               | Corte continuo        | NC9125 <sup>new</sup>                  | 40 (20 ~ 60)    | S10                     | ← NC9125 <sup>new</sup> |
|                  |                    | Corte interrumpido    | NC9135 <sup>new</sup>                  | 40 (20 ~ 60)    | S20                     | ← NC9135 <sup>new</sup> |

**Características de los grados CVD**

| Grados CVD            | ISO  | Características   |
|-----------------------|--|---|
| NC3215                | P10 ~ P15  | <ul style="list-style-type: none"> <li>• Para corte en alta Velocidad para acero</li> <li>• Excelente combinación sustrato resistente al desgaste con resistencia al astillado y al calor incrementando la estabilidad del Al<sub>2</sub>O<sub>3</sub></li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub> + TiN</li> </ul>  |
| NC3225                | P20 ~ P25  | <ul style="list-style-type: none"> <li>• Para maquinado medio de acero</li> <li>• 1er grado recomendado para maquinado general con el uso de un sustrato de alta tenacidad y una capa de recubrimiento con una mejora resistencia de soldadura / astillado • MT-TiCN + Al<sub>2</sub>O<sub>3</sub> + TiN</li> </ul>   |
| NC3120                | P20 ~ P25  | <ul style="list-style-type: none"> <li>• Medio a desbaste para acero.</li> <li>• La combinación del excelente sustrato de resistencia a la fractura con la resistencia al desconchado y la resistencia al calor Al<sub>2</sub>O<sub>3</sub> incrementó la estabilidad • MT-TiCN + TiC + Al<sub>2</sub>O<sub>3</sub></li> </ul>  |
| NC3030                | P25 ~ P35  | <ul style="list-style-type: none"> <li>• Para corte general, corte interrumpido, y operaciones de desbaste en acero</li> <li>• Excelente combinación de un sustrato con excelente resistencia a la fractura y al desgaste y la capa de Al<sub>2</sub>O<sub>3</sub> mayor estabilidad y resistencia al calor y al astillamiento</li> <li>• Estabilidad mejorada en diversos tipos de corte • MT-TiCN + TiC + Al</li> </ul> |
| NC5330                | P30 ~ P35<br>M25 ~ M35<br>K15 ~ K25<br>S15 ~ S25 | <ul style="list-style-type: none"> <li>• Acero inoxidable/Corte general para Acero Inoxidable y Acero Forjado</li> <li>• Rendimiento excelente también en materiales difíciles de cortar, gracias a su sustrato con resistencia al astillamiento y su capa CVD con buena resistencia al filo de aportación</li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub> + TiN</li> </ul>  |
| NC9115 <sup>new</sup> | M10 ~ M20  | <ul style="list-style-type: none"> <li>• Maquinado de alta velocidad de inoxidable ferrítico y martensítico</li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub> + TiN</li> </ul>   |
| NC9125 <sup>new</sup> | M20 ~ M30  | <ul style="list-style-type: none"> <li>• Corte general de inoxidables y aleaciones termostresistentes</li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub> + TiN</li> </ul>   |
| NC9135 <sup>new</sup> | M30 ~ M40  | <ul style="list-style-type: none"> <li>• Corte interrumpido de inoxidables y aleaciones termostresistentes</li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub> + TiN</li> </ul>  |
| NC6310 <sup>new</sup> | K01 ~ K10  | <ul style="list-style-type: none"> <li>• Para el corte continuo en fundición gris a alta velocidad</li> <li>• Vida útil optimizada gracias al recubrimiento con resistencia al desgaste superior</li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub> + TiN</li> </ul>  |
| NC6315                | K10 ~ K20  | <ul style="list-style-type: none"> <li>• Para corte en fundición gris y dúctil</li> <li>• Sustrato duro y una adhesión mejorada de Al<sub>2</sub>O<sub>3</sub> que brinda una superior resistencia al desgaste</li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub></li> </ul>  |

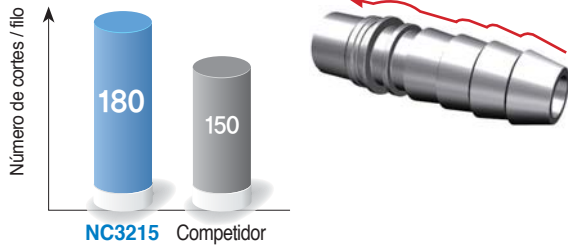


## Ejemplos de aplicaciones (NC3215/NC3225)

### P Acero al carbono (SM20C)

- **Pieza de trabajo** Parte de sistema para combustible
- **Condiciones de corte**  $vc$  (m/min) = 250~380,  $fn$  (mm/rev) = 0.2~0.3  
 $ap$  (mm) = 1.5~2.0, con refrigerante
- **Denominación** Inserto : CNMG120412-MP (NC3215)  
Porta : PCLNL2525-M12

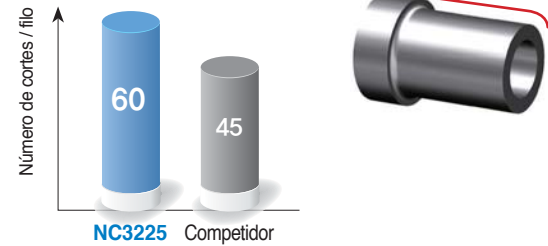
#### ■ Resultado de la prueba



### P Acero aleado (SNCM, Fundición)

- **Pieza de trabajo** Parte de motor
- **Condiciones de corte**  $vc$  (m/min) = 100,  $fn$  (mm/rev) = 0.15  
 $ap$  (mm) = 3.0, con refrigerante
- **Denominación** Inserto : CNMG120408-MP (NC3225)  
Porta : PCLNR2525-M12

#### ■ Resultado de la prueba



### P Acero al carbono (SM40C, forja en frío)

- **Pieza de trabajo** Parte sistema dirección
- **Condiciones de corte**  $vc$  (m/min) = 170,  $fn$  (mm/rev) = 0.3  
 $ap$  (mm) = 2.7~3.0, con refrigerante
- **Denominación** Inserto : DNMG150408-MP (NC3215)  
Porta : DDJNL2525-M15

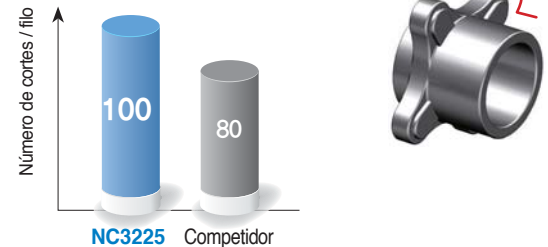
#### ■ Resultado de la prueba



### P Acero al carbono (S55CR, forjado en caliente)

- **Pieza de trabajo** Parte sistema dirección
- **Condiciones de corte**  $vc$  (m/min) = 230,  $fn$  (mm/rev) = 0.3  
 $ap$  (mm) = 0.5~1.5, con refrigerante
- **Denominación** Inserto : CNMG120408-MP (NC3225)  
Porta : PCLNL2525-M12

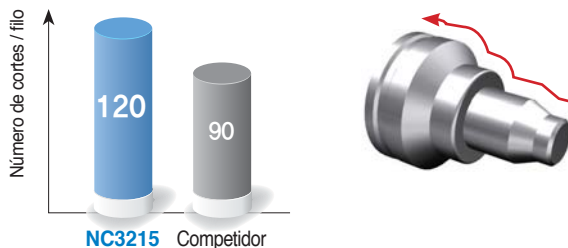
#### ■ Resultado de la prueba



### P Acero al carbono (SM45C, forja en frío)

- **Pieza de trabajo** Parte sistema dirección
- **Condiciones de corte**  $vc$  (m/min) = 200~250,  $fn$  (mm/rev) = 0.25~0.35  
 $ap$  (mm) = 1.0~2.0, con refrigerante
- **Denominación** Inserto : DNMG150612-LP (NC3215)  
Porta : DDJNL2525-M15

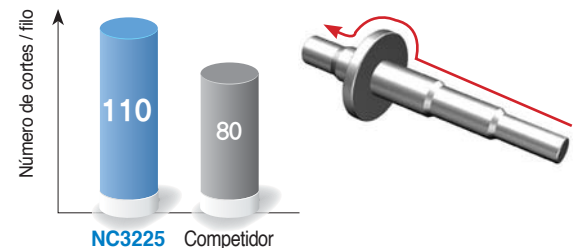
#### ■ Resultado de la prueba



### P Acero aleado (SCR420, forja en frío)

- **Pieza de trabajo** Parte transmisión
- **Condiciones de corte**  $vc$  (m/min) = 160,  $fn$  (mm/rev) = 0.13  
 $ap$  (mm) = 1.0, con refrigerante
- **Denominación** Inserto : DNMG150608-LP (NC3225)  
Porta : DDJNL2525-M15

#### ■ Resultado de la prueba



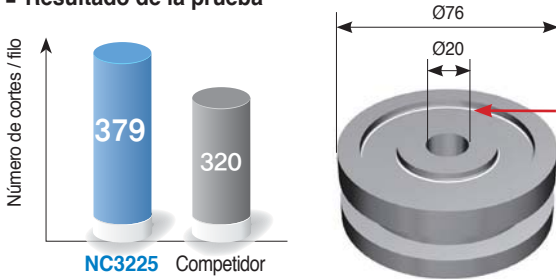
Ejemplos de aplicaciones (NC3225)

**P** Acero aleado (SCR420H, forjado en caliente)

■ **Condiciones de corte**  $vc$  (m/min) = 360~430,  $fn$  (mm/rev) = 0.2  
 $ap$  (mm) = 1.2~1.5 (maquinado externo/frente), con refrigerante

■ **Denominación** Inserto : CNMG120408-VB (NC3225)  
Porta : PCLNR2225-M12

■ **Resultado de la prueba**

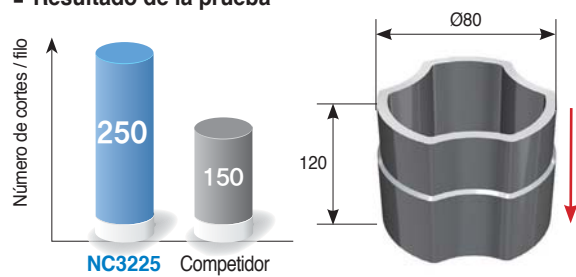


**P** Acero al carbono (S48C, forja en frío)

■ **Condiciones de corte**  $vc$  (m/min) = 280,  $fn$  (mm/rev) = 0.2~0.25  
 $ap$  (mm) = 1, sin refrigerante

■ **Denominación** Inserto : CNMG120412-VB (NC3225)  
Porta : PCLNR2525-M12

■ **Resultado de la prueba**

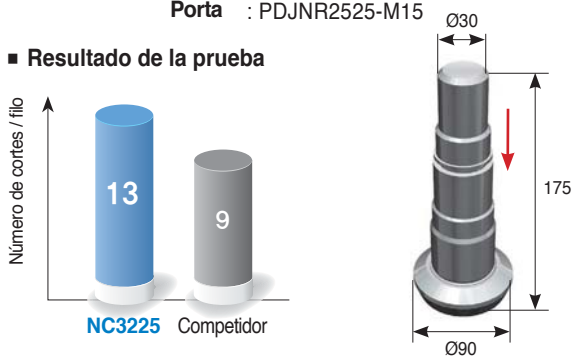


**P** Acero aleado (SCM420H, forjado en caliente)

■ **Condiciones de corte**  $vc$  (m/min) = 80~500  
 $fn$  (mm/rev) = 0.15~0.3 (Maquinado exterior/frente/ranurado/grabación),  $ap$  (mm) = 0.7~1.5, con refrigerante

■ **Denominación** Inserto : DNMG150608-VB (NC3225)  
Porta : PDJNR2525-M15

■ **Resultado de la prueba**

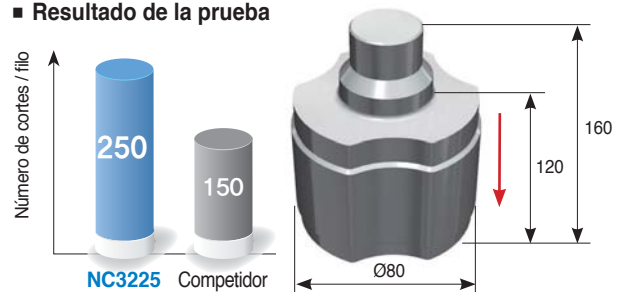


**P** Acero al carbono (SM53C, forja en frío)

■ **Condiciones de corte**  $vc$  (m/min) = 280  
 $fn$  (mm/rev) = 0.2~0.25 (Maquinado exterior / Maquinado interior),  $ap$  (mm) = 1, sin refrigerante

■ **Denominación** Inserto : DNMG150608-VB (NC3225)  
Porta : PDJNR2525-M15

■ **Resultado de la prueba**

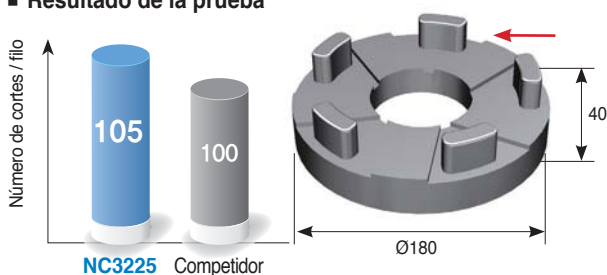


**P** Acero aleado (series SCR, forja en frío)

■ **Condiciones de corte**  $vc$  (m/min) = 314  
 $fn$  (mm/rev) = 0.25 (Maquinado exterior/frente)  
 $ap$  (mm) = 1, con refrigerante

■ **Denominación** Inserto : CNMG120408-VM (NC3225)  
Porta : PCLNR2525-M12

■ **Resultado de la prueba**

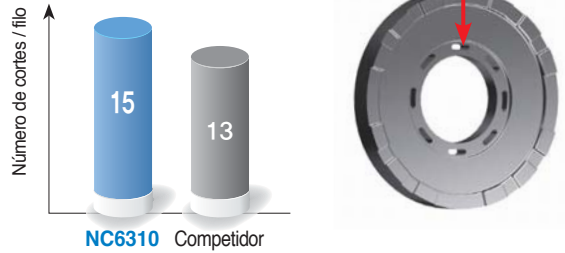


## Ejemplos de aplicaciones (NC6310)

### K Fundición dúctil (GCD500)

- **Pieza de trabajo** Volante
- **Condiciones de corte**  $vc$  (m/min) = 450,  $n$  (rpm) = 550,  $fn$ (mm/rev) = 0.3,  $ap$  (mm) = 2, sin refrigerante
- **Denominación** Inserto : CNMA120412 (NC6310)  
Porta : DCLNR2525

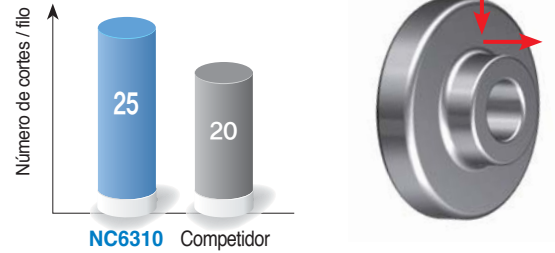
#### ■ Resultado de la prueba



### K Fundición gris (GC250D)

- **Pieza de trabajo** Disco de freno
- **Condiciones de corte**  $vc$  (m/min) = 550,  $n$  (rpm) = 547,  $fn$ (mm/rev) = 0.3,  $ap$  (mm) = 1, sin refrigerante
- **Denominación** Inserto : CNMG120412-RK (NC6310)  
Porta : DCLNR2525

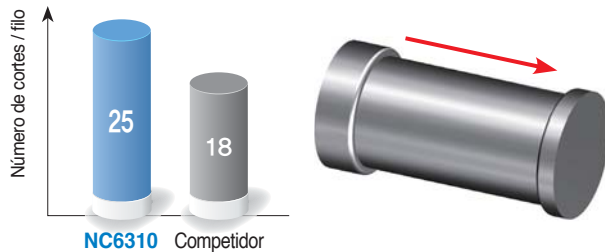
#### ■ Resultado de la prueba



### K Fundición gris (GC250D)

- **Pieza de trabajo** Camisa de cilindro
- **Condiciones de corte**  $vc$  (m/min) = 450,  $n$  (rpm) = 1100,  $fn$ (mm/rev) = 0.25,  $ap$  (mm) = 1.5, sin refrigerante
- **Denominación** Inserto : CNMA120408 (NC6310)  
Porta : DCLNR2525

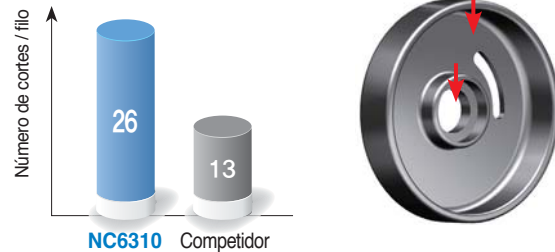
#### ■ Resultado de la prueba



### K Fundición gris (GC300D)

- **Pieza de trabajo** Caja del volante
- **Condiciones de corte**  $vc$  (m/min) = 560,  $n$  (rpm) = 298,  $fn$ (mm/rev) = 0.3,  $ap$  (mm) = 1, con refrigerante
- **Denominación** Inserto : CNMG120412-RK (NC6310)  
Porta : DCLNR2525

#### ■ Resultado de la prueba



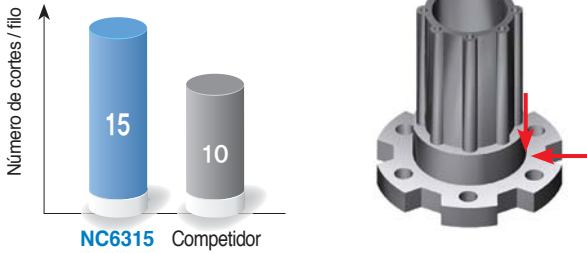


Ejemplos de aplicaciones (NC6315)

**K Fundición dúctil (GCD500)**

- **Pieza de trabajo** Cubo
- **Condiciones de corte**  $vc$  (m/min) = 320,  $n$  (rpm) = 318,  $fn$ (mm/rev) = 0.4,  $ap$  (mm) = 2, con refrigerante
- **Denominación** Inserto : WNMG080412-RK (NC6315)  
Porta : DCLNR2525

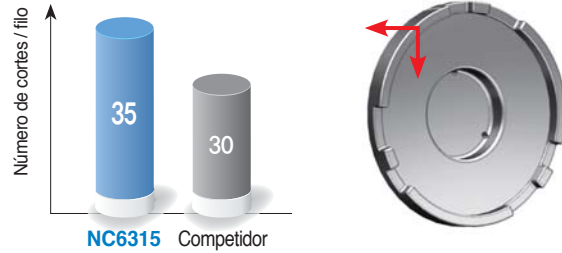
■ **Resultado de la prueba**



**K Fundición dúctil (GCD500)**

- **Pieza de trabajo** Volante
- **Condiciones de corte**  $vc$  (m/min) = 400,  $n$  (rpm) = 398,  $fn$ (mm/rev) = 0.3,  $ap$  (mm) = 2, con refrigerante
- **Denominación** Inserto : CNMA120408 (NC6315)  
Porta : DCLNR2525

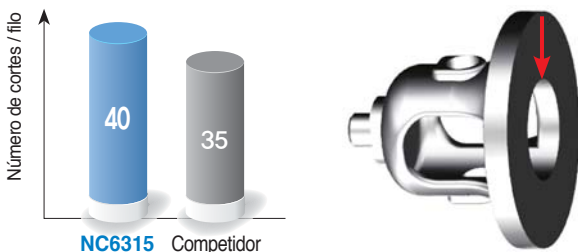
■ **Resultado de la prueba**



**K Fundición dúctil (GCD700)**

- **Pieza de trabajo** Caja diferencial
- **Condiciones de corte**  $vc$  (m/min) = 360,  $n$  (rpm) = 716,  $fn$ (mm/rev) = 0.25,  $ap$  (mm) = 1.5, con refrigerante
- **Denominación** Inserto : CNMG120408-MK (NC6315)  
Porta : DCLNR2525

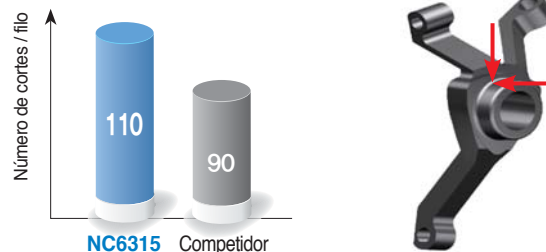
■ **Resultado de la prueba**



**K Fundición dúctil (GCD500)**

- **Pieza de trabajo** Parte dirección
- **Condiciones de corte**  $vc$  (m/min) = 200,  $n$  (rpm) = 1100,  $fn$ (mm/rev) = 0.25,  $ap$  (mm) = 2, con refrigerante
- **Denominación** Inserto : DNMG150608-MK (NC6315)  
Porta : DDJLNR2525

■ **Resultado de la prueba**

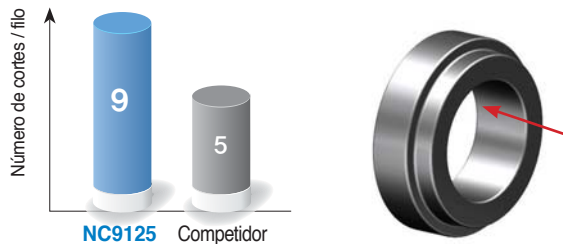


## Ejemplos de aplicaciones (serie NC9100)

### M Inoxidable (STS304)

- **Pieza de trabajo** Parte componente hidráulico (sello mecánico)
- **Condiciones de corte**  $vc$  (m/min) = 140,  $fn$  (mm/rev) = 0.28  
 $ap$  (mm) = 3.0, con refrigerante
- **Denominación** Inserto: CNMG120408-MM (NC9125)  
Porta : S32S-PCLCR-12

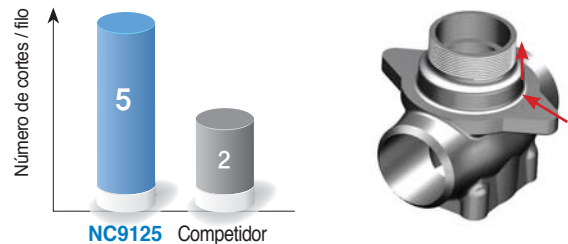
#### ■ Resultado de la prueba



### M Inoxidable (STS304)

- **Pieza de trabajo** Parte válvula, pistón
- **Condiciones de corte**  $vc$  (m/min) = 140,  $fn$  (mm/rev) = 0.28  
 $ap$  (mm) = 3.0, con refrigerante
- **Denominación** Inserto: CNMG120408-MM (NC9125)  
Porta : DCLNL2525-M12

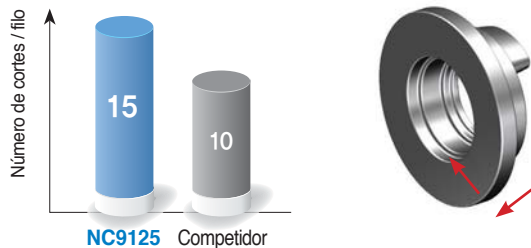
#### ■ Resultado de la prueba



### M Inoxidable (STS317L)

- **Pieza de trabajo** Parte componente eólico, brida (planta offshore)
- **Condiciones de corte**  $vc$  (m/min) = 150,  $fn$  (mm/rev) = 0.3~0.5  
 $ap$  (mm) = 4.0~6.0, con refrigerante
- **Denominación** Inserto: CNMG160616-MM (NC9125)  
Porta : PCLNR3232-P16

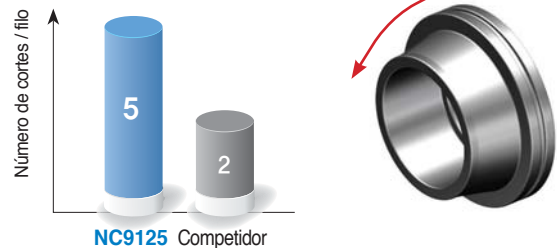
#### ■ Resultado de la prueba



### M Inoxidable (STS316)

- **Pieza de trabajo** Parte componente eólico, brida (planta offshore)
- **Condiciones de corte**  $vc$  (m/min) = 175,  $fn$  (mm/rev) = 0.3~0.8  
 $ap$  (mm) = 0.5, con refrigerante
- **Denominación** Inserto: TNMG220416-RM (NC9135)  
Porta : PTFNR3232-P22

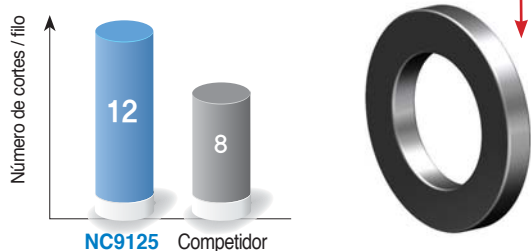
#### ■ Resultado de la prueba



### M Inoxidable (Súper dúplex)

- **Pieza de trabajo** Parte de planta (reborde, brida)
- **Condiciones de corte**  $vc$  (m/min) = 100,  $fn$  (mm/rev) = 0.5  
 $ap$  (mm) = 3, con refrigerante
- **Denominación** Inserto: CNMG160616-MM (NC9125)  
Porta : PCLNR323-P16

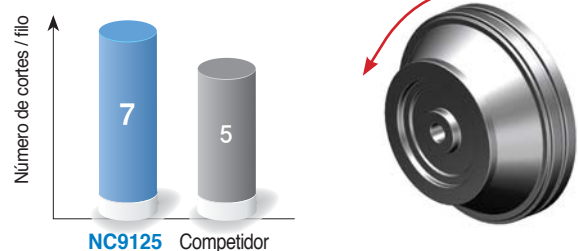
#### ■ Resultado de la prueba



### M Inoxidable (Dúplex)

- **Pieza de trabajo** Parte componente hidráulico
- **Condiciones de corte**  $vc$  (m/min) = 120,  $fn$  (mm/rev) = 0.4  
 $ap$  (mm) = 6, con refrigerante
- **Denominación** Inserto: CNMG160616-RM (NC9125)  
Porta : DCLNR3232-P16

#### ■ Resultado de la prueba



# Recubrimiento PVD

## Recubrimiento PVD para acero inoxidable y HRSA

### PC8105

- Sustrato ultra fino para mayor resistencia al desgaste y al astillamiento en filo
- Excelente tecnología de recubrimiento PVD con alta dureza y resistencia a la oxidación a altas temperaturas
- Mayor duración de la herramienta en el mecanizado y acabado a alta velocidad de aleaciones resistentes al calor y acero inoxidable

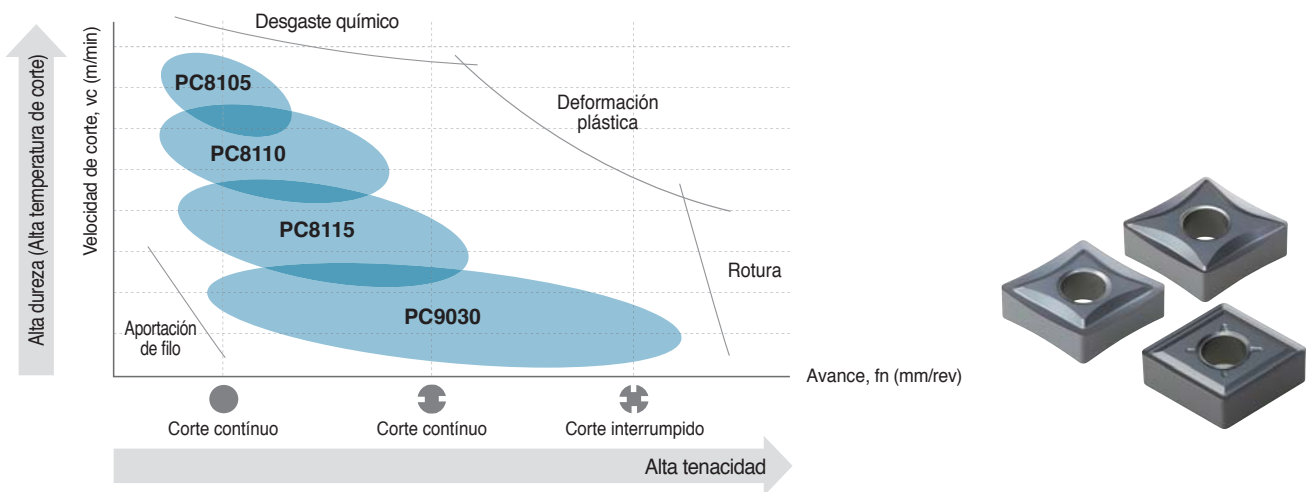
### PC8110

- Sustrato con excelente resistencia al desgaste y resistencia a la deformación plástica a altas temperaturas
- Excelente tecnología de recubrimiento PVD con alta dureza y resistencia a la oxidación a altas temperaturas
- Mayor vida de la herramienta en el mecanizado a alta velocidad de aleaciones resistentes al calor y acero inoxidable

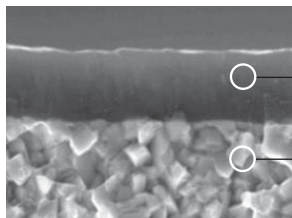
### PC8115

- Matriz de grano ultra fino para mejorar la resistencia al desgaste y al astillamiento
- Excelente tecnología de recubrimiento PVD con alta dureza y resistencia a la oxidación a altas temperaturas
- Mecanizado estable con filos de corte fuertes y excelente resistencia al astillamiento
- Mayor duración de la herramienta en mecanizado a velocidad baja/media y desbaste medio de aleaciones termorresistentes y acero inoxidable

### ➤ Alineación grados



### ➤ Características de los grados PC8100



- El desgaste a alta temperatura se evita mediante la película de recubrimiento con excelente acabado superficial, alta dureza y resistencia a la oxidación
- Mejora la resistencia al desgaste para igualar la matriz de grano ultrafino y mejora la estabilidad entre los vértices del inserto, el astillamiento y la resistencia al desgaste

**Tecnología de tratamiento de superficies de recubrimiento (Fotos de la capa de recubrimiento)**

suave superficie de recubrimiento

serie PC8100

Aspera superficie de recubrimiento

Recubrimiento convencional

**Tecnología de recubrimiento Resistente a la Oxidación (Imágenes de capa de revestimiento tratadas térmicamente a 900°C)**

Se evita la oxidación

serie PC8100

Oxidación generada fácilmente

Competidor



# A Grados de Torneado

## ☞ Sistema de selección de grados PVD

| Pieza de trabajo | Tipo de maquinado               | Grado recomendado  | Velocidad de corte recomendada (m/min) | ISO    | Rango de aplicación |        |
|------------------|---------------------------------|--------------------|--|--------|---------------------|--------|
| P                | Acero                           | PC5300             | 175 (100 ~ 250)                        | P30    | PC5300              |        |
|                  |                                 |                    | 145 (80 ~ 120)                         | P40    |                     | PC5400 |
| M                | Acero Inoxidable                | Corte continuo     | 125 (80 ~ 160)                         | P50    | PC8105              |        |
|                  |                                 |                    | 175 (120 ~ 230)                        | M01    |                     | PC8110 |
|                  |                                 |                    | 160 (110 ~ 210)                        | M10    |                     | PC8115 |
|                  | Corte interrumpido              | 135 (80 ~ 190)     | M30                                    | PC5300 | PC9030              | PC5400 |
|                  |                                 | 130 (80 ~ 180)     | M40                                    | PC9030 | PC5400              |        |
|                  |                                 | 110 (80 ~ 140)     | M50                                    | PC5400 | PC5400              |        |
| K                | Fundición                       | Corte continuo     | 135 (95 ~ 180)                         | K10    | PC8110              |        |
|                  |                                 |                    | 105 (75 ~ 140)                         | K20    | PC5300              |        |
|                  | Corte interrumpido              | 90 (65 ~ 120)      | K30                                    | PC5400 | PC5400              |        |
|                  |                                 |                    | K40                                    | PC5400 | PC5400              |        |
| S                | Aleaciones resistentes al calor | Corte continuo     | 55 (40 ~ 70)                           | S01    | PC8105              |        |
|                  |                                 |                    | 50 (35 ~ 65)                           | S10    | PC8110              |        |
|                  |                                 |                    | 45 (30 ~ 60)                           | S20    | PC8115              |        |
|                  |                                 | Corte interrumpido | 40 (20 ~ 60)                           | S30    | PC5300              | PC5400 |
|                  |                                 |                    | 35 (20 ~ 50)                           | S40    | PC5400              | PC5400 |
|                  |                                 |                    |  |        | PC5400              | PC5400 |
| H                | Acero Endurecido                | Corte interrumpido | 110 (80 ~ 140)                         | H01    | PC8105              |        |
|                  |                                 |                    | 100 (70 ~ 130)                         | H05    | PC8110              |        |
|                  |                                 |                    | 90 (65 ~ 115)                          | H10    | PC8115              |        |

## ☞ Características de los grados PVD

| Grados PVD | ISO  | Características   |
|------------|--|---|
| PC8105     | M05 ~ M15<br>S01 ~ S10<br>H01 ~ H05              | <ul style="list-style-type: none"> <li>• Para corte continuo y a alta velocidad de HRSA e inoxidable</li> <li>• Excelente rendimiento gracias a su elevada resistencia al desgaste y a su resistencia a la oxidación</li> <li>• Substrato con grano ultra fino y recubrimiento TiAlN</li> </ul>   |
| PC8110     | M10 ~ M20<br>K10 ~ K20<br>S05 ~ S15<br>H05 ~ H10 | <ul style="list-style-type: none"> <li>• Alta Velocidad y mecanizado continuo en acero inoxidable &amp; HRSA</li> <li>• Alto astillamiento y mayor duración de la herramienta</li> <li>• Nuevo revestimiento de TiAlN de grano ultra fino substrato aprobado</li> </ul>   |
| PC8115     | M15 ~ M25<br>S10 ~ S20<br>H10 ~ H15              | <ul style="list-style-type: none"> <li>• Para corte continuo e interrupción media y a media velocidad de HRSA e inoxidable</li> <li>• Excelente rendimiento gracias a su elevada resistencia al desgaste y a su resistencia a la oxidación</li> <li>• Substrato con grano ultra fino y recubrimiento TiAlN</li> </ul>                       |
| PC5300     | P30 ~ P40<br>M20 ~ M30<br>K20 ~ K25<br>S15 ~ S25 | <ul style="list-style-type: none"> <li>• Grado universal de acero inoxidable, HRSA, acero y fundición en corte interrumpido</li> <li>• Alto astillamiento y mayor duración de la herramienta</li> <li>• Nuevo revestimiento de TiAlN de grano ultra fino substrato aprobado</li> </ul>  |
| PC9030     | M25 ~ M35  | <ul style="list-style-type: none"> <li>• Medio, desbaste y corte interrumpido pesado de acero inoxidable</li> <li>• TiAlN revestimiento y de grano ultra fino substrato aprobado</li> <li>• Alto astillamiento y resistencia para el mecanizado</li> </ul>  |
| PC5400     | P35 ~ P45<br>M30 ~ M40<br>K30 ~ K35<br>S25 ~ S35 | <ul style="list-style-type: none"> <li>• Para corte medio de materiales de difícil corte, acero inoxidable, acero y fundición a velocidad media o baja</li> <li>• Mecanizabilidad estable con resistencia al astillado, la rotura y la soldadura en frío</li> <li>• Substrato ultrafino con alta tenacidad y nueva capa de AlCrN</li> </ul> |



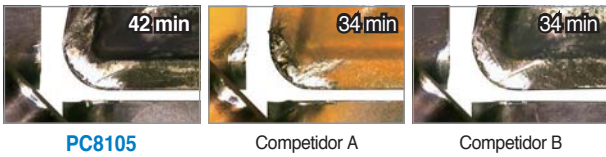
Ejemplos de aplicaciones (PC8105/PC8110/PC8115)

**S Inconel 718**

■ **Condiciones de corte**  $vc$  (m/min) = 50  
 $fn$  (mm/rev) = 0.15  
 $ap$  (mm) = 0.5, con refrigerante

■ **Denominación** Inserto : CNMG120408-VP3 (PC8105)  
 Porta : PCLNR2525-M12

■ **Resultado de la prueba**

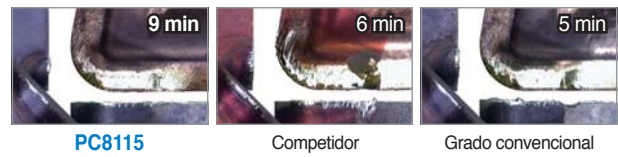


**S Inconel 718**

■ **Condiciones de corte**  $vc$  (m/min) = 50  
 $fn$  (mm/rev) = 0.15  
 $ap$  (mm) = 1.5, con refrigerante

■ **Denominación** Inserto : CNMG120408-VP3 (PC8115)  
 Porta : PCLNR2525-M12

■ **Resultado de la prueba**

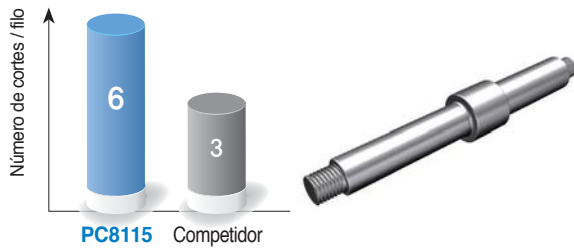


**M Inoxidable (STS316L)**

■ **Condiciones de corte**  $vc$  (m/min) = 80  
 $fn$  (mm/rev) = 0.2  
 $ap$  (mm) = 7.0, con refrigerante

■ **Denominación** Inserto : CNMG120408-VP3 (PC8115)  
 Porta : PCLNR2525-M12

■ **Resultado de la prueba**

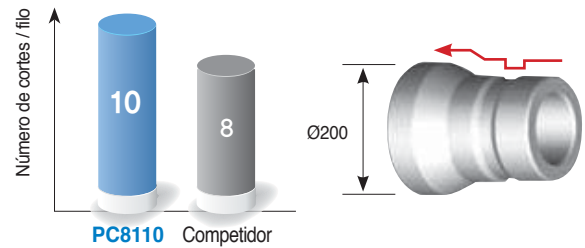


**S Inconel 625**

■ **Condiciones de corte**  $vc$  (m/min) = 60  
 $fn$  (mm/rev) = 0.2  
 $ap$  (mm) = 2, con refrigerante

■ **Denominación** Inserto : DNMG150608-MM (PC8110)  
 Porta : DDLNL2525-MS15

■ **Resultado de la prueba**

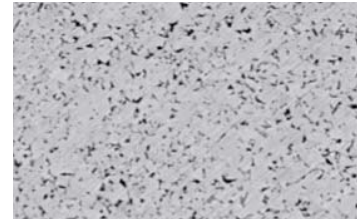


## Grados de carburo sin recubrimiento

### Grados de carburo sin recubrir para torneado de titanio

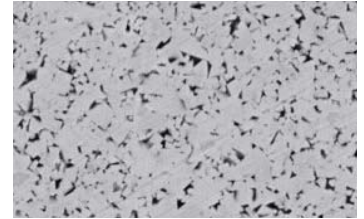
#### H01

- Resistencia al desgaste mejorada y a la fractura mejorada con el uso de un sustrato ultrafino
- Resistencia al filo de adicción y al astillamiento gracias a su superficie pulida y al uso de los rompe virutas positivos VP
- Excelente vida útil en el acabado de titanio a velocidades altas

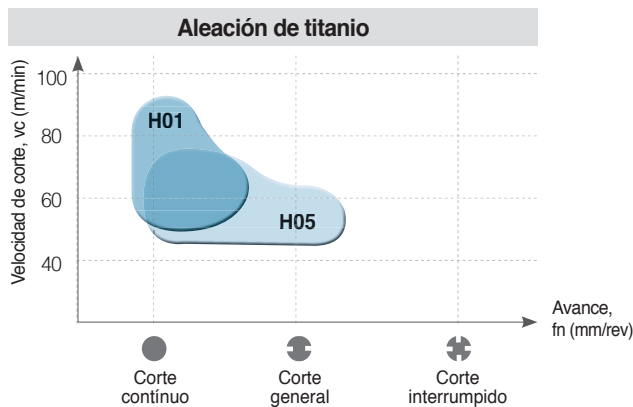


#### H05

- Primera recomendación para maquinado de titanio en diferentes condiciones de corte
- Resistencia al filo de adicción y al astillamiento gracias a su superficie pulida y al uso de los rompe virutas VP con un filo de corte muy positivos
- Excelente vida útil en maquinado medio de titanio



### ➤ Alineación grados



### ➤ Sistema de selección de grados sin recubrimiento

| Pieza de trabajo         | Grado recomendado | Condición de corte recomendada (m/min) | ISO | Rango de Aplicación |
|--------------------------|-------------------|--|-----|---------------------|
| P Acero                  | ST10              | 110 (70 ~ 140)                         | P10 | ST10                |
|                          | ST20              | 80 (50 ~ 110)                          | P20 | ST20                |
|                          | ST30A             | 70 (40 ~ 90)                           | P30 | ST30A               |
| M Acero Inoxidable       | U20               | 70 (40 ~ 90)                           | M25 | U20                 |
| K Fundición              | H01               | 105 (60 ~ 140)                         | K01 | H01                 |
|                          | H05               | 105 (60 ~ 140)                         | K10 | H05                 |
|                          | G10               | 90 (50 ~ 120)                          | K20 | G10                 |
| N Aleaciones de aluminio | H01               | 600 (450 ~ 750)                        | N10 | H01                 |
| N Aleaciones de cobre    | H05               | 425 (320 ~ 530)                        | N20 | H05                 |
| S Aleación de titanio    | H01               | 55 (40 ~ 70)                           | S01 | H01                 |
|                          | H05               | 50 (35 ~ 65)                           | S10 | H05                 |
| H Acero de alta dureza   | H01               | 80 (55 ~ 105)                          | H10 | H01                 |

### ➤ Aplicación Principal

| Pieza de trabajo | Composición   | Características   | Pieza de trabajo  |
|------------------|---------------|---|---|
| P                | WC-TiC-TaC-Co | Excelente resistencia al choque térmico y a la deformación plástica | Acero al carbon, Aleación de Acero, Acero Inoxidable                |
| M                | WC-TiC-TaC-Co | Grados de aplicación con excelente resistencia al choque térmico    | Acero al carbon, Aleación de Acero, Acero Inoxidable, Acero fundido |
| K                | WC-Co         | Grados duros y fuertes  | Fundición, Metales No-Ferrosos, Plásticos, Acrílico, etc            |
| S                | WC-Co         | Excelente resistencia al desgaste y al despostillamiento            | Aleación de titanio   |



**Propiedades físicas de los grados de carburo sin recubrimiento**

| Pieza de trabajo | Grado | Dureza (HRA) | TRS (kgf/mm <sup>2</sup> ) | Modulo de Young's (10 <sup>3</sup> kgf/mm <sup>2</sup> ) | Expansión Térmica coeficient (10 <sup>-6</sup> /°C) | Conductividad Térmica (cal/cm · sec·°C) |
|------------------|-------|--------------|----------------------------|--|---|---|
| <b>P</b>         | ST10  | 92.1         | 175                        | 48   | 6.2   | 25                                      |
|                  | ST20  | 91.9         | 200                        | 56   | 5.2   | 45                                      |
|                  | ST30A | 91.3         | 230                        | 53   | 5.2   | -                                       |
| <b>M</b>         | U20   | 91.1         | 210                        | -  | -   | 88                                      |
|                  | ST30A | 91.3         | 230                        | 53   | 5.2   | -                                       |
| <b>K</b>         | H01   | 92.9         | 210                        | 66   | 4.7   | 109                                     |
|                  | G10   | 90.9         | 250                        | 63   | -   | 105                                     |
| <b>S</b>         | H01   | 92.9         | 210                        | 66   | 4.7   | 109                                     |
|                  | H05   | 91.8         | 250                        | -  | -   | -                                       |

1KPa = 102kgf/m<sup>2</sup>, 1w/mk = 2.39×10<sup>-3</sup>cal/cm·sec·°C

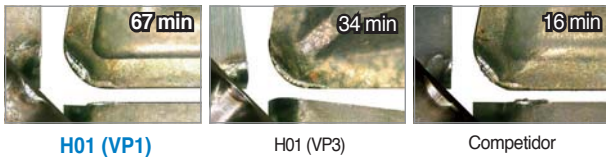
**Ejemplos de aplicaciones (H01/H05)**

**S Aleación de titanio (Ti-6Al-4V)**

- **Condiciones de corte** vc (m/min) = 100  
fn (mm/rev) = 0.1  
ap (mm) = 0.5, con refrigerante

- **Denominación** Inserto: CNMG120408-VP1 (H01)  
Porta : PCLNR2525-M12

■ **Resultado de la prueba**

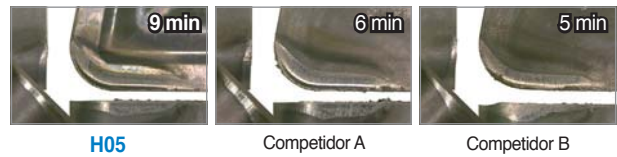


**S Aleación de titanio (Ti-6Al-4V)**

- **Condiciones de corte** vc (m/min) = 80  
fn (mm/rev) = 0.2  
ap (mm) = 2.0, con refrigerante

- **Denominación** Inserto: CNMG120408-VP3 (H05)  
Porta : PCLNR2525-M12

■ **Resultado de la prueba**

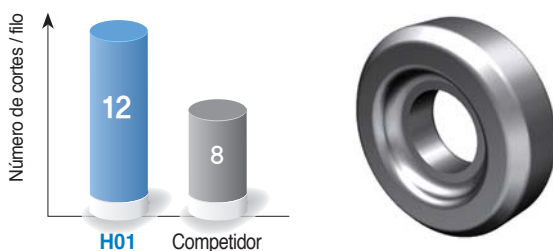


**S Aleación de titanio (Ti-6Al-4V)**

- **Pieza de trabajo** Parte de máquina industrial
- **Condiciones de corte** vc (m/min) = 60, fn (mm/rev) = 0.2  
ap (mm) = 0.8, con refrigerante

- **Denominación** Inserto: CNMG120408-VP3 (H01)  
Porta : PCLNR2525-M12

■ **Resultado de la prueba**

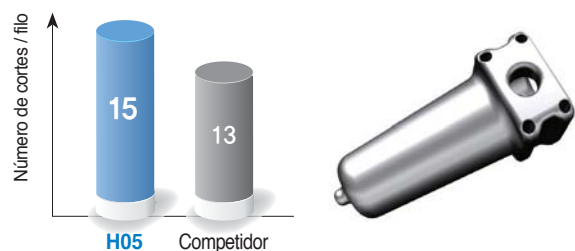


**S Aleación de titanio (Ti-6Al-4V)**

- **Pieza de trabajo** Parte de máquina industrial
- **Condiciones de corte** vc (m/min) = 50, fn (mm/rev) = 0.15  
ap (mm) = 2.0, con refrigerante

- **Denominación** Inserto: CNMG120408-VP3 (H05)  
Porta : PCLNL2525-M12

■ **Resultado de la prueba**

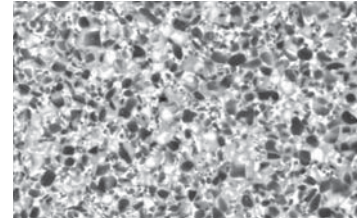


## Grados Cermet

### Solución para torneado de acero

## CN1500

- Para maquinado continuo de acero forjado en frío o caliente y acero sintetizado a alta velocidad de corte y baja profundidad de corte
- Excelente resistencia al desgaste y resistencia al desgaste en la cara del inserto
- Rugosidad en superficie mejorada gracias a la optimización de los filos de corte



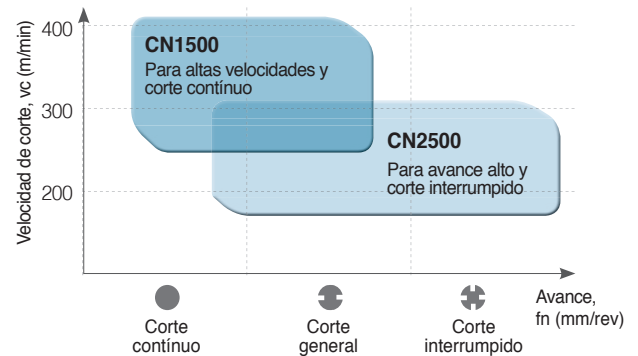
## CN2500

- Para maquinado con interrupción de acero forjado en frío o caliente y acero sintetizado a alta velocidad de corte y baja profundidad de corte
- Excelente resistencia al astillamiento, a la fractura y a la fractura térmica
- Rugosidad en superficie mejorada gracias a la optimización de los filos de corte

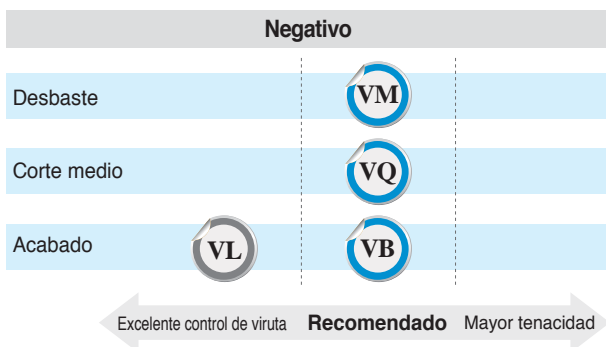
### Condiciones de corte recomendadas

| Tipo     | Material                                | Grado  | Velocidad de corte recomendada (m/min) |             |        |
|----------|---|--------|--|-------------|--------|
|          |   |        | Mínima                                 | Recomendada | Máxima |
| Torneado | SM10C, SS440                            | CN1500 | 150                                    | 270         | 400    |
|          |   | CN2500 | 130                                    | 240         | 350    |
|          | SM45C                                   | CN1500 | 150                                    | 250         | 350    |
|          |   | CN2500 | 130                                    | 220         | 300    |
|          | SCM440, aleaciones de acero sintetizado | CN1500 | 120                                    | 220         | 300    |
|          |   | CN2500 | 100                                    | 200         | 250    |

### Alineación grados



### Tipos de rompe viruta



### Selección de grados cermet

| Pieza de trabajo | Tipo de maquinado  | Grado recomendado | Velocidad de corte Recomendado (m/min) | ISO | Rango de aplicación |
|------------------|--------------------|-------------------|--|-----|---------------------|
| P Acero          | Corte continuo     | CN1500            | 250 (150 ~ 350)                        | P10 | CN1500              |
|                  | Corte interrumpido | CN2500            | 220 (130 ~ 300)                        | P20 |                     |
|                  |                    |                   |  |     |                     |





**Comparación de rompe virutas**

| Tipos de insertos | Tipos de maquinado | Rango de aplicación  | Rompevirutas |             |             |             |             |
|-------------------|--------------------|--|--------------|-------------|-------------|-------------|-------------|
|                   |                    |  | KORLOY       | CompetidorA | CompetidorB | CompetidorC | CompetidorD |
| Negativo          | Corte continuo     | Para torneado de hierro dulce con buen control de viruta   | VL           | FA          | GP          | TF          | FA          |
|                   | Corte general      | Para baja interrupción con un filo más fuerte que el modelo VG   | VB           | FG          | XP<br>CQ    | TSF<br>TS   | LU<br>SE    |
|                   | Corte general      | Para acabado en corte medio y con baja interrupción  | VQ           | MC          | HQ          | AS, ZM      | SU          |
|                   | Corte interrumpido | Para corte medio y desbaste con interrupción   | VM           | MT          | HS          | TM          | GU          |
| Positivo          | Corte continuo     | Para torneado de hierro dulce con buen control de viruta   | VL           | FA          | GP          | PF          | FP          |
|                   | Corte continuo     | Buen control de viruta, sobre todo en torneado interior, con filo de corte más resistente a la carga mecánica que VL | VF           | FG-PC       | HQ          | PS          | LU          |
|                   | Corte general      | Filo de corte más fuerte que VF  | MP           | FG          | HQ          | PS          | LU          |
|                   | Corte interrumpido | Para corte medio y desbaste con interrupción   | C25          | MT          | GK          | 24          | SC          |

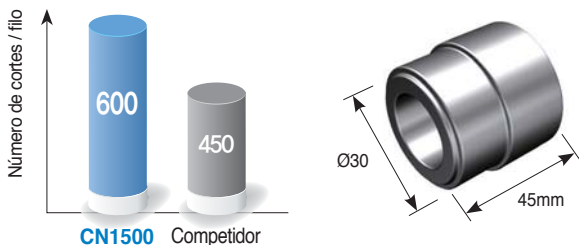
**Ejemplos de aplicaciones (CN1500)**

**P Acero al carbono (SM45C)**

■ **Condiciones de corte** vc (m/min) = 200, n (rpm) = 1,800  
fn (mm/rev) = 0.1, ap (mm) = 0.3  
con refrigerante

■ **Denominación** Inserto : CCMT09T304-MP (CN1500)  
Porta : SCLCR2020-K09

■ **Resultado de la prueba**

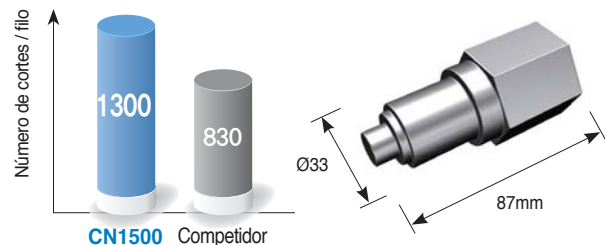


**P Acero aleado (SCM430)**

■ **Condiciones de corte** vc (m/min) = 230, n (rpm) = 2,000  
fn (mm/rev) = 0.12, ap (mm) = 0.8  
con refrigerante

■ **Denominación** Inserto : TNMG160404-VQ (CN1500)  
Porta : DTG NR3232-P16

■ **Resultado de la prueba**

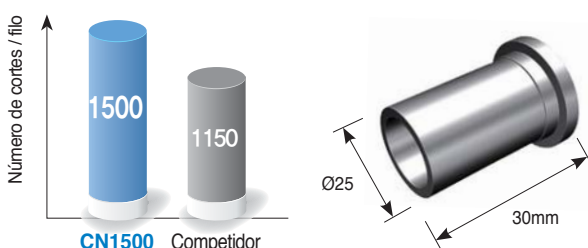


**P Acero para rodamientos (STB2)**

■ **Condiciones de corte** vc (m/min) = 200, n (rpm) = 2,500  
fn (mm/rev) = 0.1, ap (mm) = 0.3  
con refrigerante

■ **Denominación** Inserto : DCMT11T302-VF (CN1500)  
Porta : SDJCR2525-M11

■ **Resultado de la prueba**

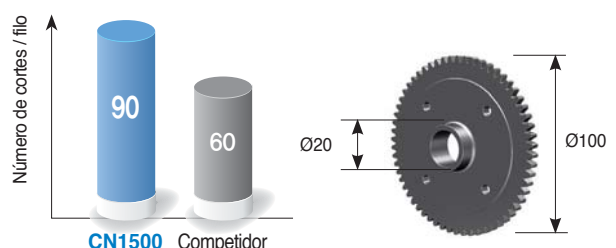


**P Metales Ferrosos Sinterizados**

■ **Condiciones de corte** vc (m/min) = 160, n (rpm) = 1,200  
fn (mm/rev) = 0.17, ap (mm) = 0.2  
con refrigerante

■ **Denominación** Inserto : SNMG120408-VM (CN1500)  
Porta : MSRNR2525-M12

■ **Resultado de la prueba**



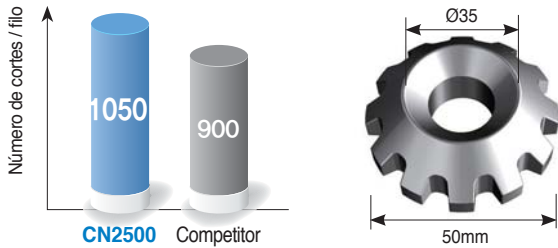
## Ejemplos de aplicaciones (CN2500)

### P Acero al carbono (SM45C)

■ **Condiciones de corte**  $vc$  (m/min) = 185,  $n$  (rpm) = 2,300  
 $fn$  (mm/rev) = 0.15,  $ap$  (mm) = 0.4  
 con refrigerante

■ **Denominación** Inserto : CCMT09T304-MP (CN2500)  
 Porta : SCLCR2020-K09

#### ■ Resultado de la prueba

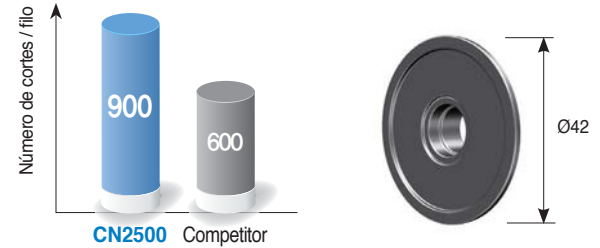


### P Acero aleado (SCR420H)

■ **Condiciones de corte**  $vc$  (m/min) = 200,  $n$  (rpm) = 2,000  
 $fn$  (mm/rev) = 0.15,  $ap$  (mm) = 0.2  
 con refrigerante

■ **Denominación** Inserto : DCMT11T304-MP (CN2500)  
 Porta : SDJCR2525-M11

#### ■ Resultado de la prueba

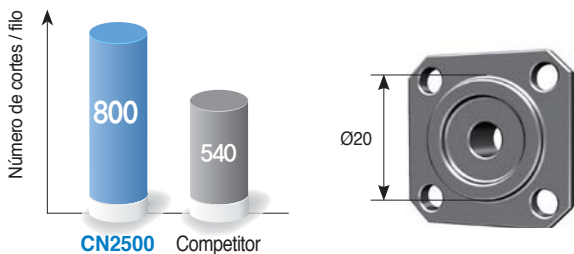


### P Materiales ferrosos sintetizados

■ **Condiciones de corte**  $vc$  (m/min) = 280,  $n$  (rpm) = 2,000  
 $fn$  (mm/rev) = 0.2,  $ap$  (mm) = 0.2  
 con refrigerante

■ **Denominación** Inserto : VBMT160404-MP (CN2500)  
 Porta : SVABL-2020-K16

#### ■ Resultado de la prueba

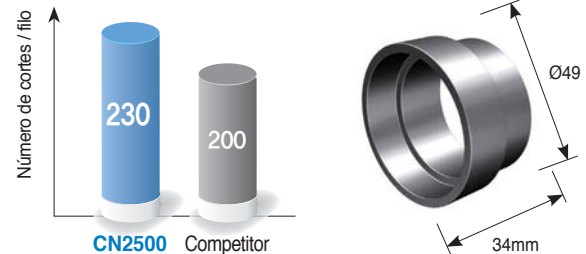


### P Acero aleado (SCM415)

■ **Condiciones de corte**  $vc$  (m/min) = 300,  $n$  (rpm) = 2,200  
 $fn$  (mm/rev) = 0.25,  $ap$  (mm) = 0.3  
 con refrigerante

■ **Denominación** Inserto : CNMG120408-VM (CN2500)  
 Porta : PCLNR2525-M12

#### ■ Resultado de la prueba

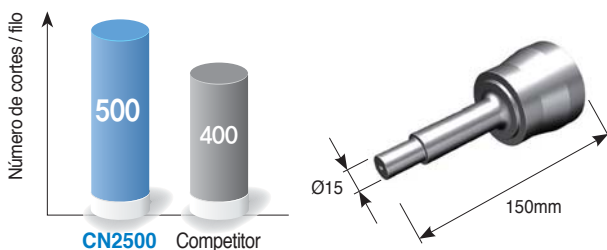


### P Acero al carbono (SM45C)

■ **Condiciones de corte**  $vc$  (m/min) = 300,  $n$  (rpm) = 2,800  
 $fn$  (mm/rev) = 0.25,  $ap$  (mm) = 0.4  
 con refrigerante

■ **Denominación** Inserto : CNMG120404-VB (CN2500)  
 Porta : PCLNR3232P-16

#### ■ Resultado de la prueba

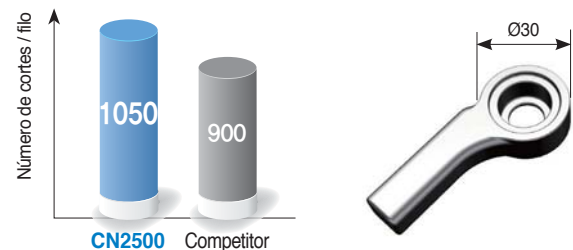


### P Acero aleado (SCR420)

■ **Condiciones de corte**  $vc$  (m/min) = 200,  $n$  (rpm) = 2,300  
 $fn$  (mm/rev) = 0.2,  $ap$  (mm) = 0.3  
 con refrigerante

■ **Denominación** Inserto : CCMT09T304-MP (CN2500)  
 Porta : SCLCR2020-K09

#### ■ Resultado de la prueba



# Grados cermet con recubrimiento

Grados cermet para maquinado de acero al carbono, acero aleador y acero sintetizado

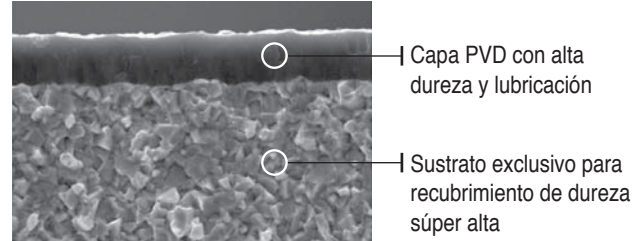
## CC1500 **new**

- Resistencia maximizada al filo de adicción y al desgaste por oxidación en corte continuo, altas velocidades de corte y baja profundidad de corte
- Muy buena resistencia al desgaste en comparación con grados existentes en corte continuo de acero al carbono y aleaciones de acero

## CC2500 **new**

- Resistencia maximizada al filo de adicción y al desgaste por oxidación en corte interrumpido, altas velocidades de corte y baja profundidad de corte
- Resistencia superior al impacto en corte con interrupción en torneado de acero al carbono y aleaciones de acero

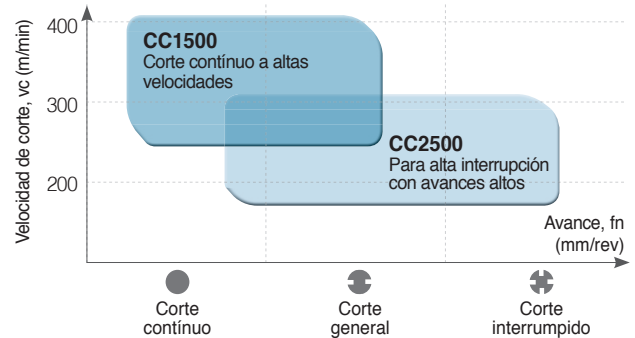
### Características



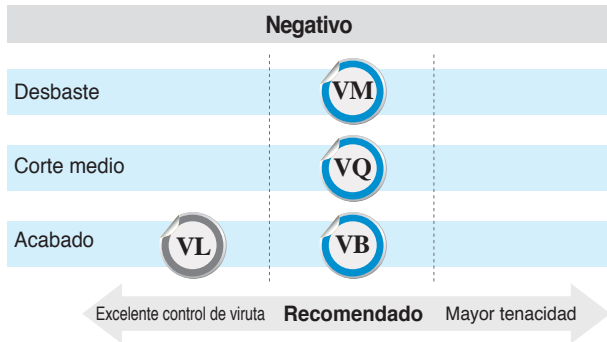
### Condiciones de corte recomendadas

| Tipo     | Material                                | Grado  | Velocidad de corte recomendada (m/min) |             |        |
|----------|---|--------|--|-------------|--------|
|          |   |        | Mínima                                 | Recomendada | Máxima |
| Torneado | SM10C, SS440                            | CN1500 | 200                                    | 350         | 450    |
|          |   | CN2500 | 180                                    | 290         | 400    |
|          | SM45C                                   | CN1500 | 200                                    | 300         | 400    |
|          |   | CN2500 | 180                                    | 270         | 350    |
|          | SCM440, aleaciones de acero sintetizado | CN1500 | 180                                    | 270         | 350    |
|          |   | CN2500 | 150                                    | 250         | 300    |

### Alineación grados



### Tipos de rompe viruta



### Selección de grados cermet

| Pieza de trabajo   | Tipo de maquinado  | Grado recomendado | Velocidad de corte Recomendado (m/min) | ISO             | Rango de aplicación |
|--------------------|--------------------|-------------------|--|-----------------|---------------------|
| P Acero            | Corte continuo     | CC1500            | 325 (200 ~ 450)                        | P10             | CC1500              |
|                    | Corte interrumpido | CC2500            | 265 (180 ~ 350)                        | P20, P30        |                     |
|                    | K Cast iron        | Corte continuo    | CC1500                                 | 270 (180 ~ 350) | K10                 |
| Corte interrumpido |                    | CC2500            | 250 (150 ~ 300)                        | K20             | CC2500              |

### Características de grados cermet

| Grados cermet con recubrimiento | ISO                   | Características   |
|---------------------------------|-----------------------|---|
| CC1500                          | P10 ~ P20 / K05 ~ K15 | <ul style="list-style-type: none"> <li>• Características de los grados cermet</li> <li>• Optimizado para torneado interior de alta precisión</li> <li>• Corte ligero de acero y fundición a altas velocidades de corte</li> </ul> |
| CC2500                          | P20 ~ P30 / K10 ~ K20 | <ul style="list-style-type: none"> <li>• Características de los grados cermet</li> <li>• Corte en seco y con lubricante</li> <li>• Corte ligero de acero y fundición a medias y altas velocidades de corte</li> </ul>             |

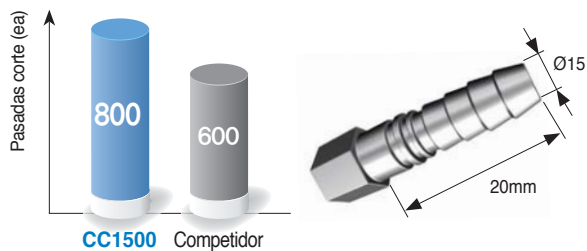


## Ejemplos de aplicaciones (CC1500)

### P Acero al carbono (SM20C)

- **Pieza de trabajo** Engrasador
- **Condiciones de corte**  $vc$  (m/min) = 170,  $n$  (rpm) = 2,000  
 $fn$  (mm/rev) = 0.12,  $ap$  (mm) = 0.12  
con refrigerante
- **Denominación** Inserto : TPMT110304-MP (CC1500)  
Porta : S20R-STWPR-11

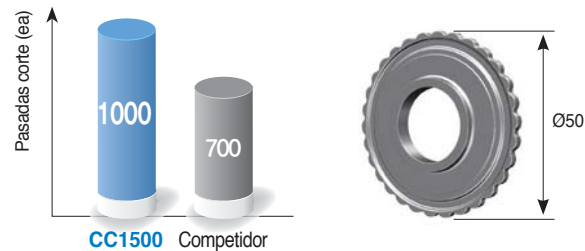
#### ■ Resultado de la prueba



### P Acero aleado (SCM440)

- **Pieza de trabajo** Plato de carga
- **Condiciones de corte**  $vc$  (m/min) = 450,  $n$  (rpm) = 2,500  
 $fn$  (mm/rev) = 0.2,  $ap$  (mm) = 0.2  
con refrigerante
- **Denominación** Inserto : DCMT11T304-MP (CC1500)  
Porta : SDJCR2525M11

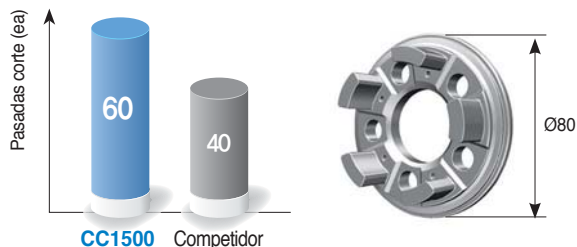
#### ■ Resultado de la prueba



### P Acero al carbono (SM45C)

- **Pieza de trabajo** Plato de carga abierto
- **Condiciones de corte**  $vc$  (m/min) = 300,  $n$  (rpm) = 2,500  
 $fn$  (mm/rev) = 0.3,  $ap$  (mm) = 0.4  
con refrigerante
- **Denominación** Inserto : CCMT09T304-C25 (CC1500)  
Porta : SCACR1212-F09

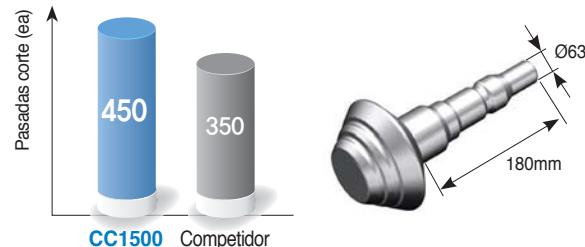
#### ■ Resultado de la prueba



### P Acero aleado (SCM420)

- **Pieza de trabajo** Piñón
- **Condiciones de corte**  $vc$  (m/min) = 250,  $n$  (rpm) = 2,500  
 $fn$  (mm/rev) = 0.2,  $ap$  (mm) = 0.5  
con refrigerante
- **Denominación** Inserto : DNMG150604-VL (CC1500)  
Porta : PDJNR2525-M15

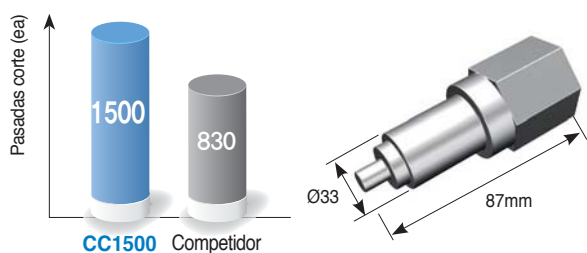
#### ■ Resultado de la prueba



### P Forjado caliente (SCM430)

- **Pieza de trabajo** Válvula
- **Condiciones de corte**  $vc$  (m/min) = 230,  $fn$  (mm/rev) = 0.8  
 $ap$  (mm) = 0.12, con refrigerante
- **Denominación** Inserto : TNMG160404-VQ (CC1500)  
Porta : PTTNR1616-H16

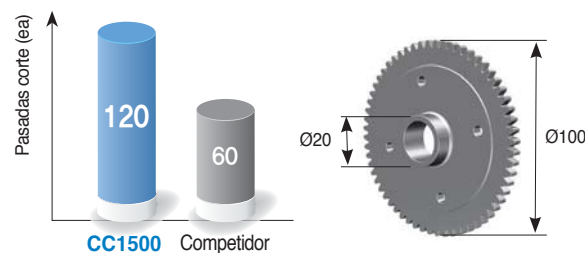
#### ■ Resultado de la prueba



### P Materiales ferrosos sintetizados

- **Pieza de trabajo** Engranaje
- **Condiciones de corte**  $vc$  (m/min) = 160,  $fn$  (mm/rev) = 0.17  
 $ap$  (mm) = 0.2, con refrigerante
- **Denominación** Inserto : SNMG120408-VM (CC1500)  
Porta : MSKNR3232-P12

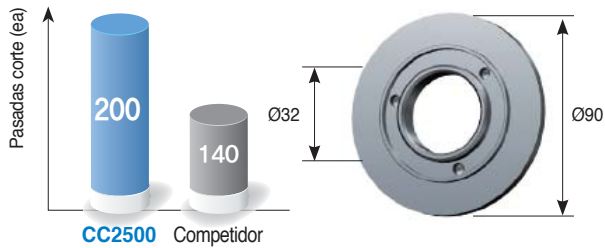
#### ■ Resultado de la prueba



Ejemplos de aplicaciones (CC2500)

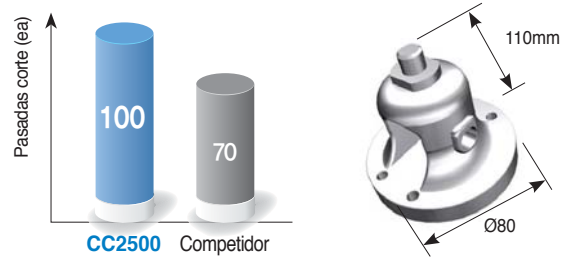
**P** Acero al carbono (SM45C)

- **Pieza de trabajo** Plato de choque
- **Condiciones de corte**  $vc$  (m/min) = 250,  $n$  (rpm) = 890  
 $fn$  (mm/rev) = 0.06,  $ap$  (mm) = 0.1  
con refrigerante
- **Denominación** **Inserto** : DNMG110404-VQ (CC2500)  
**Porta** : SDJCR2525-M11
- **Resultado de la prueba**



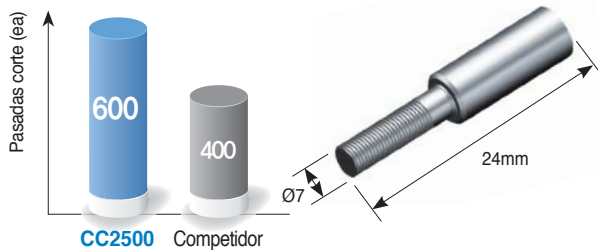
**K** Fundición dúctil (FCD400)

- **Pieza de trabajo** Caja diferencial
- **Condiciones de corte**  $vc$  (m/min) = 150,  $n$  (rpm) = 600  
 $fn$  (mm/rev) = 0.15,  $ap$  (mm) = 0.3  
con refrigerante
- **Denominación** **Inserto** : VBMT160404-MP (CC2500)  
**Porta** : SVJBR2525-M16
- **Resultado de la prueba**



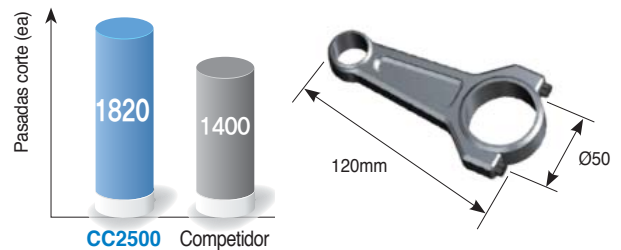
**P** Acero al carbono (SM35C)

- **Pieza de trabajo** Pistón
- **Condiciones de corte**  $vc$  (m/min) = 122,  $n$  (rpm) = 4,800  
 $fn$  (mm/rev) = 0.15,  $ap$  (mm) = 2.0  
con refrigerante
- **Denominación** **Inserto** : DNMG150604-VM (CC2500)  
**Porta** : MDQNR2525-M15
- **Resultado de la prueba**



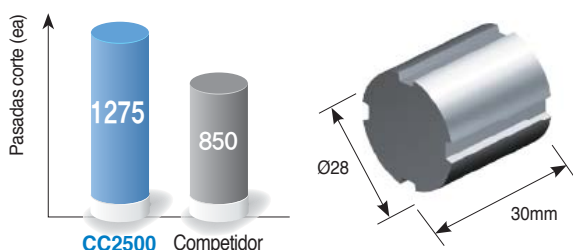
**P** Acero aleado (SCM420)

- **Pieza de trabajo** Biela
- **Condiciones de corte**  $vc$  (m/min) = 340,  $n$  (rpm) = 2,100  
 $fn$  (mm/rev) = 0.15,  $ap$  (mm) = 0.07  
con refrigerante
- **Denominación** **Inserto** : TPMT110304-MP (CC2500)  
**Porta** : S10M-STFPR-11
- **Resultado de la prueba**



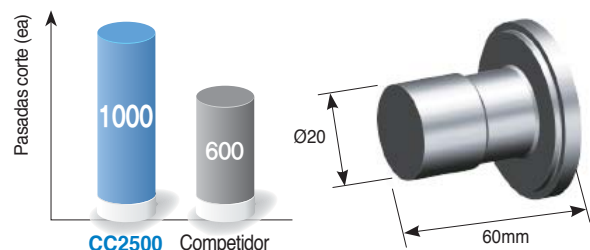
**P** Acero aleado (SCM415)

- **Pieza de trabajo** Cojinete para engranaje
- **Condiciones de corte**  $vc$  (m/min) = 314,  $n$  (rpm) = 3,500  
 $fn$  (mm/rev) = 1,  $ap$  (mm) = 0.2  
con refrigerante
- **Denominación** **Inserto** : CNMG120408-VQ (CC2500)  
**Porta** : MCLNR2525-M12
- **Resultado de la prueba**



**P** Acero aleado (SWCH18A)

- **Pieza de trabajo** Eje
- **Condiciones de corte**  $vc$  (m/min) = 367,  $n$  (rpm) = 5,800  
 $fn$  (mm/rev) = 0.02,  $ap$  (mm) = 1.55  
con refrigerante
- **Denominación** **Inserto** : TBT4405R-D38-R0.25 (CC2500)  
**Porta** : TBH425-45R
- **Resultado de la prueba**

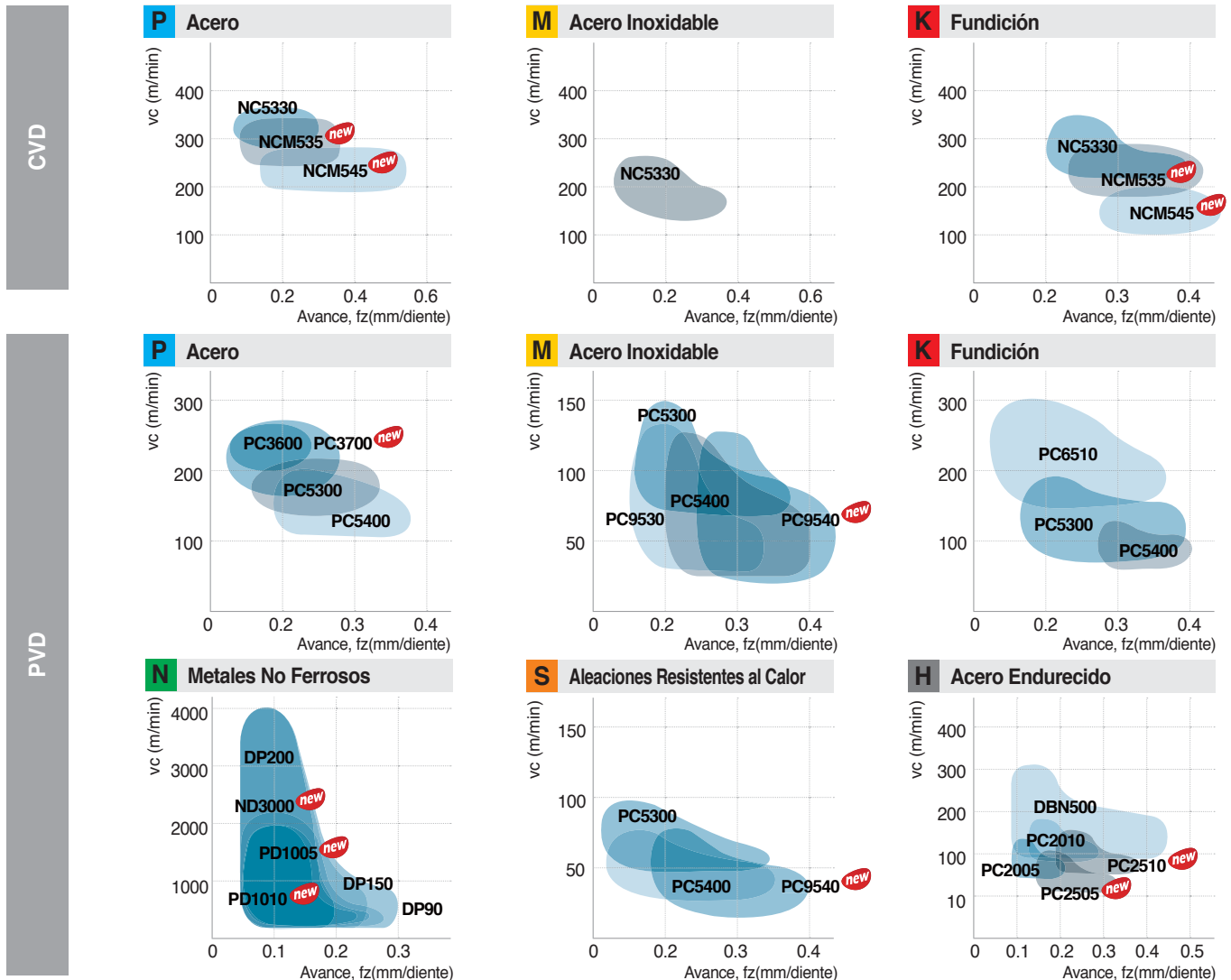


## Selecciones de grado de fresado

### Sistema de Selección

| Workpiece        | P Steel |                  |   |     | M Stainless steel |     |   |     | K Cast iron |  |     |     | S HRSA |     |                                       |     | N Nonferrous |     |                        | H Hardened  |     |     |     |  |        |     |  |
|------------------|---------|------------------|---|-----|-------------------|-----|---|-----|-------------|--|-----|-----|--------|-----|---------------------------------------|-----|--------------|-----|------------------------|---|-----|-----|-----|--|--------|-----|--|
| ISO              | P10     | P20              | P30   | P40 | P50               | M10 | M20   | M30 | M40         | K01  | K10 | K20 | K30    | K40 | S10                                   | S20 | S30          | S40 | N01                    | N10   | N20 | N30 | H01 | H10  | H20    | H30 |  |
| Coated carbide   |         | NC5330<br>PC3600 | PC3700 <i>new</i><br>NCM535 <i>new</i><br>PC5300<br>NCM545 <i>new</i><br>PC5400 |     |                   |     | NC5330<br>PC5300<br>PC9530<br>PC5400<br>PC9540 <i>new</i> |     |             | PC6510<br>NC5330<br>PC5300<br>NCM535 <i>new</i><br>PC5400<br>NCM545 <i>new</i> |     |     |        |     | PC5300<br>PC5400<br>PC9540 <i>new</i> |     |              |     |                        | ND3000 <i>new</i><br>PD1005 <i>new</i><br>PD1010 <i>new</i> |     |     |     | PC2005<br>PC2505 <i>new</i><br>PC2010<br>PC2510 <i>new</i><br>PC2015<br>PC210F |        |     |  |
| Cermet           |         | CN2000<br>CN30   |   |     |                   |     |   |     |             |  |     |     |        |     |                                       |     |              |     |                        |   |     |     |     |  |        |     |  |
| cBN / PCD        |         |                  |   |     |                   |     |   |     |             |  |     |     |        |     |                                       |     |              |     | DP90<br>DP150<br>DP200 |   |     |     |     |  | DBN500 |     |  |
| Uncoated carbide | ST20    |                  | ST30A   |     |                   |     | U20   |     |             | H01<br>H05<br>G10  |     |     |        |     |                                       |     |              |     |                        | H01<br>H05  |     |     |     |  |        |     |  |

### Rango de aplicación de grados de fresado



# Recubrimiento CVD

Solución de Fresado para Acero y Fundición

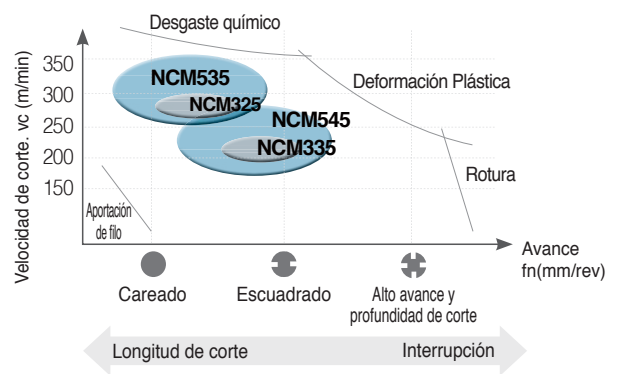
## NCM535 <sup>new</sup> / NCM545 <sup>new</sup>

- Mejor resistencia al astillado, resistencia al calor y al agrietamiento: gracias al tratamiento aplicado al recubrimiento
- Mejora la resistencia al desgaste y al calor: sustrato de alta tenacidad y alúmina CVD de alta funcionalidad

### Características



### Alineación grados



### Sistema de selección de grados con recubrimiento CVD

| Pieza de trabajo          | Tipos de maquinado | Grado recomendado     | Velocidad de corte Recomendado (m/min) | ISO        | Rango de aplicación                           |
|---------------------------|--------------------|-----------------------|--|------------|---|
| <b>P</b> Acero            | Corte continuo     | NC5330                | 200 (150 ~ 250)                        | P20<br>P25 | NC5330  |
|                           | Corte continuo     | NCM535 <sup>new</sup> | 300 (200 ~ 400)                        | P30<br>P35 |   |
|                           | Corte interrumpido | NCM545 <sup>new</sup> | 200 (150 ~ 250)                        | P40<br>P45 | NCM535 <sup>new</sup> / NCM545 <sup>new</sup> |
| <b>M</b> Acero Inoxidable | Corte continuo     | NC5330                | 150 (120 ~ 180)                        | M10<br>M20 | NC5330  |
| <b>K</b> Fundición        | Corte continuo     | NC5330                | 200 (150 ~ 250)                        | K10<br>K20 | NC5330  |
|                           |                    | NCM535 <sup>new</sup> | 250 (200 ~ 300)                        | K30        | NCM535 <sup>new</sup> / NCM545 <sup>new</sup> |

### Características del CVD para grados de Fresado

| Grados CVD            | ISO                                 | Características   |
|-----------------------|-------------------------------------|---|
| NC5330                | P20 ~ P30<br>M20 ~ M30<br>K15 ~ K25 | <ul style="list-style-type: none"> <li>• Para fresado a alta Velocidad en acero y acero inoxidable</li> <li>• Resistencia superior al desgaste y al despostillamiento en acero y acero inoxidable</li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub> + TiN</li> </ul>   |
| NCM535 <sup>new</sup> | P30 ~ P40<br>K20 ~ K30              | <ul style="list-style-type: none"> <li>• Excelente grado de fresado CVD para una alta productividad en grandes mecanizados de acero y hierro fundido a alta velocidad</li> <li>• Sustrato de alta tenacidad y conductividad térmica y capa de recubrimiento CVD de alta funcionalidad con resistencia al calor.</li> <li>• Alta resistencia al astillado, al calor y al agrietamiento gracias a un excelente postratamiento del recubrimiento</li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub></li> </ul> |
| NCM545 <sup>new</sup> | P40 ~ P50<br>K30 ~ K40              | <ul style="list-style-type: none"> <li>• Para acero y fundición con alta tenacidad</li> <li>• Sustrato de alta tenacidad y capa de recubrimiento CVD de alta funcionalidad</li> <li>• Alta resistencia al astillado, al calor y al agrietamiento gracias a un excelente postratamiento</li> <li>• MT-TiCN + Al<sub>2</sub>O<sub>3</sub></li> </ul>  |

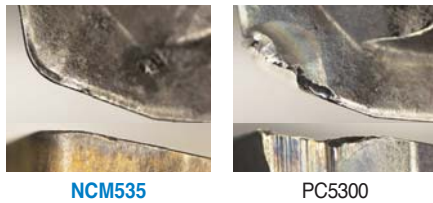


## Ejemplos de aplicaciones (NCM535/NCM545)

### P SS41(SS400)

- **Pieza de trabajo** Excavadora
- **Condiciones de corte**  $vc(m/min) = 350$ ,  $fz(mm/t) = 0.12$ ,  $ap(mm) = 2.0$ , Diámetro:  $\varnothing 250$
- **Denominación** Inserto : SNMX1507ENN-MM

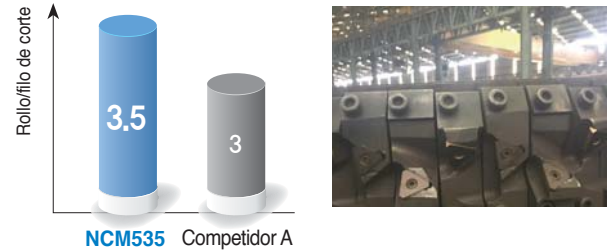
#### ■ Resultado de la prueba



### P API X83

- **Pieza de trabajo** Tubo de Acero. Tubo t 12.5
- **Condiciones de corte**  $vf(m/min) = 3$ ,  $ap(mm) = 6\sim 12$  ( $\varnothing 850$ , 65t)
- **Denominación** Inserto : TPEW3106ZS-IN

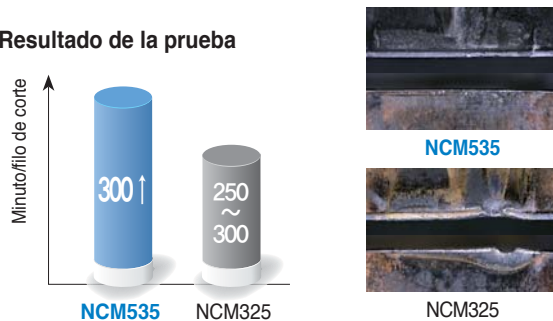
#### ■ Resultado de la prueba



### P API X55

- **Pieza de trabajo** Tubo de Acero,  $\varnothing 60.3$ , 4.7t
- **Condiciones de corte**  $n(rpm) = 350\sim 450$ ,  $fn(mm/rev) = 0.6$ ,  $ap(mm) = 2\sim 4$
- **Denominación** Inserto : TPKR2204PDR-MX

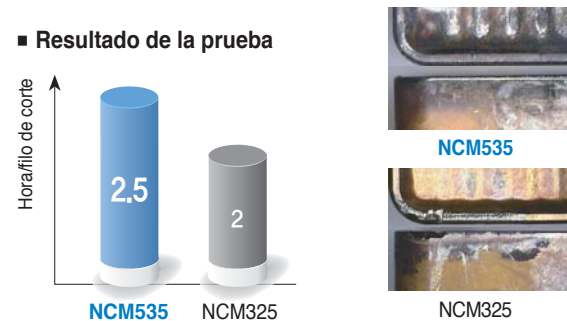
#### ■ Resultado de la prueba



### P SCM440

- **Pieza de trabajo** Partes grandes de buque
- **Condiciones de corte**  $vc(m/min) = 73.4$ ,  $fn(mm/rev) = 1.5$ ,  $ap(mm) = 1\sim 40$
- **Denominación** Inserto : SDMT090308-MM

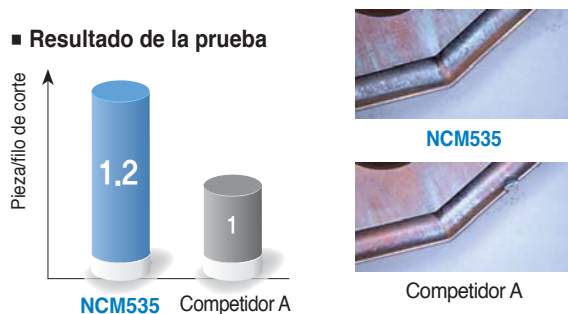
#### ■ Resultado de la prueba



### P Acero

- **Pieza de trabajo** Tubo
- **Condiciones de corte**  $vc(m/min) = 150$ , Plano único
- **Denominación** Inserto : WNMX251220-X373

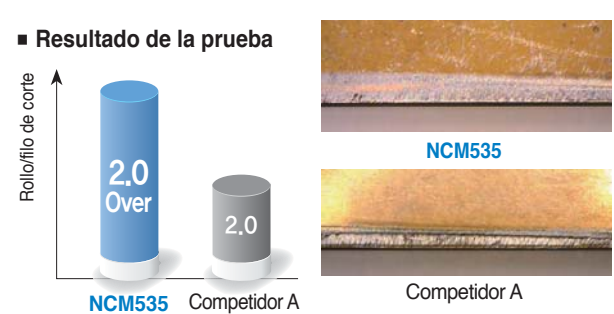
#### ■ Resultado de la prueba



### P PL-52-LHRE 145660

- **Pieza de trabajo** Oleoducto, Tubo t: 9.15
- **Condiciones de corte**  $vc(m/min) = 280$ ,  $vf(m/min) = 24$ ,  $ap(mm) = 3.2\sim 5.9$
- **Denominación** Inserto : LNMN500604

#### ■ Resultado de la prueba





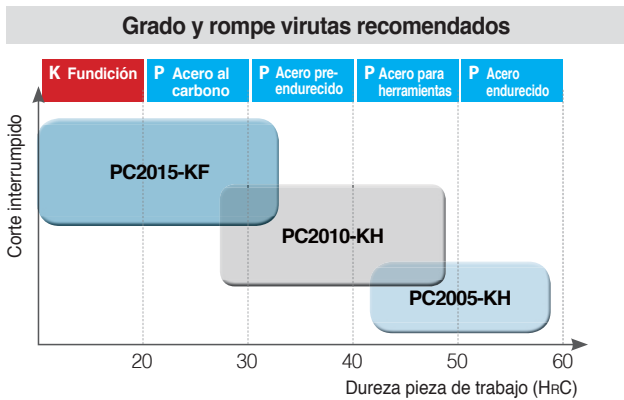
# Recubrimiento PVD

## Grados PVD para acabado de aceros templados y endurecidos

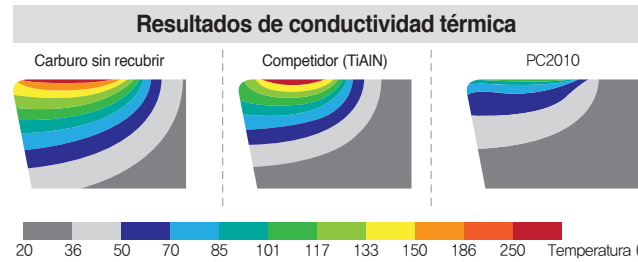
### PC2005 / PC2010 / PC2015

- Grados para acabado de aceros para herramientas y aceros para moldes de plástico
- PC2005: grado con un sustrato y recubrimiento de muy alta dureza
- PC2010: grado con filos de corte endurecidos, ideal para aceros pre-endurecidos y corte interrumpido
- PC2015: para acero al carbono y maquinado de fundición, con también buen desempeño en materiales difíciles de cortar

#### Guía de aplicación según material



#### Características



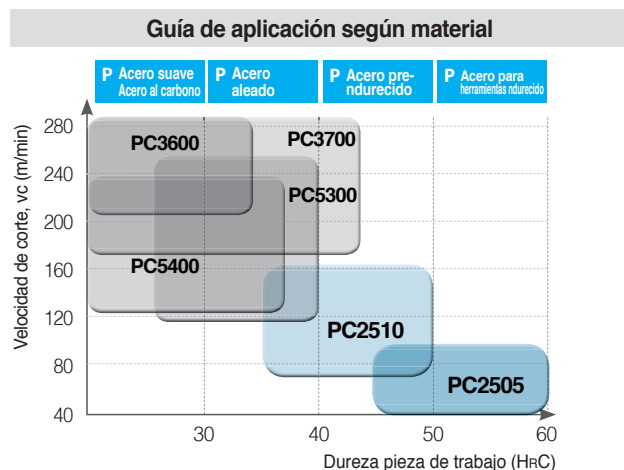
- Se aplicó un recubrimiento de protección térmica para evitar grietas térmicas.
- El WC ultrafino se combinó con cobalto de alto contenido para optimizarlo para mecanizado de acero pre-endurecido.

## Grados PVD para desbaste de acero de alta dureza

### PC2505 <sup>new</sup> / PC2510 <sup>new</sup>

- Grados para desbaste de aceros endurecidos
- PC2505: excelente resistencia al desgaste, ideal para maquinado de aceros para moldes y acero endurecido por encima de los HrC50
- PC2510: tenacidad estabilizada, ideal para corte interrumpido con lubricante de acero templado y endurecido, resistiendo el choque de variación térmica

#### Guía de aplicación según material



#### Características

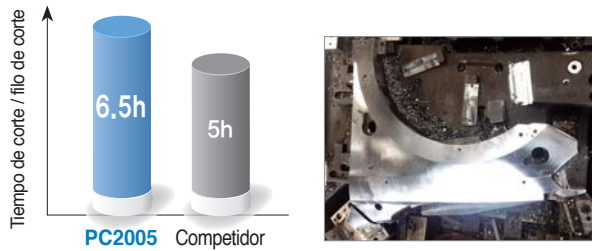


## Ejemplos de aplicaciones (PC2005/PC2010/PC2015)

### H Acero para herramientas (SKD11, tratado térmicamente)

- **Pieza de trabajo** Molde para prensa de piezas de automóvil
- **Condiciones de corte**  $vc$  (m/min) = 377,  $fz$  (mm/t) = 0.5  
 $ap$  (mm) = 0.5,  $ae$  (mm) = 0.2, sin refrigerante
- **Denominación** Inserto : LBH250-KH (PC2005)  
Porta : LBE250140S-S25C

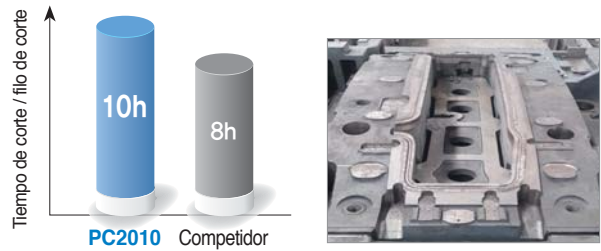
#### ■ Resultado de la prueba



### P Acero para moldes (KP4M)

- **Pieza de trabajo** Molde para prensa de piezas de automóvil
- **Condiciones de corte**  $vc$  (m/min) = 200,  $fz$  (mm/t) = 0.1  
 $ap$  (mm) = 0.1~0.5,  $ae$  (mm) = 0.1~0.5, con refrigerante
- **Denominación** Inserto : LBH160-KH (PC2010)  
Porta : LBE160100S-S16C

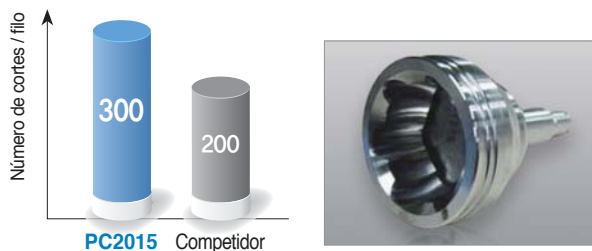
#### ■ Resultado de la prueba



### P Acero al carbono (SM53C)

- **Pieza de trabajo** Eje de unión
- **Condiciones de corte**  $vc$  (m/min) = 200,  $fz$  (mm/t) = 0.25  
 $ap$  (mm) = 0.5~2.0,  $ae$  (mm) = 0.5~1.0, sin refrigerante
- **Denominación** Inserto : LBH230-KF (PC2015)  
Porta : LBE230-HSKC63

#### ■ Resultado de la prueba

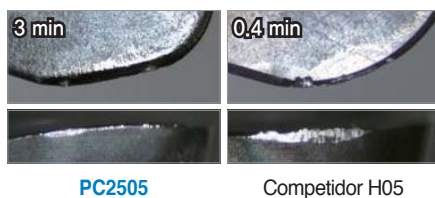


## Ejemplos de aplicaciones (PC2505/PC2510)

### H Acero para herramientas (SKD11, tratado térmicamente)

- **Condiciones de corte**  $vc$  (m/min) = 80,  $fz$  (mm/t) = 0.5  
 $ap$  (mm) = 0.3,  $ae$  (mm) = 10, sin refrigerante
- **Denominación** Inserto : LPEW040210R (PC2505)  
Porta : HFMS1010HR-2S10

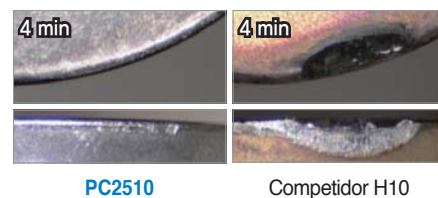
#### ■ Resultado de la prueba



### H Acero para herramientas (SKD11, tratado térmicamente)

- **Condiciones de corte**  $vc$  (m/min) = 30,  $fz$  (mm/t) = 0.4  
 $ap$  (mm) = 0.7,  $ae$  (mm) = 40, sin refrigerante
- **Denominación** Inserto : RPMW1204MOS1 (PC2510)  
Porta : FMRPS4050HRP-4M40

#### ■ Resultado de la prueba



# Grado de recubrimiento PVD

## Grado especializado en el fresado de acero

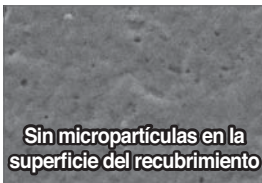
# PC3700 **new**

- Excelente tasa de eliminación de virutas gracias a un sustrato resistente especialmente diseñado para acero y un recubrimiento PVD altamente lubricativo y de alta dureza
- Grado de alta resistencia al astillado para minimizar la desviación y extender la vida útil de la herramienta en diversas condiciones de corte

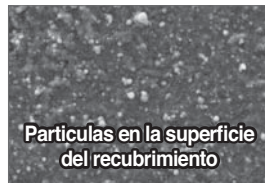
### Características

- Superficie lisa y con buen acabado gracias al tratamiento especial de la superficie  
 → Buena evacuación de viruta, resistencia mejorada y muy buen acabado

#### Tratamiento especial de la superficie del recubrimiento

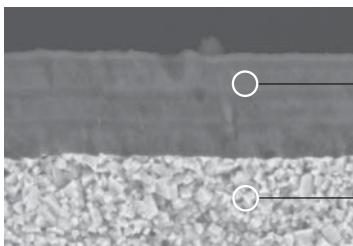


PC3700



Productos existentes

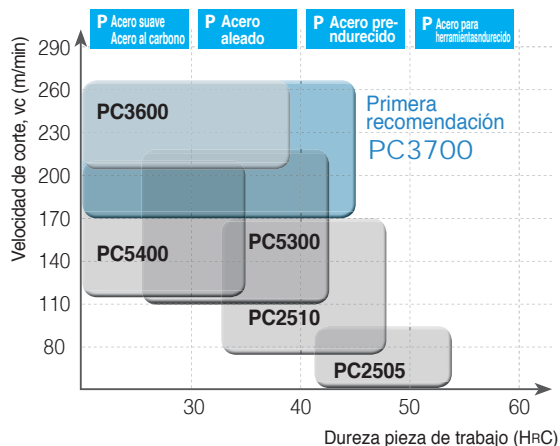
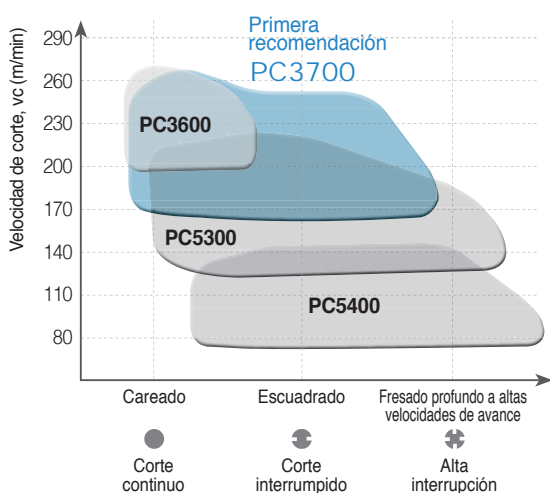
- Sustrato y recubrimiento PVD preparado para aplicaciones generales de fresado de acero



- Mayor resistencia al filo de aportación y al astillado gracias a la tecnología de recubrimiento multicapa que permite un recubrimiento de alta dureza y lubricativo.
- Garantizar la maquinabilidad general debido a materiales resistentes al desgaste y a la rotura optimizados para aplicaciones de fresado de acero.

### Rango de Aplicaciones

#### Grados recomendados y condiciones de corte para aplicaciones de fresado acero



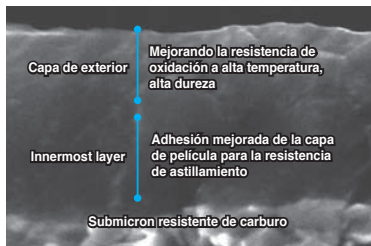
## Grado de recubrimiento PVD

### Grado PVD universal

# PC5300

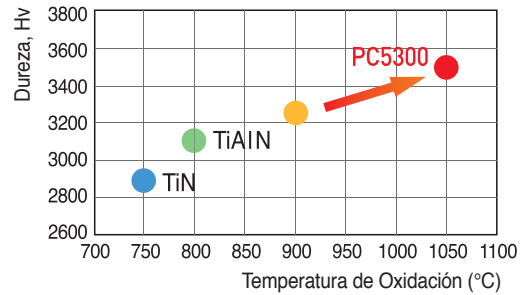
- Recubrimiento avanzado PVD con alta dureza y alta estabilidad a altas temperatura
- El sustrato altamente resistente y las películas de recubrimiento producen un excelente acabado superficial
- Capacidad de aplicación universal, cubriendo las áreas P, M, K, S con este único grado, PC5300
- Mecanizado estable gracias a la excelente dureza de los bordes y la resistencia al desconchado

### Características



- Última tecnología de revestimiento de PVD desarrollado por KORLOY
- nuevo concepto de recubrimiento equipado con alta oxidación y alta dureza

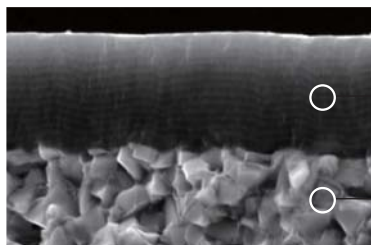
### Propiedades alta temperatura



# PC5400

- Nueva capa de recubrimiento PVD con alta tenacidad y lubricación
- Gran fuerza de adherencia entre el sustrato con alta tenacidad y la capa de recubrimiento
- La excelente fortaleza del filo de corte y la resistencia al astillado aseguran un mecanizado estable para P, M, K, S.

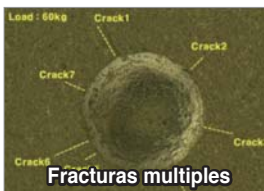
### Características



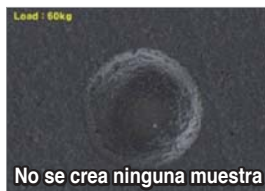
- Lubricación mejorada
- Alta tenacidad
- Adhesión fuerte
- Sustrato ultrafino de alta tenacidad



Creación de grietas en la superficie del recubrimiento después de dejar una muesca ejerciendo una carga de 60 kg



Recubrimiento normal



Recubrimiento de alta tenacidad



## Grado de recubrimiento PVD

Grado PVD optimizado para fresado intermedio a desbaste, de alta interrupción de acero inoxidable

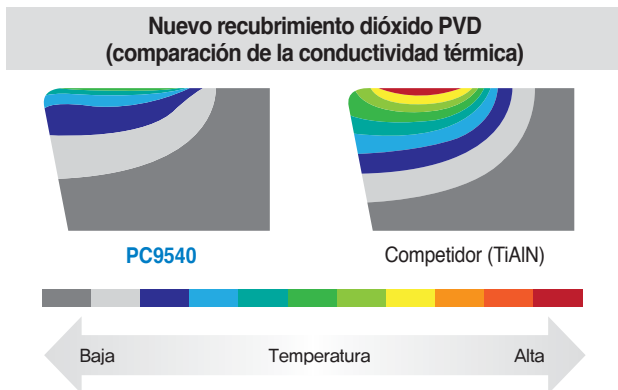
### PC9540 **new**

- Mayor vida útil gracias a la mayor resistencia a la rotura conseguida gracias a un sustrato de alta tenacidad que controla el crecimiento de grietas
- Excelente recubrimiento dióxido de este nuevo grado PVD con resistencia a la oxidación y al calor superando el límite del mecanizado de aleaciones termorresistentes
- Maquinabilidad estable al evitar el astillamiento y la aparición del filo de aportación gracias al tratamiento especial de la superficie del recubrimiento

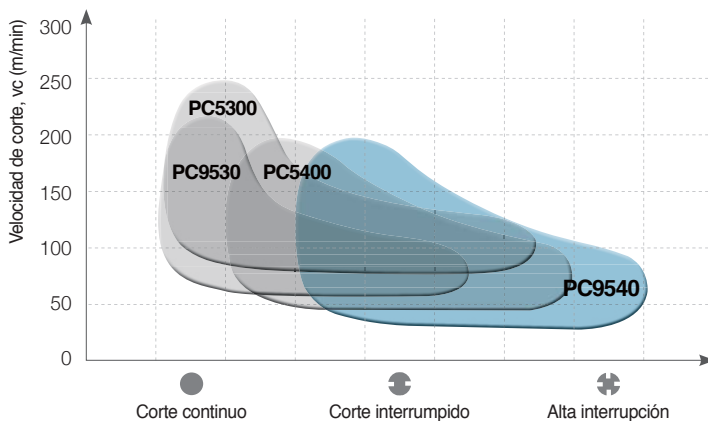
#### Características



- Acabado superficial mejorado → Buena resistencia al filo de aportación
- Multicapa PVD → Controlar el crecimiento de grietas
- Capa de dióxido de PVD → Buena resistencia a la oxidación y al calor
- Capa de nitruro de PVD → Buena resistencia al desgaste
- Sustrato de alta tenacidad → Buena resistencia a la rotura



#### Rango de Aplicaciones



## ➤ Sistema selección grados PVD

| Pieza de trabajo | Tipos de maquinado | Grado recomendado | Velocidad de corte Recomendado (m/min) | ISO             | Rango de aplicación   |        |
|------------------|--------------------|-------------------|--|-----------------|-----------------------|--------|
| P                | Acero              | Corte continuo    | PC3600                                 | 235 (180 ~ 290) | P20                   | PC3600 |
|                  |                    |                   | PC3700                                 | 235 (180 ~ 290) | P30                   | PC3700 |
|                  | Corte interrumpido | PC5300            | 195 (150 ~ 240)                        | P40             | PC5300                |        |
|                  |                    | PC5400            | 145 (80 ~ 210)                         |                 | PC5400                |        |
| M                | Acero Inoxidable   | Corte continuo    | PC5300                                 | 130 (100 ~ 160) | M20                   | PC5300 |
|                  |                    |                   | PC9530                                 | 130 (100 ~ 160) | M30                   | PC9530 |
|                  | Corte interrumpido | PC5400            | 120 (95 ~ 155)                         | M40             | PC5400                |        |
|                  |                    | PC9540            | 110 (80 ~ 140)                         | M50             | PC9540 <sup>new</sup> |        |
| K                | Fundición          | Corte continuo    | PC6510                                 | 180 (140 ~ 230) | K05                   | PC6510 |
|                  |                    |                   |  |                 | K10                   |        |
|                  | Corte interrumpido | PC5300            | 145 (110 ~ 180)                        | K20             | PC5300                |        |
|                  |                    | PC5400            | 125 (85 ~ 160)                         | K30             | PC5400                |        |
| S                | HRSA               | Corte continuo    | PC5300                                 | 55 (40 ~ 70)    | S10                   |        |
|                  |                    |                   |  |                 | S20                   | PC5300 |
|                  | Corte interrumpido | PC5400            | 40 (30 ~ 50)                           | S30             | PC5400                |        |
|                  |                    | PC9540            | 40 (30 ~ 50)                           | S40             | PC9540 <sup>new</sup> |        |
| H                | Acero muy duro     | Corte continuo    | PC2005                                 | 60 (40 ~ 80)    | H01                   | PC2005 |
|                  |                    |                   | PC2010                                 | 55 (40 ~ 70)    | H10                   | PC2010 |
|                  |                    |                   | PC2015                                 | 50 (35 ~ 65)    | H20                   | PC2015 |
|                  |                    |                   | PC210F                                 | 50 (35 ~ 65)    | H30                   | PC210F |

## ➤ Características del Recubrimiento PVD

| Recubrimiento PVD     | ISO   | Características  |
|-----------------------|---|--|
| PC3600                | P30 ~ P40   | <ul style="list-style-type: none"> <li>Grado de fresado para medio y desbaste de acero.</li> <li>Nueva capa de recubrimiento con resistencia superior al desgaste y resistencia a la oxidación con sustrato de alta tenacidad</li> </ul>   |
| PC3700                | P25 ~ P35   | <ul style="list-style-type: none"> <li>Grado exclusivo para fresado</li> <li>Recubrimiento multicapa de alta lubricación y alta dureza</li> </ul>  |
| PC5300                | P30 ~ P40 K20 ~ K30<br>M20 ~ M30 S15 ~ S25              | <ul style="list-style-type: none"> <li>Grado universal para Acero, Fundición, Materiales difíciles de cortar, Acero inoxidable</li> <li>Nuevo recubrimiento de grano ultrafino que provee mejor resistencia al desgaste y a la oxidación</li> <li>Para Torneado, Fresado, Ranurado, Tronzado, Brenado y Roscado</li> </ul>   |
| PC5400                | P35 ~ P45 K25 ~ K35<br>M30 ~ M40 S25 ~ S35              | <ul style="list-style-type: none"> <li>Calidad universal para mecanizado interrumpido de acero, fundición, materiales de difícil corte y acero inoxidable con mecanizabilidad estable</li> <li>Nueva capa de recubrimiento con alta tenacidad y lubricación sobre un sustrato de grano ultrafino con alta tenacidad</li> <li>Nueva serie de recubrimientos de AlCrN</li> <li>Para torneado, fresado, ranurado y taladrado</li> </ul> |
| PC6510                | K05 ~ K15   | <ul style="list-style-type: none"> <li>Para fresado a alta Velocidad en fundición y aluminio</li> <li>Recubrimiento K-Gold</li> </ul>  |
| PC9530                | M25 ~ M35<br>S20 ~ S30                                  | <ul style="list-style-type: none"> <li>Para fresado en fundición y aluminio en Velocidad medio y/o baja</li> <li>La dureza del Submicron provee un excelente desempeño en cortes con alto avance</li> <li>Recubrimiento TiAlN</li> <li>Para fresado y barrenado</li> </ul>   |
| PC9540 <sup>new</sup> | M35 ~ M45<br>S30 ~ S40                                  | <ul style="list-style-type: none"> <li>Grado exclusivo de alta tenacidad para fresado de acero inoxidable</li> <li>Recubrimiento dióxido PVD de excelente resistencia al calor</li> </ul>  |
| PC2005                | P01 ~ P10 K01 ~ K10<br>H01 ~ H10                        | <ul style="list-style-type: none"> <li>Exclusivo para Laser Mill en fresado de piezas de alta dureza y moldes de acero.</li> <li>Máxima resistencia al desgaste debido al sustrato y recubrimiento de gran dureza</li> <li>Recubrimiento K-Brown de dureza xtratadamente alta</li> </ul>   |
| PC2010                | H05 ~ H15   | <ul style="list-style-type: none"> <li>Exclusivo para Laser Mill en fresado de acero pre/endurecido y acero para moldes de plástico</li> <li>Filos de corte endurecidos gracias al uso de partículas ultra finas de WC y a alto contenido de material de unión, expandiendo el rango de aplicación a aceros endurecidos y pre-endurecidos</li> <li>Revestimiento K-Brown de dureza ultra alta</li> </ul>                             |
| PC2015                | H10 ~ H20   | <ul style="list-style-type: none"> <li>Exclusivo para Laser Mill en fresado de acero al carbono y fundición.</li> <li>Recubrimiento K-SILVER altamente lubricante</li> <li>Capa de revestimiento lubricante y sustrato de alto contenido para el mecanizado de acero al carbono y materiales fundidos difíciles de cortar</li> </ul>   |
| PC210F                | H10 ~ H20<br>P25 ~ P35 K15 ~ K25<br>M15 ~ M25 S10 ~ S20 | <ul style="list-style-type: none"> <li>Alta Velocidad en fresado en acero endurecido, Fundación, y Acero Inoxidable(Laser Mill)</li> <li>Nuevo recubrimiento de grano ultrafino que provee mejor resistencia al desgaste y a la oxidación</li> <li>Nueva serie de recubrimientos de TiAlN</li> </ul>   |
| PC2505 <sup>new</sup> | H01 ~ H10   | <ul style="list-style-type: none"> <li>Grado de desbaste para acero endurecido y acero para moldes</li> <li>Excelente resistencia al desgaste ideal para el mecanizado de acero para moldes y acero endurecido sobre Hrc50</li> </ul>  |
| PC2510 <sup>new</sup> | H05 ~ H15   | <ul style="list-style-type: none"> <li>Grado de desbaste para acero templado y acero troquelado de plástico</li> <li>Dureza estabilizada ideal para corte interrumpido de acero endurecido alto y corte húmedo acompañado por choque térmico masivo</li> </ul>   |



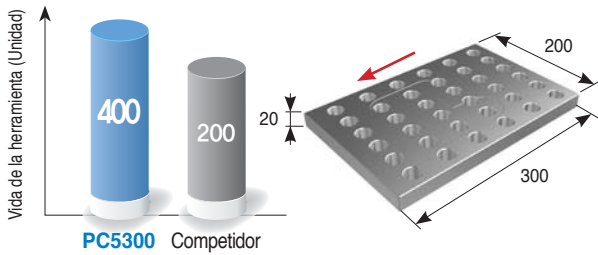
Ejemplos de aplicaciones (PC5300)

**P** Acero para moldes (KP4M)

■ **Condiciones de corte**  $vc$  (m/min) = 250,  $fz$  (mm/t) = 1.0  
 $ap$  (mm) = 1.0, sin refrigerante

■ **Denominación** Inserto : WNMX130520ZNN-MM (PC5300)  
Fresa : HRMDCM13050HR-3

■ **Resultado de la prueba**

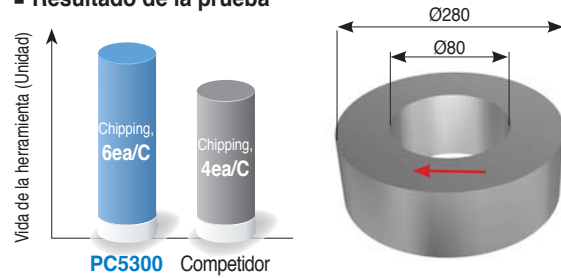


**M** Inoxidable (STS316)

■ **Condiciones de corte**  $vc$  (m/min) = 65,  $fz$  (mm/t) = 0.14  
 $ap$  (mm) = 3.0, con refrigerante

■ **Denominación** Inserto : SEET14M4AGSN-MM (PC5300)  
Fresa : FMACM4100HR

■ **Resultado de la prueba**



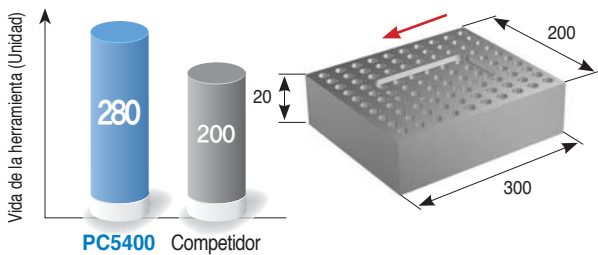
Ejemplos de aplicaciones (PC5400)

**P** Acero al carbono (SM45C)

■ **Condiciones de corte**  $vc$  (m/min) = 250,  $fz$  (mm/t) = 1.2  
 $ap$  (mm) = 1.0, sin refrigerante

■ **Denominación** Inserto : WNMX130520ZNN-MM (PC5400)  
Fresa : HRMDCM13050HR-4

■ **Resultado de la prueba**

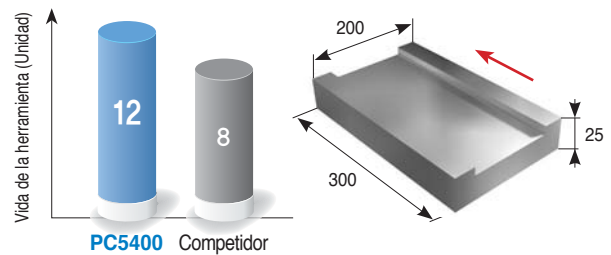


**P** Acero aleado (SCR440)

■ **Condiciones de corte**  $vc$  (m/min) = 180,  $fz$  (mm/t) = 0.2  
 $ap$  (mm) = 2.0, sin refrigerante

■ **Denominación** Inserto : PDKT1605M0-MM (PC5400)  
Fresa : FMRC5063HRD-H

■ **Resultado de la prueba**

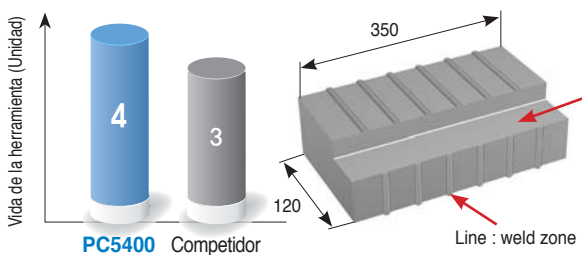


**M** Inoxidable (STS316)

■ **Condiciones de corte**  $vc$  (m/min) = 50,  $fz$  (mm/t) = 0.1  
 $ap$  (mm) = 4.0,  $ae$  (mm) = 15.0, sin refrigerante

■ **Denominación** Inserto : APMT1604PDSR-MM (PC5400)  
Fresa : AMC3063HS

■ **Resultado de la prueba**

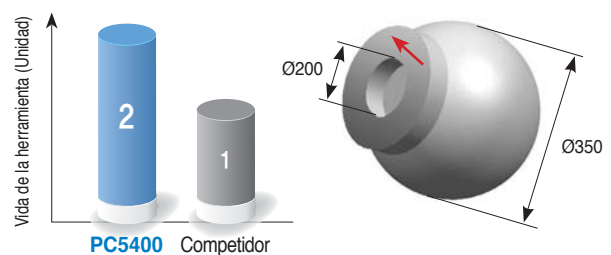


**S** Aleaciones Resistentes al Calor (Inconel 718)

■ **Condiciones de corte**  $vc$  (m/min) = 60,  $fz$  (mm/t) = 0.1  
 $ap$  (mm) = 2.5, con refrigerante

■ **Denominación** Inserto : SNMX1206ANN-MM (PC5400)  
Fresa : RM8AC4080HR

■ **Resultado de la prueba**

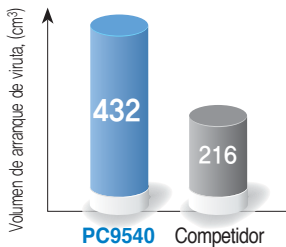


## Ejemplos de aplicaciones (PC9540)

### M Acero inoxidable austenítico (STS304, HB200)

- **Pieza de trabajo** Barra cuadrada (300×200×100)
- **Condiciones de corte**  $vc$  (m/min) = 120,  $fz$  (mm/t) = 0.1  
 $ap$  (mm) = 1.5,  $ae$  (mm) = 20, con refrigerante
- **Denominación** Inserto : XNKT080508PNER-ML  
Porta : RM3PCM4063HR

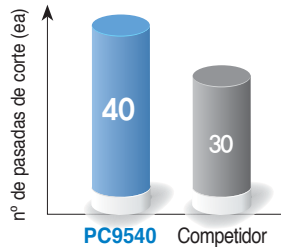
#### ■ Resultado de la prueba



### M Acero inoxidable resistente al calor (DIN 1.4837)

- **Pieza de trabajo** Caja de turbocargador
- **Condiciones de corte**  $vc$  (m/min) = 100,  $fz$  (mm/t) = 0.16  
 $ap$  (mm) = 2.2, sin refrigerante
- **Denominación** Inserto : SNMX1206ANN-MF  
Porta : RM8AC4100HR

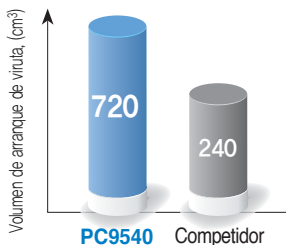
#### ■ Resultado de la prueba



### M Acero inoxidable austenítico (STS316, HB160)

- **Pieza de trabajo** Barra cuadrada (300×200×100)
- **Condiciones de corte**  $vc$  (m/min) = 120,  $fz$  (mm/t) = 0.15  
 $ap$  (mm) = 5.0,  $ae$  (mm) = 10, sin refrigerante
- **Denominación** Inserto : ADKT170608PESR-ML  
Porta : AMXS032R-3W32-125-AD17

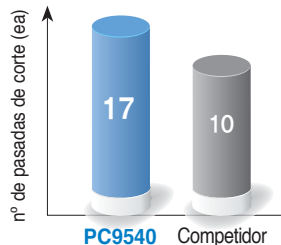
#### ■ Resultado de la prueba



### M Acero inoxidable resistente al calor (DIN 1.4848)

- **Pieza de trabajo** Caja de turbocargador
- **Condiciones de corte**  $vc$  (m/min) = 80,  $fz$  (mm/t) = 0.2  
 $ap$  (mm) = 1.2, sin refrigerante
- **Denominación** Inserto : ONMX060608-MM  
Porta : RM16AC6100HR-M

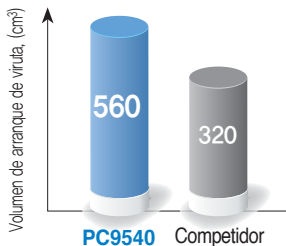
#### ■ Resultado de la prueba



### M Acero inoxidable resistente al calor (DIN 1.4848, HB180)

- **Pieza de trabajo** Barra cuadrada (300×200×100)
- **Condiciones de corte**  $vc$  (m/min) = 90,  $fz$  (mm/t) = 0.2  
 $ap$  (mm) = 2.0,  $ae$  (mm) = 25, con refrigerante
- **Denominación** Inserto : SNMX1206ANN-MF  
Porta : RM8ACM4063HR-H

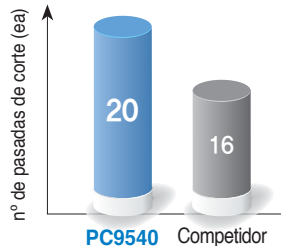
#### ■ Resultado de la prueba



### M Acero inoxidable resistente al calor (DIN 1.4848)

- **Pieza de trabajo** Caja de turbocargador
- **Condiciones de corte**  $vc$  (m/min) = 100,  $fz$  (mm/t) = 0.15  
 $ap$  (mm) = 1.5, con refrigerante
- **Denominación** Inserto : XNKT060405PNSR-MM  
Porta : RM3PS3025HR-3L20

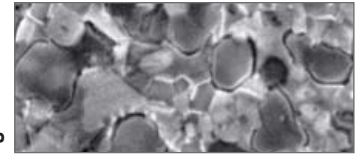
#### ■ Resultado de la prueba





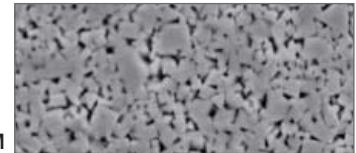
## Grados de carburo sin recubrimiento

- Características**
- Debido a la avanzada tecnología de sinterización de KORLOY, nuestros grados de carburo sin recubrimiento tienen una estructura de aleación fina que es necesario para obtener una calidad superior de una herramienta de corte sin recubrimiento

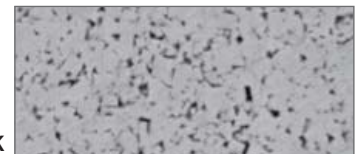


Tipo P

- Ventajas**
- Tenemos grados de carburo P, M, K y puede utilizarse en todo tipo de pieza de trabajo
  - Excelente calidad en el mecanizado con refrigerante, debido a la calidad superior. Resistencia al agrietamiento térmico del arbujo
  - Debido al diseño especial de carburos, tiene una micro estructura fina y baja afinidad con la pieza de trabajo.
  - Tiene una excelente tenacidad y produce menores cargas de corte



Tipo M



Tipo K

### Sistema de selección de grados sin recubrir

| Pieza de trabajo | Grado             | Velocidad de corte Recomendado (m/min) | ISO             | Rango de aplicación |          |
|------------------|-------------------|--|-----------------|---------------------|----------|
| P                | Acero             | ST20                                   | 90 (70 ~ 110)   | P20                 | ST20     |
|                  |                   | ST30A                                  | 80 (60 ~ 100)   | P30                 | ST30A    |
| M                | Acero Inoxidable  | U20                                    | 90 (70 ~ 110)   | M20                 | U20      |
| K                | Fundición         | H01, H05                               | 150 (110 ~ 190) | K10                 | H01, H05 |
|                  |                   | G10                                    | 120 (90 ~ 150)  | K20                 | G10      |
| N                | Aleación Aluminio | H01                                    | 600 (450 ~ 750) | N10                 | H01      |
|                  | Aleación Cobre    | H05                                    | 425 (320 ~ 530) | N20                 | H05      |

### Aplicación Principal

| Pieza de trabajo | Composición   | Características  | Pieza Trabajo  |
|------------------|---------------|--|--|
| P                | WC-TiC-TaC-Co | Excelente resistencia al choque térmico y a la deformación plástica    | Acero al carbon, Aleación de Acero, Acero inoxidable               |
| M                | WC-TiC-TaC-Co | Grados de amplia cobertura con excelente resistencia al choque térmico | Acero al carbon, Aleación de Acero, Acero inoxidable Acero fundido |
| K                | WC-Co         | Grados duros y fuertes   | Fundición, Metales No-Ferrosos, Plásticos, Acrílico, etc           |

### Propiedades físicas de los grados sin recubrir

| Pieza de trabajo | Grado | Dureza (HRA) | TRS (kgf/mm <sup>2</sup> ) | Modulo de Young's (10 <sup>3</sup> kgf/mm <sup>2</sup> ) | Expansión Térmica coeficiente (10 <sup>-6</sup> /°C) | Conductividad Térmica (cal/cm·sec·°C) |
|------------------|-------|--------------|----------------------------|--|--|---------------------------------------|
| P                | ST10  | 92.1         | 175                        | 48   | 6.2  | 25                                    |
|                  | ST20  | 91.9         | 200                        | 56   | 5.2  | 45                                    |
|                  | ST30A | 91.3         | 230                        | 53   | 5.2  | -                                     |
| M                | U20   | 91.1         | 210                        | -  | -  | 88                                    |
| K                | H01   | 92.9         | 210                        | 66   | 4.7  | 109                                   |
|                  | G10   | 90.9         | 250                        | 63   | -  | 105                                   |

1KPa = 102kgf/m<sup>2</sup>, 1w/mk = 2.39x10<sup>-3</sup>cal/cm·sec·°C



## Grados Cermet

- **Características**
  - Sustrato de alta dureza garantiza una larga vida útil en el fresado de alta Velocidad.
  - El borde de corte de alta inflexibilidad asegura una larga vida útil incluso en el mecanizado de alto impacto.
  - El sustrato químicamente estable proporciona un excelente acabado superficial de la pieza de trabajo

### ➤ Sistema de selección de grados cermet

| Pieza de trabajo | Tipos de maquinado | Grado recomendado  | Velocidad de corte Recomendado (m/min) | ISO             | Rango de aplicación |  |
|------------------|--------------------|--------------------|--|-----------------|---------------------|--|
| P                | Steel              | Corte Continuo     | CN2000                                 | 250 (200 ~ 300) | P20                 |  |
|                  |                    | Corte interrumpido | CN30                                   | 150 (100 ~ 200) | P30                 |  |

### ➤ Características de los grados cermet

| Grado Cermet | ISO       | Características  |
|--------------|-----------|--|
| CN2000       | P20 ~ P30 | <ul style="list-style-type: none"> <li>• Grado universal de acabado a desbaste de acero</li> <li>• Material de Gradiente Material</li> </ul> |
| CN30         | P25 ~ P35 | <ul style="list-style-type: none"> <li>• Para acero fresado</li> <li>• Cermet con alta dureza</li> </ul>                                     |

### ➤ Propiedades físicas de los grados cermet

| Pieza de trabajo | Grado  | Dureza(Hv) | TRS(kgf/mm <sup>2</sup> ) | SG(g·cm <sup>-3</sup> ) |
|------------------|--------|------------|---------------------------|-------------------------|
| P                | CN2000 | < 1800     | 210 <                     | 6.8~7.0                 |
|                  | CN30   | < 1500     | 240 <                     | 7.0~7.3                 |

## Ejemplos de aplicaciones (CN30)

| P                               | Acero al carbono (SM45C)   | P                               | Acero para moldes (KP4M)  |
|---------------------------------|--|---------------------------------|---|
| ■ <b>Condiciones de corte</b>   | vc (m/min) = 120~150, fz (mm/t) = 0.07~0.13<br>ap (mm) = 2.0, sin refrigerante | ■ <b>Condiciones de corte</b>   | vc (m/min) = 230, fz (mm/t) = 0.1~0.15<br>ap (mm) = 1.0, sin refrigerante |
| ■ <b>Denominación</b>           | Inserto : SDCN42MT (CN30)<br>Fresa : ADN4315R                                  | ■ <b>Denominación</b>           | Inserto : SDCN42MT (CN30)<br>Fresa : ADN4315R                             |
| ■ <b>Resultado de la prueba</b> |  | ■ <b>Resultado de la prueba</b> |   |



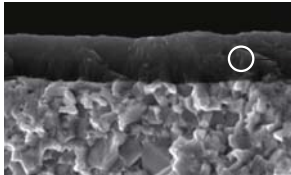
## Selecciones de grados de Endmills Sólido

### Grados para los endmills H

# PC303S/PC310U

- Sustrato ultrafino de sustrato y recubrimientos de alta dureza para una excelente resistencia al desgaste
- El tratamiento especial de la superficie proporciona una mayor resistencia al astillado

#### Características



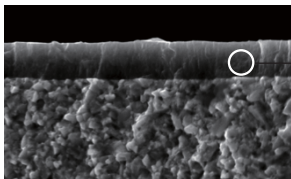
Resistencia excepcional al desgaste gracias a las capas del recubrimiento extremadamente duras

### Grados para los endmills Z

# PC315E

- Sustrato fino y recubrimientos lubricantes para una maquinabilidad estable

#### Características



Recubrimientos lubricantes para una excelente maquinabilidad

#### Sistema Selección

| Pieza Trabajo |                  | Grado                 | ISO | Rango de Aplicación   |                       |                       |        |        |        |
|---------------|------------------|-----------------------|-----|-----------------------|-----------------------|-----------------------|--------|--------|--------|
| P             | Acero            | PC303S                | P01 |                       |                       |                       |        |        |        |
|               |                  | PC310U                | P10 | PC303S                | PC203F                |                       |        |        |        |
|               |                  | PC315F                | P20 |                       | PC310U                |                       |        |        |        |
|               |                  | PC320                 | P30 |                       | PC315E                | PC320                 | PC215F |        |        |
| M             | Acero Inoxidable | PC303S                | M01 |                       |                       |                       |        |        |        |
|               |                  | PC310U                | M10 | PC303S                | PC203F                |                       |        |        |        |
|               |                  | PC320S                | M20 |                       | PC310U                | PC320S                | PC315E | PC320  | PC215F |
|               |                  | PC315E                | M30 |                       |                       |                       |        |        |        |
| K             | Fundición        | PC303S                | K01 |                       |                       |                       |        |        |        |
|               |                  | PC310U                | K10 | PC303S                | PC203F                |                       |        |        |        |
|               |                  | PC315E                | K20 |                       | PC310U                | PC315E                | PC320  | PC215F |        |
|               |                  | PC320                 | K30 |                       |                       |                       |        |        |        |
| S             | HRSA             | PC320S                | S20 | PC320S                | PC315E                | PC320                 | PC215F |        |        |
|               |                  | PC315E                | S30 |                       |                       |                       |        |        |        |
| N             | No ferrosos      | ND3000 <sup>new</sup> | N01 | ND3000 <sup>new</sup> |                       |                       |        |        |        |
|               |                  | ND2100 <sup>new</sup> | N05 | ND2100 <sup>new</sup> | PD1005 <sup>new</sup> | PD1010 <sup>new</sup> | H01    | H05S   | PC210C |
|               |                  | PD3000                | N10 |                       |                       |                       |        |        |        |
|               |                  | H01                   | N20 |                       |                       |                       |        |        |        |
| H             | Acero muy duro   | PC303S                | H01 |                       |                       |                       |        |        |        |
|               |                  | PC203F                | H10 | PC303S                | PC203F                |                       |        |        |        |
|               |                  | PC310U                | H20 |                       | PC310U                |                       |        |        |        |



## Selecciones de grados de Endmills Sólido

### Información de los grados para cada producto

| Ítem       | Grado             |                   | Ítem                     | Carburo                      |                   | Acero rápido           |                   |
|------------|-------------------|-------------------|--------------------------|------------------------------|-------------------|------------------------|-------------------|
|            | Con recubrimiento | Sin recubrimiento |                          | Con recubrimiento            | Sin recubrimiento | Con recubrimiento      | Sin recubrimiento |
| H Endmill  | PC303S, PC310U    | -                 | R+ Endmill               | PC10T, PC20T<br>PC30T, PC40T | FN30T             | HC10T, HC20T,<br>HC30T | HN20T, HN30T      |
| V Endmill  | PC215F            | -                 | Aluminum Solid Endmill   | PD1005, PD1010               | H01               | -                      | -                 |
| Z Endmill  | PC315E            | -                 | A+ Endmill               | -                            | H05S              | -                      | -                 |
| F Endmill  | PC203F            | -                 | C-Max                    | PC210C                       | -                 | -                      | -                 |
| T Endmill  | PC2510, ND3000    | H01               | Super Endmill            | SL                           | -                 | -                      | -                 |
| I+ Endmill | PC320             | -                 | D Endmill                | ND3000                       | -                 | -                      | -                 |
| Z+ Endmill | PC320U            | -                 | Composite Router Endmill | ND2100                       | -                 | -                      | -                 |
| S+ Endmill | PC320S            | -                 | Brazed Endmill           | PC221F                       | FCC               | -                      | -                 |

### Las características de los grados recubiertos

| Pieza de trabajo | ISO                                 | Características   |
|------------------|-------------------------------------|---|
| PC303S           | P05 ~ P15<br>K05 ~ K15<br>H05 ~ H15 | <ul style="list-style-type: none"> <li>Excelente resistencia al desgaste / astillado en el mecanizado a alta velocidad debido a la combinación de sustrato ultrafino y recubrimiento PVD</li> <li>Para mecanizado a alta velocidad de acero de alta dureza.</li> <li>Nueva película aplicada con una excelente resistencia a la oxidación y dureza a alta temperatura</li> </ul>                        |
| PC310U           | P10 ~ P20<br>K10 ~ K20<br>H10 ~ H20 | <ul style="list-style-type: none"> <li>Excelente resistencia al desgaste / astillado en el mecanizado a alta velocidad debido a la combinación de sustrato ultrafino y recubrimiento PVD</li> <li>Para mecanizado a alta velocidad de acero de alta dureza.</li> <li>Nueva película aplicada con una excelente resistencia a la oxidación y dureza a alta temperatura</li> </ul>                        |
| PC315E<br>PC320  | P20 ~ P35<br>K20 ~ K35              | <ul style="list-style-type: none"> <li>Excelente resistencia al desgaste / soldadura en mecanizado de alta velocidad debido a la combinación de un ultra fino sustrato y recubrimiento PVD</li> <li>Para mecanizado para acero en general a la velocidad baja / media</li> <li>Nueva película aplicada con una excelente resistencia al astillado / desgaste.</li> </ul>                                |
| PC320S           | M20 ~ M30<br>S20 ~ S30              | <ul style="list-style-type: none"> <li>Corte de velocidad baja a media para acero inoxidable y aleaciones resistentes al calor.</li> <li>Capas de recubrimiento avanzadas con mayor resistencia a aportación del filo y oxidación</li> <li>Excelente resistencia al desgaste y a aportación del filo a altas velocidades debido al sustrato ultrafino y las capas de recubrimiento dedicadas</li> </ul> |
| PC210C           | N10 ~ N20                           | <ul style="list-style-type: none"> <li>Corte de media a alta velocidad de cobre y electrodo de cobre.</li> <li>Corte de velocidad media a alta de materiales acrílicos.</li> <li>Recubrimiento K-Silver con excelente lubricación y sustrato resistente al desgaste y astillado</li> </ul>  |
| ND3000*          | N01 ~ N05                           | <ul style="list-style-type: none"> <li>Para el mecanizado de electrodos de grafito a velocidades medias y altas.</li> <li>Capa de recubrimiento diamante con alta resistencia al desgaste y lubricación.</li> </ul>   |
| ND2100*          | N03 ~ N08                           | <ul style="list-style-type: none"> <li>Para materiales compuestos.</li> <li>Capas con recubiertos de diamante con excelente adherencia.</li> </ul>  |
| PD1005           | N05 ~ N10                           | <ul style="list-style-type: none"> <li>Para el mecanizado de metales no ferrosos (aleación de aluminio).</li> <li>Capa de recubrimiento DLC (Diamond Like Carbon) con alta resistencia al desgaste y lubricación</li> </ul>   |

\* : CVD

### Características de KORLOY endmills

| Índice   | Características  |
|--|--|
| <b>H Endmill</b><br>(Endmill para acero de alta dureza)            | <ul style="list-style-type: none"> <li>Filos de corte negativos adecuados para mecanizar piezas de trabajo con tratamiento térmico de alta dureza bajo HRC70</li> <li>Mayor vida útil de la herramienta con el uso de sustrato ultra fino y película de alta dureza</li> </ul>   |
| <b>Z Endmill / I+ Endmill</b><br>(Endmill para corte general)      | <ul style="list-style-type: none"> <li>Excelente en el mecanizado de diversas piezas como acero al carbono, acero aleado, fundición, acero pre endurecido, etc. bajo HRC45</li> <li>Mayor vida útil de la herramienta con el uso de sustrato ultrafino y nueva tecnología de recubrimiento</li> </ul>  |
| <b>T Endmill</b><br>(Para la industria dental)                     | <ul style="list-style-type: none"> <li>Endmill para prótesis dentales hechas de circonia, titanio, Co-Cr, cera, PMMA y vitrocerámica.</li> <li>Herramientas a medida para cada tipo de fresadoras para uso dental.</li> </ul>  |
| <b>Z+ Endmill</b>  | <ul style="list-style-type: none"> <li>Endmill universal aplicable a una variedad de materiales de pieza de trabajo bajo HRC47</li> <li>Disponibilidad para desbaste y acabado</li> <li>Vida útil de la herramienta mejorada gracias al nuevo sustrato y al recubrimiento más avanzado</li> <li>Chips inhibidos y mayor tiempo de corte debido al diseño optimizado de la lama</li> </ul>  |
| <b>SSEA / A+ Endmill</b><br>(Endmill para aluminio)                | <ul style="list-style-type: none"> <li>Adecuado para el mecanizado a alta velocidad en aluminio y otros materiales no ferrosos</li> <li>Puede lograr un excelente acabado de la superficie, una mayor eliminación de viruta en un gran avance</li> </ul>   |
| <b>S+ Endmill</b><br>(Endmill para materiales difíciles de cortar) | <ul style="list-style-type: none"> <li>El filo de corte afilado y el alto ángulo de inclinación con una cavidad optimizada muestran un buen rendimiento de corte para acero inoxidable donde el endurecimiento por trabajo es un problema.</li> </ul>  |
| <b>R+ Endmill</b>  | <ul style="list-style-type: none"> <li>Endmill con alte eficiencia para el corte medio a desbaste</li> <li>Excelente eficiencia de mecanizado gracias al diseño de un filo de alta eficiencia para desbaste</li> <li>Fuerza de corte reducida gracias a las puntas específicamente diseñadas, el espaciado irregular de las estrías y el ángulo de avance</li> </ul>   |
| <b>D Endmill</b>   | <ul style="list-style-type: none"> <li>Endmill con el recubrimiento de diamante para grafito y cerámica.</li> <li>Excelente resistencia al desgaste gracias al recubrimiento de diamante de alta dureza y alta pureza</li> <li>Optimizado para cortes de alta velocidad y trabajo pesado gracias al fuerte agarre del recubrimiento</li> <li>Excelente rendimiento de corte y acabado gracias al diseño optimizado de la lama de alto ángulo de inclinación</li> </ul> |
| <b>Endmill de fresadora compuesto</b>                              | <ul style="list-style-type: none"> <li>Endmill de fresadora para mecanizar materiales compuestos (CFRP y GFRP).</li> <li>Minimiza los defectos de mecanizado gracias a su diseño para evitar la descamación, desprendimiento y rebabas.</li> <li>Excelente resistencia al desgaste y al desprendimiento gracias al recubrimiento de diamante nano-cristalino de alta dureza y alta pureza</li> </ul>   |
| <b>C-Max</b>   | <ul style="list-style-type: none"> <li>Ideal para mecanizar cobre, latón, bronce y materiales no ferrosos gracias a la combinación optimizada entre recubrimiento K-Silver con excelente lubricación y resistencia al desgaste y astillado, y el sustrato dedicado</li> </ul>  |
| <b>Super Endmill</b>   | <ul style="list-style-type: none"> <li>Recubrimiento de alta lubricación y tratamiento superficial especial</li> <li>Mayor resistencia a la soldadura y al astillado y estabilidad de mecanizado gracias a la tecnología para el tratamiento de la superficie de recubrimiento</li> </ul>  |



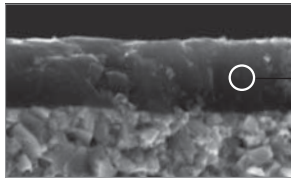
## Selecciones de grado de brocas Solidas

### Grados para Mach Solid Drill (MSD)

## PC325U

- El tratamiento especial de la superficie proporciona una mejor lubricación y reduce las cargas de corte
- Vida de herramienta estable gracias a una mayor resistencia a la soldadura.

#### Características



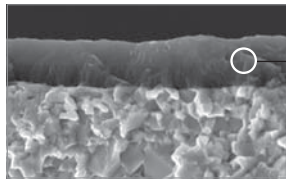
Mayor resistencia a la soldadura en cortes de velocidad media a alta debido a capas de recubrimiento altamente lubricantes Mayor resistencia al desgaste en el mecanizado de acero al carbono

### Grados para Mach Solid Drill (MSD)

## PC325T **new**

- Buena resistencia al desgaste en el mecanizado a alta temperatura de aleaciones termorresistentes.
- El buen acabado de la superficie reduce la resistencia a la fricción y mejora la evacuación de viruta.

#### Características



La alta resistencia al calor y a la oxidación aumenta la vida útil de la herramienta.

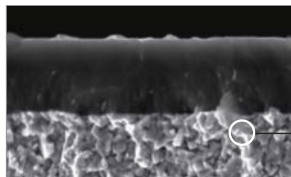
Recubrimiento con muy buen acabado superficial asegurando la lubricación y un mecanizado de alta calidad

### Grados para Mach Long Drill (MLD)

## PC215G/PC315G

- Mejora de la resistencia al desgaste gracias al sustrato ultrafino.
- Resistencia a la fricción reducida y un flujo suave de viruta debido a una mejor lubricación del recubrimiento

#### Características



Resistencia al desgaste excepcional debido al sustrato ultrafino

#### Sistema Selección

| Pieza Trabajo             | Grado             | ISO | Rango de Aplicación |        |        |        |
|---------------------------|-------------------|-----|---------------------|--------|--------|--------|
| <b>P</b> Acero            | PC215G            | P01 |                     |        |        |        |
|                           | PC315G            | P10 |                     |        |        |        |
|                           | PC325U            | P20 | PC215G              | PC315G | PC325U |        |
|                           | PC230F            | P30 |                     |        |        | PC230F |
| <b>M</b> Acero Inoxidable | PC215G            | M01 |                     |        |        |        |
|                           | PC315G            | M10 |                     |        |        |        |
|                           | PC205F            | M20 | PC215G              | PC315G | PC325U |        |
|                           | PC325U            | M30 |                     |        | PC325U |        |
| <b>K</b> Fundición        | PC215G            | K01 |                     |        |        |        |
|                           | PC315G            | K10 |                     |        |        |        |
|                           | PC205F            | K20 | PC215G              | PC315G | PC325U |        |
|                           | PC325U            | K30 |                     |        | PC325U |        |
| <b>N</b> No ferrosos      | ND2100 <b>new</b> | N05 | ND2100 <b>new</b>   |        |        |        |
|                           | FG2               | N10 |                     | FG2    | FA1    |        |
|                           |                   | N20 |                     |        |        |        |
| <b>S</b> HRSA             | PC325T <b>new</b> | S20 | PC325T <b>new</b>   |        |        |        |
|                           |                   | S30 |                     |        |        |        |





## Selecciones de grado de brocas Solidas

### Información de grado para cada producto

| Ítem          | Grado             |                   |
|---------------|-------------------|-------------------|
|               | Con recubrimiento | Sin recubrimiento |
| MSD Plus      | PC325U            | FG2               |
| MSD Plus-S    | PC325T            | -                 |
| MSD Plus CFRP | ND2100            | -                 |
| MSFD          | PC325U            | -                 |
| MLD Plus      | PC215G, PC315G    | FG2               |
| VZD           | PC230F            | -                 |
| ESDP          | PC325U            | FG2               |
| SSD Plus      | -                 | FA1, FG2          |

### Las características de grados con recubrimiento PVD

| Pieza de trabajo   | ISO                                 | Características   |
|--|-------------------------------------|---|
| PC325U   | P20 ~ P35<br>M20 ~ M30<br>K20 ~ K35 | <ul style="list-style-type: none"> <li>Grado universal para mecanizar acero, fundición, acero inoxidable, etc.</li> <li>Un estable rendimiento de corte con excelente resistencia al desgaste / astillado.</li> <li>Mayor resistencia a la soldadura debido al nuevo recubrimiento lubricante a velocidad media a alta</li> </ul> |
| PC325T    | M20 ~ M30<br>S20 ~ S30              | <ul style="list-style-type: none"> <li>Buena resistencia al desgaste para mecanizado a alta temperatura de aleaciones termorresistentes</li> <li>Buena resistencia al desgaste y a la rotura asegurando una maquinabilidad estable</li> </ul>   |
| PC215G   | P15 ~ P30<br>M15 ~ M25<br>K15 ~ K30 | <ul style="list-style-type: none"> <li>Grado universal para mecanizado de acero, fundición, etc.</li> <li>Un estable rendimiento de corte con excelente resistencia al desgaste / astillado.</li> </ul>   |
| PC315G   | P15 ~ P30<br>M15 ~ M25<br>K15 ~ K30 | <ul style="list-style-type: none"> <li>Grado universal para mecanizar acero, fundición, acero inoxidable, etc.</li> <li>Un estable rendimiento de corte con excelente resistencia al desgaste / astillado.</li> <li>Mayor resistencia a la soldadura debido al nuevo recubrimiento lubricante a velocidad media a alta</li> </ul> |
| PC230F   | P25 ~ P35                           | <ul style="list-style-type: none"> <li>Para el mecanizado de acero en general a velocidad media a alta.</li> <li>Un estable rendimiento de corte con excelente resistencia al desgaste / astillado.</li> </ul>  |
| ND2100  | N03 ~ N08                           | <ul style="list-style-type: none"> <li>Para maquinado de materiales compuestos</li> <li>Recubrimiento de diamante con excelente adhesión al sustrato</li> </ul>   |
| FG2 / FA1  | N05 ~ N25                           | <ul style="list-style-type: none"> <li>Mayor resistencia al desgaste / astillado con el uso de sustrato ultrafino</li> </ul>  |

### Características de las brocas de KORLOY

| Index         | Características  |
|---------------|--|
| MSD Plus      | <ul style="list-style-type: none"> <li>Mayor resistencia a la soldadura en cortes de velocidad media a alta debido a capas de recubrimientos altamente lubricantes</li> <li>Mayor resistencia al desgaste en el mecanizado de acero al carbono.</li> <li>Resistencia a la fricción reducida en bordes y estrías.</li> </ul>  |
| MSD Plus-S    | <ul style="list-style-type: none"> <li>Grado con buena resistencia al desgaste a altas temperaturas y resistencia al astillado exclusivo para taladrado de aleaciones termorresistentes</li> <li>Nuevo recubrimiento con excelente acabado superficial para reducir la resistencia a la fricción y aumentar la evacuación de virutas</li> <li>La prevención de astillado en el filo y la fractura de la herramienta garantiza una alta productividad.</li> </ul> |
| MSD Plus CFRP | <ul style="list-style-type: none"> <li>La mejor herramienta para el taladrado de piezas de trabajo CFRP.</li> <li>Excelente resistencia al desgaste debido al grado recubierto de diamante</li> <li>Reducción de la creación de rebabas en el mecanizado CFRP debido a los altos filos de corte</li> </ul>   |
| MSFD          | <ul style="list-style-type: none"> <li>Capacidad para el taladrado de la alta calidad con un ángulo de 180°</li> <li>Mejora de la resistencia al astillado y soldadura mediante el honing de filos y el biselado</li> <li>Creación minimizada de rebabas en comparación con taladros generales</li> </ul>  |
| MLD Plus      | <ul style="list-style-type: none"> <li>Mayor rigidez debido al diseño de un filo recto.</li> <li>Un suave flujo de viruta debido a la cavidad de viruta más ancha y un mejor acabado superficial en estrías</li> <li>Sistema de doble margen para una maquinabilidad estable.</li> </ul>   |
| ESDP          | <ul style="list-style-type: none"> <li>La capa de recubrimiento lubricante mejora la resistencia a la aportación de filo a velocidades medias y altas.</li> <li>Aumenta la resistencia al desgaste en el mecanizado de acero al carbono.</li> <li>Mayor resistencia a la aportación de filo y al desgaste con la aplicación del nuevo grado PC325U.</li> </ul>   |
| SSD Plus      | <ul style="list-style-type: none"> <li>Nueva forma aumenta el control de la viruta</li> <li>El acabado superficial y la geometría mejorada logran una alta calidad de mecanizado</li> <li>Vida útil estable aumentando la productividad</li> </ul>   |

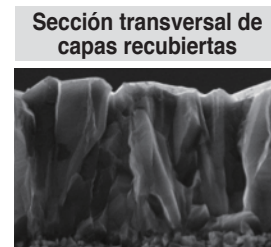
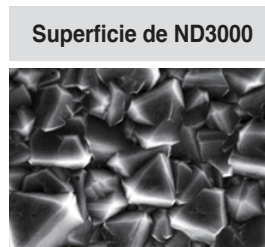


# Grados con Recubrimiento de Diamante

## Grado para grafito y cerámica

### ND3000 **new**

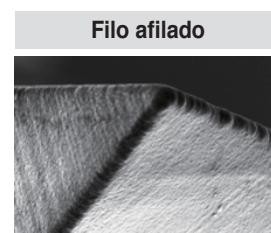
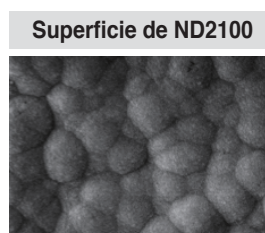
- Recubrimientos de diamante cristalino SP3 de alta pureza y alta dureza
- La mejorada adhesión entre las capas recubiertas y el sustrato que es especializado para recubrimientos de diamante
- Excelente vida útil de la herramienta en el mecanizado de grafito y cerámica



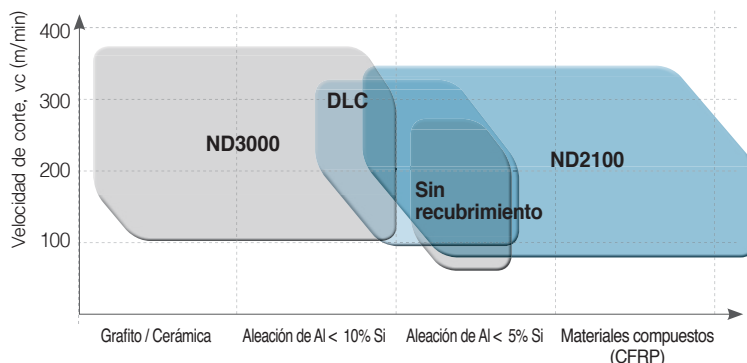
## Grado para materiales compuestos

### ND2100 **new**

- Mejor acabado superficial y resistencia al desgaste gracias al control. Tecnología de partículas de diamante nano-cristalino
- Mejor resistencia al desprendimiento debido al sustrato especializado. para recubrimientos de diamante
- Disponibilidad de mecanizado de alta calidad y alta precisión gracias a bordes afilados
- Excelente vida útil de la herramienta en el mecanizado de materiales compuestos



### Rango de aplicación



### Sistema Selección

| Pieza Trabajo |                       | Grado                                  | ISO               | Rango de Aplicación |
|---------------|-----------------------|--|-------------------|---------------------|
| <b>N</b>      | No ferrosos           | Grafito / Cerámica                     | ND3000 <b>new</b> | N01                 |
|               | Aleación de Al        | ND3000 <b>new</b><br>ND2100 <b>new</b> | N05               |                     |
|               | Materiales compuestos | ND2100 <b>new</b>                      | N10               | N03~N08             |

### Características de grados con recubrimiento de diamante

| Grado             | ISO      | Características  |
|-------------------|----------|--|
| ND3000 <b>new</b> | N01 ~N05 | <ul style="list-style-type: none"> <li>• Para el desbaste continuo de grafito, cerámica y aleación de Al a altas velocidades</li> <li>• Un excepcional rendimiento de corte debido a la alta resistencia al desgaste y al desprendimiento.</li> <li>• Recubrimientos de diamante de alta dureza de estructura cristalina SP3 de alta pureza</li> </ul> |
| ND2100 <b>new</b> | N03~N08  | <ul style="list-style-type: none"> <li>• Para el acabado continuo de materiales compuestos y aleación de Al a altas velocidades.</li> <li>• Maquinabilidad estable debido a filos agudos y duraderos</li> <li>• Recubrimientos de diamante nano-cristalino bajo control de partículas.</li> </ul>  |



## Grados recubiertos con DLC

Insertos con recubrimiento DLC para materiales no ferrosos

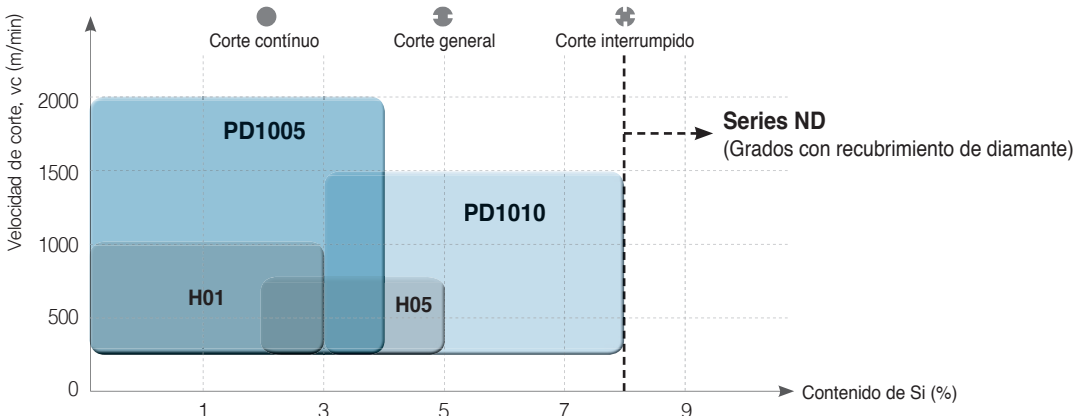
# PD1005 <sup>new</sup> / PD1010 <sup>new</sup>

- Tecnología DLC de alta dureza y baja fricción.
- Resistencia al desgaste y lubricación maximizadas, mejorando la maquinabilidad y la calidad del mecanizado.
- Sustrato óptimo para cada pieza de trabajo, garantizando una vida útil estable y larga.
- Para mecanizado de metales no ferrosos como aluminio, aleación de Al-Si, cobre, etc.

### Características

| Superficie del recubrimiento lisa | Recubrimiento DLC de alta dureza | Grado                | Resistencia al desgaste y al filo de aportación | Acabado superficial | Rizo de la virtua |
|-----------------------------------|----------------------------------|----------------------|---|---------------------|-------------------|
|                                   |                                  | Carburo sin recubrir |   |                     |                   |
|                                   |                                  | DLC PD1010           |   |                     |                   |

### Rango de aplicación



### Sistema Selección

| Pieza Trabajo         | Grado   | ISO              | Rango de Aplicación |
|-----------------------|---|------------------|---------------------|
| N Material no ferroso | Aluminio y cobre (materiales no ferrosos suaves)                                    | PD1005           | N05                 |
|                       | Aleaciones de aluminio  | PD1005<br>PD1010 | N10                 |
|                       | Aleaciones de aluminio con silicio (aleaciones no ferrosas templadas o endurecidas) | PD1010           | N15                 |

### Características de los grados con recubrimiento DLC

| Grado  | ISO | Características   |
|--------|-----|---|
| PD1005 | N05 | <ul style="list-style-type: none"> <li>• Para mecanizado continuo a alta velocidad de aluminio y cobre.</li> <li>• Alta resistencia al desgaste y a la soldadura para lograr una buena maquinabilidad</li> <li>• Alto rendimiento del recubrimiento DLC con alta dureza y baja fricción.</li> </ul>                               |
| PD1010 | N10 | <ul style="list-style-type: none"> <li>• Para mecanizado en condiciones de intermedias a altas e interrumpidos de aleación de aluminio y aleación Al-Si</li> <li>• Vida útil estable debido al sustrato con resistencia al astillado</li> <li>• Revestimiento DLC de alto rendimiento con alta dureza y baja fricción.</li> </ul> |



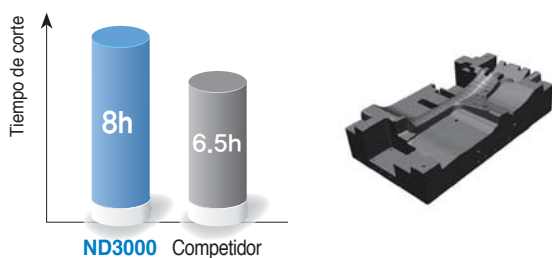


## Ejemplos de aplicaciones (ND3000/ND2100)

### N Molde de grafito

- **Condiciones de corte**  $vc$  (m/min) = 100,  $fz$  (mm/t) = 0.11,  $ap$  (mm) = 0.26, sin refrigerante
- **Denominación** Endmill : DBE4060-110-N250S06 (ND3000)

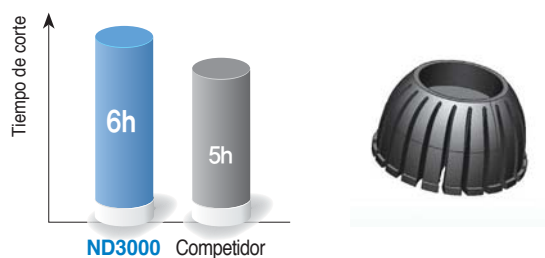
#### ■ Resultado de la prueba



### N Molde de grafito

- **Condiciones de corte**  $vc$  (m/min) = 300,  $fz$  (mm/t) = 0.1,  $ap$  (mm) = 0.15, sin refrigerante
- **Denominación** Endmill : DBE2060-080-N250S06 (ND3000)

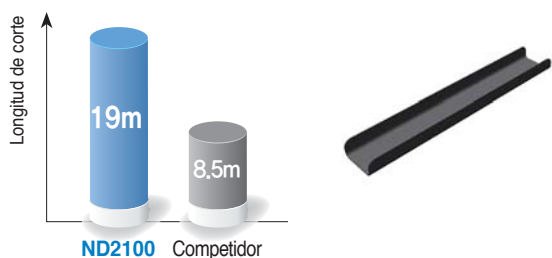
#### ■ Resultado de la prueba



### N CFRP

- **Condiciones de corte**  $vc$  (m/min) = 200,  $fn$  (mm/rev) = 0.21,  $ap$  (mm) = 10,  $ae$  (mm) = 2.8
- **Denominación** Endmill : CCR2080-075 (ND2100)

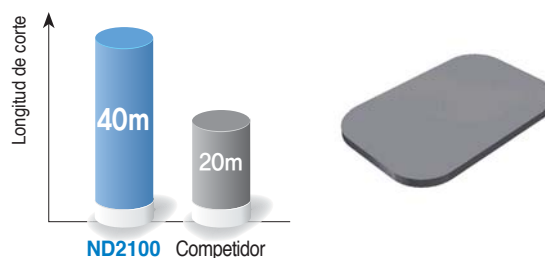
#### ■ Resultado de la prueba



### N CFRP

- **Condiciones de corte**  $vc$  (m/min) = 200,  $fz$  (mm/t) = 0.17,  $ap$  (mm) = 10,  $ae$  (mm) = 1.2
- **Denominación** Endmill : CCLR4080-075 (ND2100)

#### ■ Resultado de la prueba

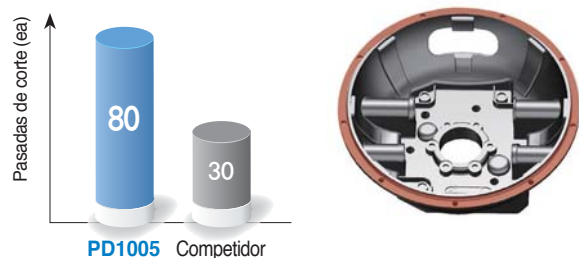


## Ejemplos de aplicaciones (PD1005/PD1010)

### N Aleación Aluminio con Silicio

- **Pieza de trabajo** Aleación de aluminio fundido, ALDC7 (Si 8%)
- **Condiciones de corte**  $vc$  (m/min) = 400,  $fn$  (mm/rev) = 0.25-0.3,  $ap$  (mm) = 1.0-1.5, con refrigerante
- **Denominación** Inserto : CNMG120408-HA (PD1005)  
Porta : PCLNR2525-M12

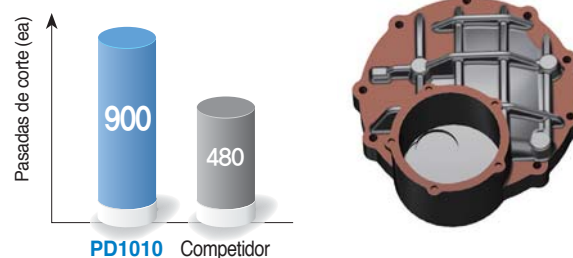
#### ■ Resultado de la prueba



### N Aleación Aluminio con Silicio

- **Pieza de trabajo** Aleación de aluminio forjado, AC4C (Si 7%)
- **Condiciones de corte**  $vc$  (m/min) = 740,  $fn$  (mm/rev) = 0.15,  $ap$  (mm) = 1.0-1.5, con refrigerante
- **Denominación** Inserto : XEKT19M504FR-MA (PD1010)  
Porta : PAXS5032HR-A

#### ■ Resultado de la prueba



## Grados de insertos cBN

- Características**
- Excelente dureza y resistencia térmica al sinterizar los componentes principales y la cerámica especial de KORLOY aglutinante a alta presión y alta temperatura
  - Excelente dureza y resistencia al desgaste para una mayor productividad en el mecanizado de fundición y aleaciones de tratamiento térmico a alta velocidad

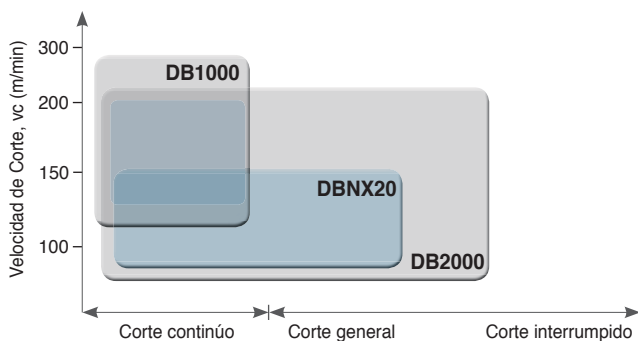
► Tipos de insertos

| Alta presión                       |                     | Resistencia al desgaste |  | Productividad |                  |
|------------------------------------|---------------------|-------------------------|--|---------------|------------------|
|                                    |                     |                         |  |               |                  |
| Para el tipo posible de rectificar | Tipo de un solo uso | Tipo de borde múltiple  | Tipo de borde múltiple (Con recubrimiento) | Tipo sólido   | Tipo de tronzado |

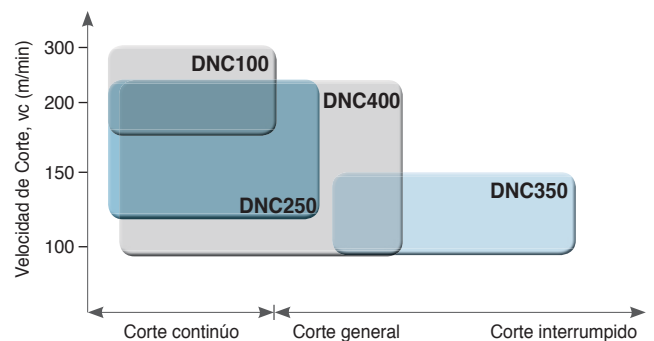
► Insertos cBN

| Tipo filo múltiple con recubrimiento  |  | Tipo imposible de rectificar   |  |
|---|--|--|--|
|   |  |  |  |
| <ul style="list-style-type: none"> <li>• Fácil manejo de bordes</li> <li>• Excelente vida útil de la herramienta en comparación con los insertos sin recubrimiento</li> </ul>   |  | <ul style="list-style-type: none"> <li>• Precio económico</li> <li>• Más pequeño que un costoso cBN y una reducción de un costo espectacular</li> <li>• Cara de soldadura fuerte y un estable rendimiento de corte</li> </ul>                          |  |
| Tipo de borde múltiple  |  | Para el tipo posible de rectificar   |  |
|   |  |  |  |
| <ul style="list-style-type: none"> <li>• El precio por borde es más razonable en comparación con las esquinas individuales normales, tipo de un solo uso</li> <li>• Amplia aplicación de mecanizado continuo a interrumpido.</li> </ul> |  | <ul style="list-style-type: none"> <li>• Larga vida útil de la herramienta.</li> <li>• Excelente resistencia al desgaste, alta dureza</li> <li>• El ahorro de costo de la herramienta debido a la inserto posible de rectificar 3 ~ 4 veces</li> </ul> |  |

















► Rango de Aplicación cBN



► Rango de aplicación cBN con recubrimiento



## Condición de corte de los grados cBN

| Workpiece                 | Grados            | Color de inserto  | Aplicación  | Velocidad de corte, vc (m/min)   | Avance, fn (mm/rev)  | Profundidad, ap (mm) |            |
|---------------------------|-------------------|---|---|--|--|----------------------|------------|
| H<br>Acero de alta dureza | Con recubrimiento | DNC100  <b>new</b> | Corte continuo en alta velocidad                    | 180  300     | 0.03 ~ 0.3   | 0.03 ~ 0.3           |            |
|                           |                   | DNC250             | Corte continuo y bajo interrumpido a alta velocidad | 120  220      | 0.05 ~ 0.3   | 0.05 ~ 0.3           |            |
|                           |                   | DNC350             | Corte medio y alto interrumpido                     | 90  150       | 0.05 ~ 0.3   | 0.05 ~ 0.3           |            |
|                           |                   | DNC400  <b>new</b> | Corte continuo y medio interrumpido                 | 90  220       | 0.05 ~ 0.3   | 0.05 ~ 0.5           |            |
|                           | Sin recubrimiento |                    | DB1000  | Corte continuo en alta velocidad   | 130  250   | 0.03 ~ 0.15          | 0.03 ~ 0.2 |
|                           |                   |   | DB2000  | Corte medio y bajo interrumpido  | 80  200     | 0.03 ~ 0.2           | 0.03 ~ 0.3 |
|                           |                   |   | DBNX20  | Corte de alta eficiencia   | 120  150    | 0.03 ~ 0.3           | 0.03 ~ 0.5 |
|                           |                   |   | DBN250  | Corte medio y bajo interrumpido  | 80  120     | 0.03 ~ 0.2           | 0.03 ~ 0.3 |
|                           |                   |   | DBN350  | Corte medio y bajo interrumpido  |  | 0.03 ~ 0.2           | 0.03 ~ 0.3 |
|                           |                   |   | DBN400  | Alta velocidad y alta profundidad de corte   | 120  220    | 0.10 ~ 0.3           | 0.5        |
|                           |                   |   | DB7000  | Corte continuo en alta velocidad   | 100  300 | 0.05 ~ 0.2           | 0.1 ~ 1.0  |
|                           | S<br>HRSA         | DBN700A   | Corte continuo en alta velocidad                    | 500  2000 | 0.10 ~ 0.4   | 0.1 ~ 0.4            |            |
|                           | K<br>Fundición    |   |   |  |  |                      |            |

## Tipo sólido cBN DBN400

### Características

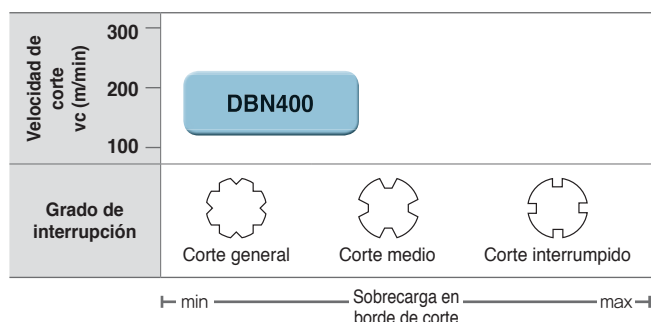
- Para corte medio y ligero interrumpido de acero tratado al calor
- Grado equilibrado de resistencia al desgaste y resistencia a los golpes
- Tipo sólido para maquinado altamente eficiente

### Características de tipo sólido




- Mayor productividad a alta velocidad y alta profundidad de corte
- Ideal para quitar la capa cementada y mecanizar las soldaduras
- Soldadura estable con el uso de llamas de 3 caras
- Excelente rendimiento a diferentes profundidades de corte



### Rango de aplicación



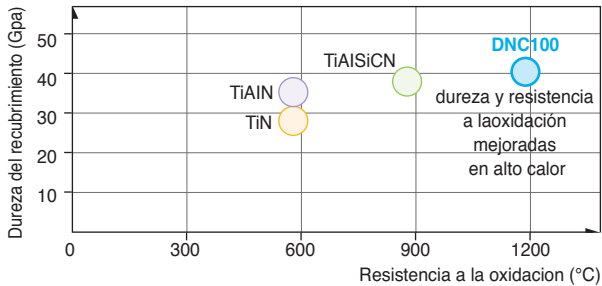
### Condición de corte recomendada

|   |   |
|---|---|
| Velocidad de corte vc (m/min)           | 120  220 |
| Avance fn (mm/rev)                      | 0.1  0.3 |
| Profundidad de corte por tiempo ap (mm) |  0.5     |

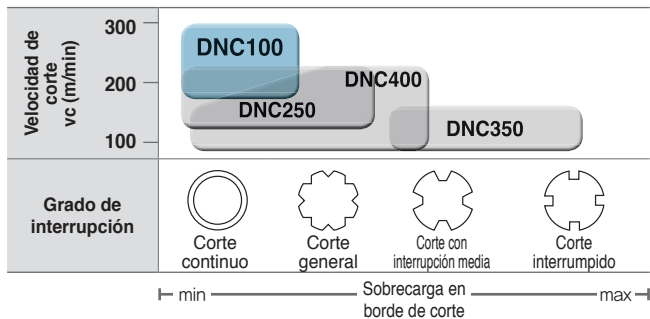
## cBN con recubrimiento

# DNC100 new

- Características**
  - Excelente resistencia térmica
  - Capa de recubrimiento con alta dureza, resistencia a la oxidación y resistencia al desprendimiento



### Rango de aplicación



### Condición de corte recomendada

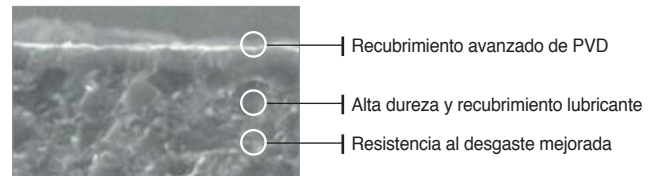
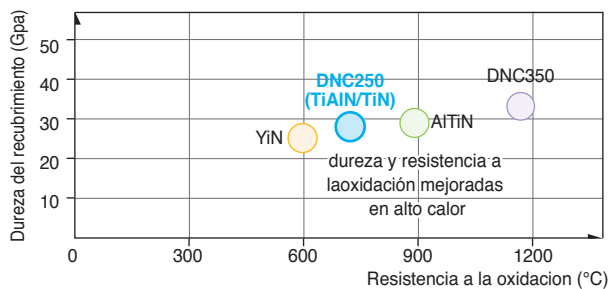
|   |                |
|---|----------------|
| Velocidad de corte vc (m/min)           | 180 ————— 300  |
| Avance fn (mm/rev)                      | 0.03 ————— 0.3 |
| Profundidad de corte por tiempo ap (mm) | 0.03 ————— 0.3 |

- Mayor resistencia a la oxidación y al desgaste debido a la capa de recubrimiento de alta dureza
- Resistencia a la fractura y resistencia al astillado dramáticamente mejoradas

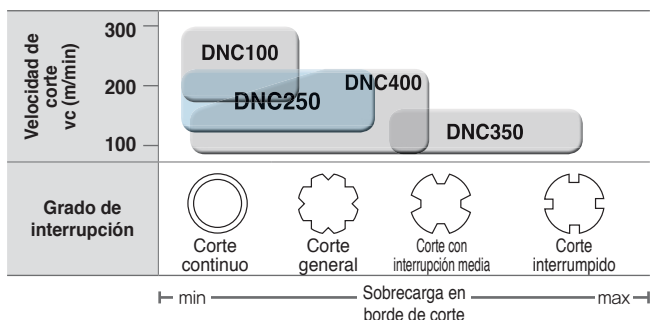
## Bordes múltiple con recubrimiento para un corte altamente eficiente de la aleación con tratamiento térmico

# DNC250

- Características**
  - Vida de la herramienta estable y larga.
  - Costo efectivo por inserto de un solo uso con bordes múltiples



### Rango de aplicación



### Condición de corte recomendada

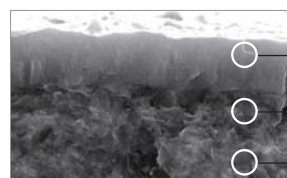
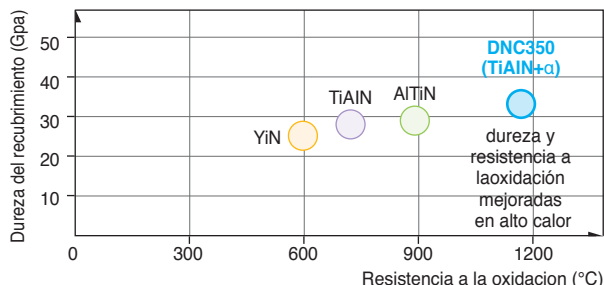
|   |                |
|---|----------------|
| Velocidad de corte vc (m/min)           | 120 ————— 220  |
| Avance fn (mm/rev)                      | 0.05 ————— 0.3 |
| Profundidad de corte por tiempo ap (mm) | 0.05 ————— 0.3 |



## cBN Con recubrimiento para corte alto interrumpido

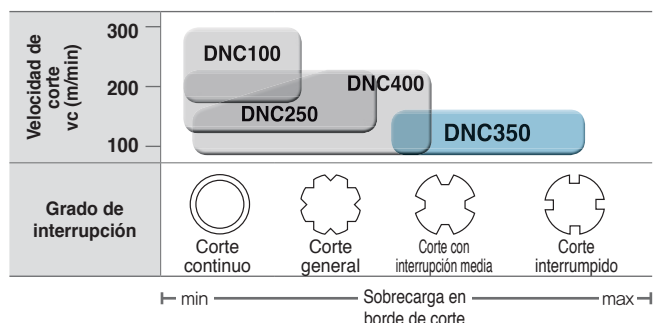
# DNC350

- Características**
- Excelente vida útil de la herramienta y productividad en el corte interrumpido
  - Nuevo recubrimiento PVD aplicado con alta dureza y oxidación resistencia



- Recubrimiento de alta dureza y resistencia a la oxidación
- Recubrimiento de alta dureza
- cBN muy fino + sustrato muy resistente

### Rango de aplicación



### Condición de corte recomendada

|   |                |
|---|----------------|
| Velocidad de corte vc (m/min)           | 90 ————— 150   |
| Avance fn (mm/rev)                      | 0.05 ————— 0.3 |
| Profundidad de corte por tiempo ap (mm) | 0.05 ————— 0.3 |

## Tipo sólido con recubrimiento cBN

# DNC400 **new**

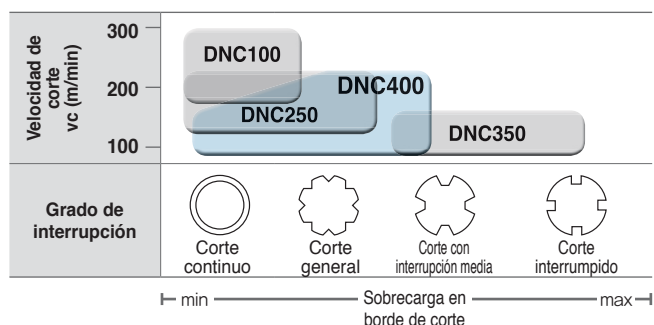
- Características**
- Para el mecanizado de acero tratado al calor en corte continuo y medio interrumpido
  - Mayor vida útil de la herramienta debido a la capa de recubrimiento.
  - Tipo sólido para propósito universal

### Características del tipo sólido cBN

- Mayor productividad a alta velocidad y alta profundidad de corte
- Ideal para quitar la capa cementada y las soldaduras
- Mejor estabilidad de soldadura debido a las llamas de 3 caras
- Excelente rendimiento de corte a diferentes profundidades de corte



### Rango de aplicación



### Condición de corte recomendada

|   |        |                |
|---|--------|----------------|
| Avance fn (mm/rev)                      | DNC400 | 0.05 ————— 0.3 |
|   | DNC250 | 0.05 ————— 0.3 |
|   | DNC350 | 0.05 ————— 0.3 |
| Profundidad de corte por tiempo ap (mm) | DNC400 | 0.05 ————— 0.5 |
|   | DNC250 | 0.05 ————— 0.3 |
|   | DNC350 | 0.05 ————— 0.3 |

## cBN sin recubrimiento

# DB1000

### Características

- cBN sin recubrimiento con la mayor resistencia al desgaste a alta velocidad
- Excelente vida útil de la herramienta en corte continuo a la luz interrumpida
- Mejor resistencia a la fractura junto con alta resistencia al desgaste
  - Mayor resistencia térmica y dureza debido al puro TiCN de cerámica aglutinante



## cBN sin recubrimiento

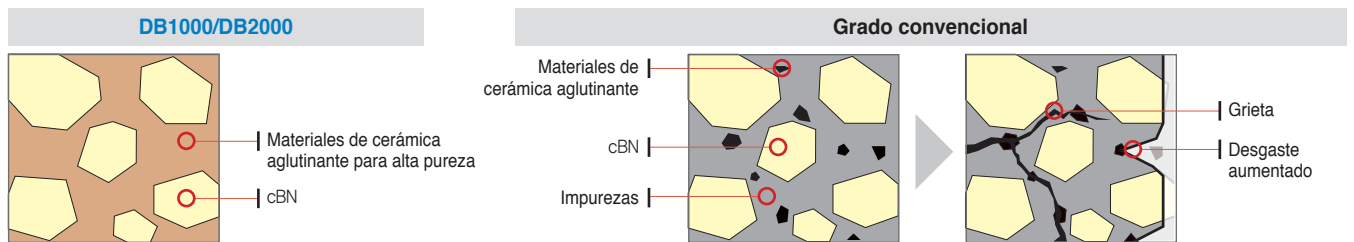
# DB2000

### Características

- Grado universal para el mecanizado en general de tratamiento térmico.
  - Vida de herramienta estable en corte continuo a bajo / medio interrumpido
- Tanto la resistencia a la fractura como la resistencia al desgaste adquiridas con el uso del puro aglutinante de cerámica
- Rugosidad de la superficie estable



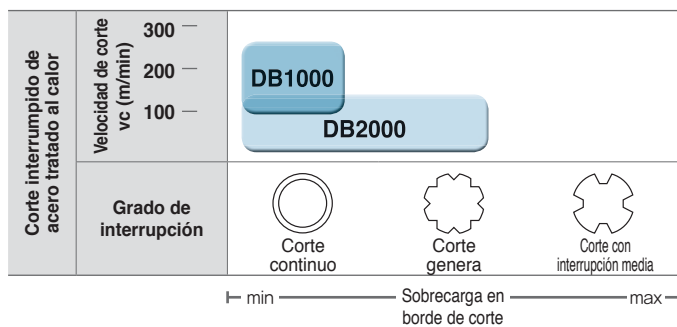
### Nueva tecnología de materiales cerámicos de alta pureza



DB2000 minimiza dramáticamente las impurezas con el uso de aglutinante cerámica de alta pureza. Materiales y mejora la resistencia térmica y tenacidad.

Las impurezas incluidas en el aglutinante cerámico de grado convencional causaron una resistencia térmica inferior y la dureza de los compuestos sinterizados, que provocaron grietas (fracturas) y desgaste.

### Rango de aplicación



### Condición de corte recomendada (DB1000)

|   |                 |
|---|-----------------|
| Velocidad de corte vc (m/min)           | 130 ————— 250   |
| Avance fn (mm/rev)                      | 0.03 ————— 0.15 |
| Profundidad de corte por tiempo ap (mm) | 0.03 ————— 0.2  |

### Condición de corte recomendada (DB2000)

|   |                |
|---|----------------|
| Velocidad de corte vc (m/min)           | 80 ————— 200   |
| Avance fn (mm/rev)                      | 0.03 ————— 0.2 |
| Profundidad de corte por tiempo ap (mm) | 0.03 ————— 0.3 |



## Grados de insertos PCD

**Características** Los productos PVD de KORLOY están fabricados con una punta de PCD de alta calidad a alta temperatura y presión, y soldada al inserto de carburo. Ya que KORLOY proporciona productos de alta calidad para torneado, fresado, fresado con enmils, es posible cubrir las necesidades de una amplia gama de aplicaciones.

- Excelente duración de la herramienta en aleaciones de aluminio y aleaciones de cobre
- Excelente duración de la herramienta en cerámica, aluminio alto en silicio y piedra
- Excelente duración de la herramienta en plástico, grafito y madera

### Calidad PCD

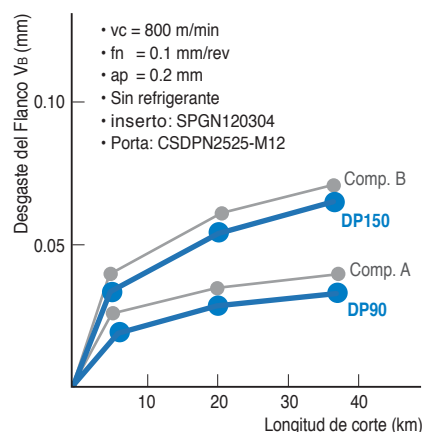
| Calidad | Características  | Aplicación  | Tam. grano (µm) | Dureza (Hv)   | TRS (kgf/mm²) |
|---------|--|---|-----------------|---------------|---------------|
| DP90    | Grano grueso de diamantes es utilizado para obtener una excelente resistencia al desgaste, suficiente para maquinado de carburo cementado, aleaciones de aluminio alto en silicio              | Carburo cementado<br>Desbaste en cerámica<br>Aleación de aluminio alto en silicio | 50              | 10,000~12,000 | 110           |
| DP150   | Mediante el uso de finos granos de diamante tiene buenas propiedades de enlace, teniendo una característica de la vinculación es conveniente para el maquinado de metales no ferrosos, grafito | Aleación de aluminio alto en silicio, Cobre, Aleación de bronce, Madera, Carbon   | 5               | 10,000~12,000 | 200           |
| DP200   | Por medio del grano ultrafino de diamante es posible hacer el filo mas agudo. Así el grado es apropiado para trabajar en el maquinado de materiales no ferrosos                                | Plástico<br>Madera<br>Acabado preciso de aluminio                                 | 0.5             | 8,000~10,000  | 220           |

### Condiciones de corte Recomendada

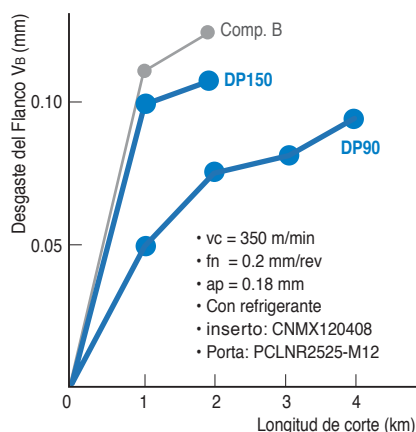
| Pieza Trabajo                     | Velocidad de Corte (m/min) | Avance (mm/rev) | Profundidad de Corte (mm) | Grado recomendado |                 |
|-----------------------------------|----------------------------|-----------------|---------------------------|-------------------|-----------------|
|                                   |                            |                 |                           | 1 <sup>st</sup>   | 2 <sup>nd</sup> |
| Aleación de Aluminio (4%~8% Si)   | 1000 ~ 3000                | 0.1 ~ 0.6       | ~ 3                       | DP150             | DP200           |
| Aleación de Aluminio (9%~14% Si)  | 600 ~ 2500                 | 0.1 ~ 0.5       | ~ 3                       | DP150             | DP200           |
| Aleación de Aluminio (15%~18% Si) | 300 ~ 700                  | 0.1 ~ 0.4       | ~ 3                       | DP150             | DP200           |
| Cobre, Aleación de Bronce         | ~ 1000                     | 0.05 ~ 0.2      | ~ 3                       | DP150             | DP200           |
| Plástico reforzado                | ~ 1000                     | 0.1 ~ 0.3       | ~ 2                       | DP150             | DP200           |
| Madera                            | ~ 4000                     | 0.1 ~ 0.4       | -                         | DP150             | DP200           |
| Carburo Cementado                 | 10 ~ 30                    | ~ 0.2           | ~ 0.5                     | DP90              | DP150           |

### Rendimiento de corte

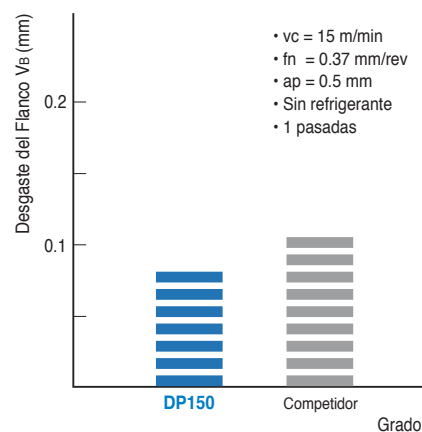
Prueba de corte continuo (Pieza Trabajo: Al-25%Si)























Prueba de corte interrumpido (Pieza Trabajo: Al-20%Si)



Prueba de corte carburo Cementado



## Rompeviruta Para Torneado

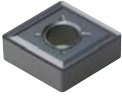
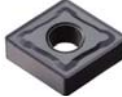

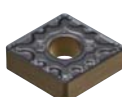






| Geometría   | Filo de corte   | Rango de aplicación                |       |      |      |      |     |      |     |     |     |      | Características |     |      |     |     |     |     |     |      |      |    |  |   |
|---|---|------------------------------------|-------|------|------|------|-----|------|-----|-----|-----|------|-----------------|-----|------|-----|-----|-----|-----|-----|------|------|----|--|---|
|   |   | Velocidad de alimentación (mm/rev) |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |  |   |
|   |   | 0.04                               | 0.063 | 0.10 | 0.16 | 0.25 | 0.4 | 0.63 | 1.0 | 1.6 | 2.5 | 4.0  |                 | 6.3 |      |     |     |     |     |     |      |      |    |  |   |
| Profundidad de Cort (mm)  |   |                                    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |  |   |
|   |   |                                    |       |      |      |      |     |      |     |     | 0.1 | 0.16 | 0.25            | 0.4 | 0.63 | 1.0 | 1.6 | 2.5 | 4.0 | 6.3 | 10.0 | 11.6 | 13 |  |   |
| <b>VL</b><br>    |    |                                    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |  | <b>Para acabado</b> <ul style="list-style-type: none"> <li>Control de virutas estable en material de alta resistencia; acero al carbono bajo, tubería de acero</li> <li>Control de viruta mejorado para creado, el maquinado de copiado y mejor acabado en superficie.</li> </ul> |
| <b>VB</b><br>    |    |                                    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |  | <b>Para acabado</b> <ul style="list-style-type: none"> <li>Mejor control de virutas más pequeños la profundidad de los cortes</li> <li>Excelente control de virutas en maquinado de copiado</li> </ul>  |
| <b>VF</b><br>    |    |                                    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |  | <b>Para acabado</b> <ul style="list-style-type: none"> <li>Buena calidad control de la viruta de la profundidad de corte variado</li> <li>Excelente resistencia de punta se ha adquirido debido a la especial rompeviruta</li> </ul>  |
| <b>VC</b><br>   |    |                                    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |  | <b>Para acabado medio</b> <ul style="list-style-type: none"> <li>Control de viruta estable en maquinado copiado e interno con varias profundidades de corte</li> </ul>  |
| <b>VQ</b><br>  |  |                                    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |  | <b>Para acabado medio</b> <ul style="list-style-type: none"> <li>Filo de corte hace corte excelente rendimiento en corte interrumpido</li> <li>Para cermet</li> </ul>   |
| <b>VM</b><br>  |  |                                    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |  | <b>Para corte medio</b> <ul style="list-style-type: none"> <li>Amplia gama de virutas disponibles de control medio a medio terminar-desbaste</li> <li>Rompeviruta recomendado para maquinado en CNC</li> </ul>  |
| <b>VH</b><br>  |  |                                    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |  | <b>Para corte pesado</b> <ul style="list-style-type: none"> <li>Diseñado específicamente para el mecanizado pesado</li> <li>Rompevirutas para la industrias pesadas como la construcción de buques, la industria de emergija de la planta.</li> </ul>                             |
| <b>VT</b><br>  |  |                                    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |  | <b>Para corte pesado</b> <ul style="list-style-type: none"> <li>Diseñado específicamente para el mecanizado pesado</li> <li>Rompevirutas para la industrias pesadas como la construcción de buques, la industria de emergija de la planta.</li> </ul>                             |
| <b>VP1</b><br> |  |                                    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |  | <b>Para acabado</b> <ul style="list-style-type: none"> <li>Borde de corte altamente positivo</li> <li>La Viruta reduce contrae y minimiza la temperatura para mejorar la vida de la herramienta</li> </ul>  |
| <b>VP2</b><br> |  |                                    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |  | <b>Para acabado medio</b> <ul style="list-style-type: none"> <li>Control de viruta estable y alto maquinado en copiado con profundidad de corte</li> </ul>  |

Nota : los rangos de aplicación se basa en el material principal de corte








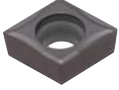






## Rompeviruta Para Torneado

| Geometría                | Filo de corte | Rango de aplicación   |           |      |      |      |         |      |     |     |     |      | Características |     |  |
|--------------------------|---------------|---|-----------|------|------|------|---------|------|-----|-----|-----|------|-----------------|-----|--|
|                          |               | Velocidad de alimentación (mm/rev)  |           |      |      |      |         |      |     |     |     |      |                 |     |  |
|                          |               | 0.04  | 0.063     | 0.10 | 0.16 | 0.25 | 0.4     | 0.63 | 1.0 | 1.6 | 2.5 | 4.0  |                 | 6.3 |  |
| Profundidad de Cort (mm) |               |   |           |      |      |      |         |      |     |     |     |      |                 |     |  |
|                          |               | 0.1   | 0.16      | 0.25 | 0.4  | 0.63 | 1.0     | 1.6  | 2.5 | 4.0 | 6.3 | 10.0 | 11.6            | 13  |  |
| V series                 | VP3           |    | 0.05~0.45 |      |      |      | 0.5~4.5 |      |     |     |     |      |                 |     | <b>Para corte medio</b> <ul style="list-style-type: none"> <li>Alto borde de corte altamente positivo con amplio campo</li> <li>Rendimiento de corte estable en maquinado intermitente con alta dureza</li> <li>Maquinado estable con control de viruta en maquinado con alta profundidad de corte</li> </ul>  |
|                          | VP4           |    | 0.15~0.45 |      |      |      | 1.0~4.5 |      |     |     |     |      |                 |     | <b>Para desbaste</b> <ul style="list-style-type: none"> <li>La primera recomendación para el corte inconel.</li> <li>Un fuerte ángulo de inclinación y resistente para evitar el desgaste en entalla en desbaste de superficies rugosas</li> </ul>   |
|                          | VR            |    | 0.25~0.55 |      |      |      | 1.2~7.0 |      |     |     |     |      |                 |     | <b>Para desbaste</b> <ul style="list-style-type: none"> <li>Mecanizado de alto avance con la combinación de filo ancho y un gran espaciado</li> <li>El diseño de interruptor de viruta superficial previene el bloqueo de viruta en alta alimentación</li> <li>Disminución del desgaste en el filo principal debido al tratamiento especial del filo de corte</li> </ul>   |
| -P series                | LP            |   | 0.10~0.40 |      |      |      | 0.5~2.5 |      |     |     |     |      |                 |     | <b>Para acabado medio</b> <ul style="list-style-type: none"> <li>El ángulo de inclinación disminuye la resistencia de corte para una mejor rugosidad superficial</li> <li>El diseño especial del resalte previene el bloqueo de viruta gracias al romper virutas claramente</li> </ul>   |
|                          | MP            |  | 0.15~0.45 |      |      |      | 0.5~4.5 |      |     |     |     |      |                 |     | <b>Para corte medio</b> <ul style="list-style-type: none"> <li>Mayor productividad debido al excelente control de viruta en varias condiciones de corte</li> <li>Vida de la herramienta estable al reducir la carga de corte a alta velocidad y alto avance</li> </ul>   |
| -M series                | MM            |  | 0.12~0.45 |      |      |      | 0.5~5.5 |      |     |     |     |      |                 |     | <b>Para corte medio</b> <ul style="list-style-type: none"> <li>Primera recomendación para corte continuo en aplicaciones de acero inoxidable</li> <li>Mejor vida útil de la herramienta y el acabado de la superficie debido a vaciados dobles combinando maquinabilidad y tenacidad</li> <li>cavidad ancha de viruta para una evacuación estable de la viruta en alta profundidad de corte y alto avance</li> </ul> |
|                          | RM            |  | 0.15~0.55 |      |      |      | 2.0~6.0 |      |     |     |     |      |                 |     | <b>Para desbaste</b> <ul style="list-style-type: none"> <li>El primer rompevirutas recomendado para corte interrumido o desbaste de acero inoxidable</li> <li>Desgaste de muescas inhibidas y creación de rebabas a alta profundidad de cortes y alimentaciones</li> <li>Reducción de las cargas de corte y mayor vida útil de la herramienta con altos avances.</li> </ul>  |
| -K series                | MK            |  | 0.10~0.50 |      |      |      | 1.0~5.0 |      |     |     |     |      |                 |     | <b>Para corte medio</b> <ul style="list-style-type: none"> <li>Adecuado para corte continuo en fundición dúctil y gris</li> <li>Excelente vida útil de la herramienta y acabado superficial gracias a vaciados de ángulo que mejoran del rendimiento de corte</li> </ul>   |
|                          | RK            |  | 0.20~0.60 |      |      |      | 1.5~6.0 |      |     |     |     |      |                 |     | <b>Para desbaste</b> <ul style="list-style-type: none"> <li>Adecuado para el mecanizado de fundición dúctil y gris a alta velocidad y alto avance</li> <li>Mejora de la tenacidad y resistencia al astillado debido al plano vaciado</li> </ul>  |
| H series                 | HA            |  | 0.03~0.30 |      |      |      | 0.5~2.5 |      |     |     |     |      |                 |     | <b>Para acabado medio</b> <ul style="list-style-type: none"> <li>Filo agudo genera la fuerza de corte bajo</li> <li>Diseño especialmente difíciles de punta principal.</li> <li>Conveniente para el de acero de bajo carbono, acero inoxidable, aluminio</li> </ul>  |

Nota : los rangos de aplicación se basa en el material principal de corte

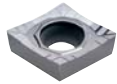

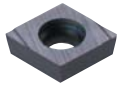





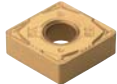





## Rompeviruta Para Torneado

| Geometría     | Filo de corte | Rango de aplicación   |       |      |           |      |     |           |     |     |     |          | Características |     |  |
|---------------|---------------|---|-------|------|-----------|------|-----|-----------|-----|-----|-----|----------|-----------------|-----|--|
|               |               | Velocidad de alimentación (mm/rev)  |       |      |           |      |     |           |     |     |     |          |                 |     |  |
|               |               | 0.04  | 0.063 | 0.10 | 0.16      | 0.25 | 0.4 | 0.63      | 1.0 | 1.6 | 2.5 | 4.0      |                 | 6.3 |  |
|               |               | Profundidad de Cort (mm)  |       |      |           |      |     |           |     |     |     |          |                 |     |  |
|               |               | 0.1   | 0.16  | 0.25 | 0.4       | 0.63 | 1.0 | 1.6       | 2.5 | 4.0 | 6.3 | 10.0     | 11.6            | 13  |  |
| G series      | GR            |    |       |      |           |      |     | 0.30~0.80 |     |     |     | 3.0~8.0  |                 |     | <b>Para desbaste</b> <ul style="list-style-type: none"> <li>• Conveniente para el corte intermedio</li> <li>• Adecuada para el corte intermitente</li> </ul>   |
|               | GH            |    |       |      |           |      |     | 0.30~1.30 |     |     |     | 3.0~11.0 |                 |     | <b>Para corte pesado</b> <ul style="list-style-type: none"> <li>• Apto para trabajo pesado de corte debido a la vanguardia fuerte</li> <li>• Amplia gama de control de viruta con la fuerza de corte baja</li> </ul>   |
| B series      | B25           |    |       |      |           |      |     | 0.50~1.00 |     |     |     | 4.0~10.0 |                 |     | <b>Para corte en general</b> <ul style="list-style-type: none"> <li>• Apto para corte en general en condiciones de cortado</li> </ul>  |
| V-Posi series | VF            |   |       |      | 0.05~0.25 |      |     |           |     |     |     |          |                 |     | <b>Para acabado</b> <ul style="list-style-type: none"> <li>• Acabado de la superficie mejorado y la precisión del tamaño debido a la estabilidad interna del boring.</li> </ul>  |
|               | VL            |  |       |      | 0.05~0.20 |      |     |           |     |     |     |          |                 |     | <b>Para acabado</b> <ul style="list-style-type: none"> <li>• Control de la viruta en acero de bajo carbón, tuberías y placas de acero</li> </ul>   |
|               | VP1           |  |       |      | 0.01~0.25 |      |     |           |     |     |     |          |                 |     | <b>Para acabado</b> <ul style="list-style-type: none"> <li>• Excelente control de viruta en aplicaciones con microprofundidad de corte y bajo avance</li> <li>• Carga de corte baja y excelente acabado superficial</li> <li>• Óptimo para mecanizado interior y exterior</li> </ul>                                       |
| H-Posi series | HMP           |  |       |      | 0.08~0.40 |      |     |           |     |     |     |          |                 |     | <b>Para corte medio</b> <ul style="list-style-type: none"> <li>• Excelente control de virutas en la amplia gama de condiciones de corte,</li> <li>• Conveniente para el corte de acero inoxidable</li> </ul>   |
| C-Posi series | C25           |  |       |      | 0.10~0.35 |      |     |           |     |     |     | 1.0~3.0  |                 |     | <b>Para desbaste</b> <ul style="list-style-type: none"> <li>• Conveniente para el corte interrumpido y el mecanizado de hierro fundido</li> <li>• Buen acabado superficial debido a la fuerza baja de corte</li> <li>• Recomendado para ambos boring y diámetro exterior</li> </ul>  |
| P-Posi series | MP            |  |       |      | 0.05~0.30 |      |     |           |     |     |     | 0.3~3.0  |                 |     | <b>Para corte medio</b> <ul style="list-style-type: none"> <li>• Borde afilado y espaciado para la viruta ancho para una carga de corte baja</li> <li>• Control estable de viruta a diferentes profundidades de corte</li> <li>• Excelente rendimiento de corte en el mecanizado de componentes de automóviles.</li> </ul> |
| AL series     | AK            |  |       |      | 0.03~0.40 |      |     |           |     |     |     |          |                 |     | <b>Para acabado medio</b> <ul style="list-style-type: none"> <li>• Alto ángulo de incidencia y el borde con baja resistencia de corte asegura una vida largo a la herramienta en corte continuo de aluminio torneado</li> <li>• Alta Velocidad de operación de acabado</li> </ul>  |

Nota : los rangos de aplicación se basa en el material principal de corte



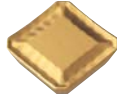



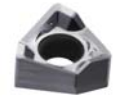







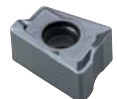






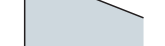
# Rompeviruta Para Torneado

| Geometría        | Filo de corte | Rango de aplicación   |   |           |      |          |           |         |         |     |     |      | Características |     |  |   |
|------------------|---------------|---|---|-----------|------|----------|-----------|---------|---------|-----|-----|------|-----------------|-----|--|---|
|                  |               | Velocidad de alimentación (mm/rev)  |   |           |      |          |           |         |         |     |     |      |                 |     |  |   |
|                  |               | 0.04  | 0.063   | 0.10      | 0.16 | 0.25     | 0.4       | 0.63    | 1.0     | 1.6 | 2.5 | 4.0  |                 | 6.3 |  |   |
|                  |               | Profundidad de Cort (mm)  |   |           |      |          |           |         |         |     |     |      |                 |     |  |   |
|                  |               | 0.1   | 0.16  | 0.25      | 0.4  | 0.63     | 1.0       | 1.6     | 2.5     | 4.0 | 6.3 | 10.0 | 11.6            | 13  |  |   |
| AL series        | AR            |    |    | 0.05~0.50 |      |          |           | 0.5~4.0 |         |     |     |      |                 |     | <b>Para corte medio</b> <ul style="list-style-type: none"> <li>• Gran estabilidad de corte excelente desempeño en altas Velocidades en maquinado de corte de aluminio de torneado</li> <li>• Excelente desempeño a alta Velocidad en corte medio e intermitente</li> </ul> |   |
|                  | KF            |    |    | 0.01~0.12 |      | 0.01~1.0 |           |         |         |     |     |      |                 |     | <b>Para acabado</b> <ul style="list-style-type: none"> <li>• Baja profundidad de corte con filo</li> <li>• Mayor durabilidad a altas Velocidades debido al bajo esfuerzo de corte</li> <li>• Excelente acabado</li> </ul>  |   |
| Auto tool series | KM            |    |    | 0.04~0.15 |      | 0.05~1.5 |           |         |         |     |     |      |                 |     | <b>Para acabado medio</b> <ul style="list-style-type: none"> <li>• Mayor control de la viruta mayor vida de la herramienta y mejor, maquinado</li> </ul>   |   |
|                  | LW            |   |   |           |      |          | 0.15~0.60 |         | 1.0~5.0 |     |     |      |                 |     |  | <b>Para corte medio</b> <ul style="list-style-type: none"> <li>• Garantiza un excelente acabado superficial con un excelente control de virutas en grandes avances</li> </ul>   |
| For Wiper        | VW            |  |  |           |      |          | 0.15~0.50 |         | 0.5~3.5 |     |     |      |                 |     |  | <b>Para acabado medio</b> <ul style="list-style-type: none"> <li>• Excelente acabado a baja profundidad de corte y alto avance del filo fuerte</li> </ul>   |
|                  | SR            |  |  |           |      |          | 0.12~0.45 |         | 1.0~4.5 |     |     |      |                 |     |  | <b>Para acabado</b> <ul style="list-style-type: none"> <li>• Profundidad de corte baja con borde afilado</li> <li>• Mayor vida útil a alta velocidad de corte gracias a la baja fuerza de corte.</li> <li>• Buen acabado superficial</li> </ul> |
| For Shaft        | SH            |  |  |           |      |          | 0.15~0.50 |         | 1.5~5.0 |     |     |      |                 |     |  | <b>Para corte medio</b> <ul style="list-style-type: none"> <li>• Buen flujo de viruta, incrementando la vida útil y la maquinabilidad</li> </ul>  |

Nota : los rangos de aplicación se basa en el material principal de corte













## Rompeviruta Para Fresado

| Geometría            | Filo de corte | Rango de aplicación   |   |      |      |           |           |      |     |          |     |      | Características |     |  |
|----------------------|---------------|---|---|------|------|-----------|-----------|------|-----|----------|-----|------|-----------------|-----|--|
|                      |               | Velocidad de alimentación (mm/rev)  |   |      |      |           |           |      |     |          |     |      |                 |     |  |
|                      |               | 0.04  | 0.063   | 0.10 | 0.16 | 0.25      | 0.4       | 0.63 | 1.0 | 1.6      | 2.5 | 4.0  |                 | 6.3 |  |
|                      |               | Profundidad de Corte (mm)   |   |      |      |           |           |      |     |          |     |      |                 |     |  |
|                      |               | 0.1   | 0.16  | 0.25 | 0.4  | 0.63      | 1.0       | 1.6  | 2.5 | 4.0      | 6.3 | 10.0 | 11.6            | 14  |  |
| MX series            | MX            |    |    |      |      |           | 0.10~0.30 |      |     | 1.0~5.0  |     |      |                 |     | <b>Para desbaste</b> <ul style="list-style-type: none"> <li>Permite incrementar la productividad al aumentar el avance y profundidad.</li> <li>Excelente resistencia al calor gracias al diseño especial del rompevirutas de la cara superior del inserto.</li> </ul>                                    |
|                      | MM            |    |    |      |      |           | 0.20~0.40 |      |     | 2.0~14.0 |     |      |                 |     | <b>Para desbaste</b> <ul style="list-style-type: none"> <li>Herramienta especializada en desbaste a alta profundidad de corte, con un filo de alta rigidez que asegura un mecanizado estable</li> </ul>  |
| Rich Mill series-RM3 | MA            |    |    |      |      | 0.05~0.40 |           |      |     | 1.0~8.0  |     |      |                 |     | <b>Para fresado de aluminio</b> <ul style="list-style-type: none"> <li>El filo de corte afilado para una carga de corte baja, que es ideal para mecanizado aluminio, acero y materiales duros para cortar</li> </ul>   |
|                      | ML            |   |    |      |      | 0.05~0.30 |           |      |     | 1.0~8.0  |     |      |                 |     | <b>Para fresado de materiales difíciles de cortar</b> <ul style="list-style-type: none"> <li>Baja resistencia al corte para una excelente vida útil y superficie. rugosidad en el mecanizado de materiales difíciles de cortar</li> </ul>  |
|                      | MM            |  |  |      |      | 0.05~0.35 |           |      |     | 1.0~8.0  |     |      |                 |     | <b>Para corte en general</b> <ul style="list-style-type: none"> <li>Disponible para la mayoría de aplicaciones con universal diseño para fresado general</li> </ul>  |
| Rich Mill series-RM4 | MA            |  |  |      |      | 0.05~0.25 |           |      |     | 0.3~14.0 |     |      |                 |     | <b>Para fresado de aluminio</b> <ul style="list-style-type: none"> <li>El diseño afilado del filo asegura una baja resistencia al corte y excelente mecanizado en materiales difíciles de cortar, Aluminio y mecanizado ligero.</li> </ul>   |
|                      | MF            |  |  |      |      | 0.05~0.30 |           |      |     | 0.5~14.0 |     |      |                 |     | <b>Para corte ligero</b> <ul style="list-style-type: none"> <li>El diseño del rompevirutas de baja fuerza de corte garantiza una herramienta más larga Vida útil y excelente mecanizado en materiales difíciles de cortar y mecanizado ligero</li> </ul>   |
|                      | MM            |  |  |      |      | 0.05~0.30 |           |      |     | 1.0~14.0 |     |      |                 |     | <b>Para corte en general</b> <ul style="list-style-type: none"> <li>Disponible para la mayoría de aplicaciones con universal diseño para fresado general</li> </ul>  |
| Rich Mill series-RM6 | MA            |  |  |      |      | 0.05~0.2  |           |      |     | 1.0~8.2  |     |      |                 |     | <b>Para fresado de aluminio</b> <ul style="list-style-type: none"> <li>Filo de corte muy positivo y afilado especializado en mecanizado de aluminio asegura buena maquinabilidad.</li> <li>Superficie pulida, tratada para un buen flujo de viruta y buena resistencia al filo de aportación.</li> </ul> |
|                      | ML            |  |  |      |      | 0.05~0.25 |           |      |     | 1.0~8.2  |     |      |                 |     | <b>Para fresado de materiales difíciles de cortar</b> <ul style="list-style-type: none"> <li>Rompevirutas para baja carga mecánica para facilitar un corte ligero</li> <li>Proporciona una larga vida útil y un mecanizado de alta calidad en aleaciones termostresistentes</li> </ul>                   |

Nota : los rangos de aplicación se basa en el material principal de corte














## Rompeviruta Para Fresado

| Geometría             | Filo de corte | Rango de aplicación   |       |      |           |           |     |      |         |     |     |      |      | Características |  |  |
|-----------------------|---------------|---|-------|------|-----------|-----------|-----|------|---------|-----|-----|------|------|-----------------|--|--|
|                       |               | Velocidad de alimentación (mm/rev)  |       |      |           |           |     |      |         |     |     |      |      |                 |  |  |
|                       |               | 0.04  | 0.063 | 0.10 | 0.16      | 0.25      | 0.4 | 0.63 | 1.0     | 1.6 | 2.5 | 4.0  | 6.3  |                 |  |  |
|                       |               | Profundidad de Cort (mm)  |       |      |           |           |     |      |         |     |     |      |      |                 |  |  |
|                       |               | 0.1   | 0.16  | 0.25 | 0.4       | 0.63      | 1.0 | 1.6  | 2.5     | 4.0 | 6.3 | 10.0 | 11.6 | 14              |  |  |
| Rich Mill series-RM6  | MM            |    |       |      |           | 0.05~0.25 |     |      | 1.0~8.2 |     |     |      |      |                 |  | <p><b>Para corte en general</b></p> <ul style="list-style-type: none"> <li>Geometría optimizada para escuadrado general en varios tipos de mecanizado</li> </ul>   |
| Rich Mill series-RM8  | MA            |    |       |      | 0.05~0.35 |           |     |      | 0.3~6.0 |     |     |      |      |                 |  | <p><b>Para fresado de aluminio</b></p> <ul style="list-style-type: none"> <li>Borde extremadamente filoso y la cara superior pulida dan un mejor flujo de virutas y evita la adhesión del material a la punta de corte.</li> </ul>   |
|                       | MF            |    |       |      | 0.05~0.35 |           |     |      | 0.3~6.0 |     |     |      |      |                 |  | <p><b>Para corte ligero</b></p> <ul style="list-style-type: none"> <li>Este diseño asegura una mayor durabilidad de la herramienta debido a el bajo esfuerzo de corte en mecanizado ligero.</li> </ul>   |
|                       | ML            |   |       |      | 0.05~0.30 |           |     |      | 0.3~6.0 |     |     |      |      |                 |  | <p><b>Para fresado de materiales difíciles de cortar</b></p> <ul style="list-style-type: none"> <li>Rompevirutas con baja resistencia a la carga de corte asegura larga vida útil y alta calidad en el corte ligero y de materiales difíciles de cortecondiciones ligeras y difíciles de cortar</li> </ul> |
|                       | MM            |  |       |      |           | 0.10~0.40 |     |      | 0.5~6.0 |     |     |      |      |                 |  | <p><b>Para corte en general</b></p> <ul style="list-style-type: none"> <li>Diseño de geometría apropiado para fresado en general, con mayor rango de maquinado.</li> </ul>   |
|                       |               |   |       |      |           |           |     |      |         |     |     |      |      |                 |  |  |
| Rich Mill series-RMT  | MF            |  |       |      | 0.05~0.20 |           |     |      | 0.5~5.0 |     |     |      |      |                 |  | <p><b>Para corte ligero</b></p> <ul style="list-style-type: none"> <li>Baja carga de corte debido al diseño de su Rompeviruta que brinda mayor tiempo de vida a la herramienta y excelente maquinado en materiales difíciles de cortar y materiales ligeros</li> </ul>                                     |
|                       | MM            |  |       |      | 0.05~0.30 |           |     |      | 0.5~8.0 |     |     |      |      |                 |  | <p><b>Para corte en general</b></p> <ul style="list-style-type: none"> <li>Diseño de geometría apropiado para fresado en general, con mayor rango de maquinado.</li> </ul>   |
| Rich Mill series-RMT6 | MA            |  |       |      | 0.05~0.30 |           |     |      | 0.3~5.5 |     |     |      |      |                 |  | <p><b>Para fresado de aluminio</b></p> <ul style="list-style-type: none"> <li>El diseño del borde brinda mayor resistencia de corte y maquinado excelente en materiales difíciles de cortar, aluminio y maquinado ligero</li> </ul>  |
|                       | MF            |  |       |      | 0.05~0.40 |           |     |      | 0.3~5.5 |     |     |      |      |                 |  | <p><b>Para corte ligero</b></p> <ul style="list-style-type: none"> <li>Baja carga de corte debido al diseño de su Rompeviruta que brinda mayor tiempo de vida a la herramienta y excelente maquinado en materiales difíciles de cortar y materiales ligeros</li> </ul>                                     |
|                       | ML            |  |       |      | 0.05~0.35 |           |     |      | 0.3~5.5 |     |     |      |      |                 |  | <p><b>Para fresado de materiales difíciles de cortar</b></p> <ul style="list-style-type: none"> <li>Baja resistencia al corte para una excelente vida útil y superficie rugosidad en el mecanizado de materiales difíciles de cortar</li> </ul>  |

Nota : los rangos de aplicación se basa en el material principal de corte



## Rompeviruta Para Fresado

| Geometría                | Filo de corte | Rango de aplicación   |       |      |      |      |     |      |     |     |     |      | Características |     |      |     |     |     |     |     |      |      |    |   |   |
|--------------------------|---------------|---|-------|------|------|------|-----|------|-----|-----|-----|------|-----------------|-----|------|-----|-----|-----|-----|-----|------|------|----|---|---|
|                          |               | Velocidad de alimentación (mm/rev)  |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |   |   |
|                          |               | 0.04  | 0.063 | 0.10 | 0.16 | 0.25 | 0.4 | 0.63 | 1.0 | 1.6 | 2.5 | 4.0  |                 | 6.3 |      |     |     |     |     |     |      |      |    |   |   |
| Profundidad de Cort (mm) |               |   |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |   |   |
|                          |               |   |       |      |      |      |     |      |     |     | 0.1 | 0.16 | 0.25            | 0.4 | 0.63 | 1.0 | 1.6 | 2.5 | 4.0 | 6.3 | 10.0 | 11.6 | 17 |   |   |
| Rich Mill series-PM16    | MM            |    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |   | <b>Para corte en general</b><br><br>• Diseño de geometría apropiado para fresado en general, con mayor rango de maquinado.  |
|                          | W             |    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |   | <b>Para Acabado en Fresado (Wiper)</b><br><br>• Inserto Wiper mejora la rugosidad de la superficie debido a su filo especial de corte.  |
| Alpha Mill series        | MA            |    |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |   | <b>Para fresado de aluminio</b><br><br>• Borde extremadamente filoso y la cara superior pulida da un mejor flujo de virutas y evita la adhesión del material a la punta del filo  |
|                          | MF            |   |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |   | <b>Para corte ligero</b><br><br>• Baja carga de corte debido al diseño de la rompeviruta que brinda mayor tiempo de vida a la herramienta y un excelente maquinado en materiales difíciles de cortar materiales ligeros |
|                          | MM            |  |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |   | <b>Para corte en general</b><br><br>• Diseño de geometría apropiado para fresado en general con un mayor rango de maquinado   |
|                          | ML            |  |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |   | <b>Para el mecanizado de material de difícil corte</b><br><br>• Rompevirutas con baja resistencia al corte que asegura una mecanizabilidad superior en materiales de difícil corte                                      |
|                          | MN            |  |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |   | <b>Para desbaste (con filos aserrados)</b><br><br>• Diseño aserrado asegurando una buena maquinabilidad en desbaste   |
|                          | MM            |  |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    |   | <b>Para corte en general</b><br><br>• Geometría para fresado general en múltiples condiciones   |
| Alpha Mill-X series      | ML            |  |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    | <b>Para fresado de materiales difíciles de cortar</b><br><br>• Rompevirutas para baja carga mecánica para facilitar un corte ligero, proporcionando una larga vida útil y un mecanizado de alta calidad en aleaciones termorresistentes |   |
|                          | MF            |  |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    | <b>Para corte ligero</b><br><br>• Diseño especial para corte ligero de materiales gomosos como el acero inoxidable y el material difícil de mecanizar proporcionan acabado superficial y mayor vida útil de la herramienta              |   |
| Future Mill series       | MF            |  |       |      |      |      |     |      |     |     |     |      |                 |     |      |     |     |     |     |     |      |      |    | <b>Para corte ligero</b><br><br>• Diseño especial para corte ligero de materiales gomosos como el acero inoxidable y el material difícil de mecanizar proporcionan acabado superficial y mayor vida útil de la herramienta              |   |

Nota : los rangos de aplicación se basa en el material principal de corte





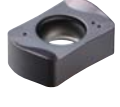





# Rompeviruta Para Fresado

| Geometría                 | Filo de corte | Rango de aplicación                |       |      |      |           |         |           |           |         |     |      |      |    |  | Características |   |
|---------------------------|---------------|------------------------------------|-------|------|------|-----------|---------|-----------|-----------|---------|-----|------|------|----|--|-----------------|---|
|                           |               | Velocidad de alimentación (mm/rev) |       |      |      |           |         |           |           |         |     |      |      |    |  |                 |   |
|                           |               | 0.04                               | 0.063 | 0.10 | 0.16 | 0.25      | 0.4     | 0.63      | 1.0       | 1.6     | 2.5 | 4.0  | 6.3  |    |  |                 |   |
|                           |               | Profundidad de Cort (mm)           |       |      |      |           |         |           |           |         |     |      |      |    |  |                 |   |
|                           |               | 0.1                                | 0.16  | 0.25 | 0.4  | 0.63      | 1.0     | 1.6       | 2.5       | 4.0     | 6.3 | 10.0 | 11.6 | 14 |  |                 |   |
| Future Mill series        | MM            |                                    |       |      |      | 0.05~0.30 |         |           |           | 1.0~5.0 |     |      |      |    |  |                 | <b>Para corte en general</b> <ul style="list-style-type: none"> <li>Diseño de rompevirutas para cubrir condiciones generales, proporciona un amplio rango de aplicación.</li> <li>Tipo pulido o sinterizado disponible.</li> </ul>            |
|                           | MR            |                                    |       |      |      | 0.05~0.35 |         |           |           | 1.5~5.0 |     |      |      |    |  |                 | <b>Para desbaste</b> <ul style="list-style-type: none"> <li>Resistente filo de corte que proporciona una vida de herramienta estable, aun en condiciones severas de corte pesado en operación intermitente o desbaste.</li> </ul>             |
|                           | MA            |                                    |       |      |      | 0.10~0.35 |         |           |           | 0.5~5.0 |     |      |      |    |  |                 | <b>Para fresado de aluminio</b> <ul style="list-style-type: none"> <li>Diseño recomendable para maquinado en aluminio con filo vivo y acabado espejo que previene las adherencias y proporciona un rendimiento de corte excelente.</li> </ul> |
| Future Mill series P-posi | MA            |                                    |       |      |      |           |         | 0.30~0.60 |           | 0.3~6.0 |     |      |      |    |  |                 | <b>Para fresado de aluminio</b> <ul style="list-style-type: none"> <li>El diseño afilado del filo asegura una baja resistencia al corte y excelente mecanizado en materiales difíciles de cortar, Aluminio y mecanizado ligero.</li> </ul>    |
|                           | ML            |                                    |       |      |      |           |         | 0.30~0.50 |           | 0.3~3.0 |     |      |      |    |  |                 | <b>Para fresado de materiales difíciles de cortar</b> <ul style="list-style-type: none"> <li>Baja resistencia al corte para una excelente vida útil y superficie, rugosidad en el mecanizado de materiales difíciles de cortar</li> </ul>     |
|                           | MF            |                                    |       |      |      | 0.12~0.50 |         |           |           | 0.3~6.0 |     |      |      |    |  |                 | <b>Para corte ligero</b> <ul style="list-style-type: none"> <li>El diseño del rompevirutas de baja fuerza de corte garantizar y mecanizado ligero</li> </ul>  |
|                           | MM            |                                    |       |      |      |           |         | 0.20~0.70 |           | 0.3~6.0 |     |      |      |    |  |                 | <b>Para corte en general</b> <ul style="list-style-type: none"> <li>Disponible para la mayoría de aplicaciones con universal diseño para fresado general</li> </ul>   |
|                           | None C/B      |                                    |       |      |      |           | 0.3~0.5 |           | 0.30~0.50 |         |     |      |      |    |  |                 | <b>Para fresado de acero endurecido</b> <ul style="list-style-type: none"> <li>Ideal para aceros templados de alta dureza y acero para moldes</li> </ul>  |
|                           |               |                                    |       |      |      |           |         |           |           |         |     |      |      |    |  |                 |   |
| HFM                       | MF            |                                    |       |      |      | 0.1~0.4   |         |           | 0.30~1.0  |         |     |      |      |    |  |                 | <b>Para corte ligero</b> <ul style="list-style-type: none"> <li>Rompevirutas para baja carga mecánica para facilitar un corte ligero</li> </ul>   |
|                           | None C/B      |                                    |       |      |      | 0.1~0.4   |         |           | 0.30~0.80 |         |     |      |      |    |  |                 | <b>Para fresado de acero endurecido</b> <ul style="list-style-type: none"> <li>Geometría con filo de corte fuerte para fresado de acero aleado de alta dureza</li> </ul>  |

Nota : los rangos de aplicación se basa en el material principal de corte



## Rompeviruta Para Fresado









| Geometría                | Filo de corte | Rango de aplicación   |       |      |      |      |     |      |     |     |     |      |      | Características |  |   |
|--------------------------|---------------|---|-------|------|------|------|-----|------|-----|-----|-----|------|------|-----------------|--|---|
|                          |               | Velocidad de alimentación (mm/rev)  |       |      |      |      |     |      |     |     |     |      |      |                 |  |   |
|                          |               | 0.04  | 0.063 | 0.10 | 0.16 | 0.25 | 0.4 | 0.63 | 1.0 | 1.6 | 2.5 | 4.0  | 6.3  |                 |  |   |
| Profundidad de Cort (mm) |               |   |       |      |      |      |     |      |     |     |     |      |      |                 |  |   |
|                          |               | 0.1   | 0.16  | 0.25 | 0.4  | 0.63 | 1.0 | 1.6  | 2.5 | 4.0 | 6.3 | 10.0 | 11.6 | 57              |  |   |
| HFMD                     | ML            |    |       |      |      |      |     |      |     |     |     |      |      |                 |  | <p><b>Para fresado de materiales difíciles de cortar</b></p> <ul style="list-style-type: none"> <li>Rompevirutas para baja carga mecánica y filo de corte tenaz, asegurando un mecanizado de alta calidad en aleaciones termostresistentes</li> </ul>   |
|                          | MF            |    |       |      |      |      |     |      |     |     |     |      |      |                 |  | <p><b>Para corte ligero</b></p> <ul style="list-style-type: none"> <li>Rompevirutas para mecanizado con baja carga de corte</li> </ul>  |
|                          | MM            |    |       |      |      |      |     |      |     |     |     |      |      |                 |  |   |
| TP2P                     | MA            |   |       |      |      |      |     |      |     |     |     |      |      |                 |  | <p><b>Para fresado de aluminio</b></p> <ul style="list-style-type: none"> <li>Filo de corte muy positivo y afilado especializado en mecanizado de aluminio asegura buena maquinabilidad.</li> <li>Superficie pulida, tratada para un buen flujo de viruta y buena resistencia al filo de aportación.</li> </ul> |
|                          | ML            |  |       |      |      |      |     |      |     |     |     |      |      |                 |  | <p><b>Para fresado de materiales difíciles de cortar</b></p> <ul style="list-style-type: none"> <li>Rompevirutas para baja carga mecánica y filo de corte tenaz, garantizando una larga vida útil y un mecanizado de alta calidad en aleaciones termostresistentes</li> </ul>                                   |
|                          | MM            |  |       |      |      |      |     |      |     |     |     |      |      |                 |  |   |
| Pro-XL MIII              | MA            |  |       |      |      |      |     |      |     |     |     |      |      |                 |  | <p><b>Para fresado de aluminio</b></p> <ul style="list-style-type: none"> <li>Filo de corte muy positivo y afilado, con superficie pulida, especializado en mecanizado de aluminio, asegurando un buen flujo de viruta y buena resistencia al filo de aportación.</li> </ul>                                    |
| Pro-V MIII               | MA            |  |       |      |      |      |     |      |     |     |     |      |      |                 |  | <p><b>Para fresado de aluminio</b></p> <ul style="list-style-type: none"> <li>Filo de corte muy positivo y afilado, con superficie pulida, especializado en mecanizado de aluminio, asegurando un buen flujo de viruta y buena resistencia al filo de aportación.</li> </ul>                                    |

Nota : los rangos de aplicación se basa en el material principal de corte





# Rompeviruta Para Brocas

| Geometría         | Filo de corte   | Rango de aplicación  |           |      |         |      |     |      |     |     |     |     |     | Características |   |
|-------------------|---|--|-----------|------|---------|------|-----|------|-----|-----|-----|-----|-----|-----------------|---|
|                   |   | Velocidad de alimentación (mm/rev)   |           |      |         |      |     |      |     |     |     |     |     |                 |   |
|                   |   | 0.04   | 0.063     | 0.10 | 0.16    | 0.25 | 0.4 | 0.63 | 1.0 | 1.6 | 2.5 | 4.0 | 6.3 |                 |   |
|                   |   | Profundidad de Cort (mm)   |           |      |         |      |     |      |     |     |     |     |     |                 |   |
|                   |   | 30   | 60        | 90   | 120     | 150  | 180 | 210  | 240 | 270 | 300 | 330 | 900 |                 |   |
| King Drill series | <b>PD</b><br>  |   | 0.04~0.20 |      | 60~300  |      |     |      |     |     |     |     |     |                 | <b>Para Corte en General</b><br><br>• Rompevirutas con filo de corte fuerte para aplicaciones universales con acero, acero inoxidable y fundición   |
|                   | <b>LD</b><br>  |   | 0.04~0.15 |      | 40~250  |      |     |      |     |     |     |     |     |                 | <b>Para corte ligero</b><br><br>• Control de viruta superior en el mecanizado de acero suave, acero forjado y acero inoxidable  |
|                   | <b>RD</b><br>  |   | 0.04~0.20 |      | 60~300  |      |     |      |     |     |     |     |     |                 | <b>Resistencia al astillamiento reforzada</b><br><br>• Resistencia al astillamiento central mejorada debido al reforzado. Esquinas de las inserciones centrales King Drill.<br>• Excelente rendimiento de corte incluso en el mecanizado donde frecuentemente se rompen las esquinas de los insertos centrales.<br>• p.ej. Mecanizado de acero tratado térmicamente o acero inoxidable, y Mecanizado de alto avance, etc. |
|                   | <b>ND</b><br> |  | 0.04~0.10 |      | 100~400 |      |     |      |     |     |     |     |     |                 | <b>Metales no ferrosos</b><br><br>• Rompevirutas con filo de corte afilado y pulido para aluminio y metales no ferrosos. El mecanizado con King Drill asegura un buen flujo de viruta y resistencia a la soldadura en frío de la viruta.  |

Nota : los rangos de aplicación se basa en el material principal de corte



## Rompevirutas Torneado

- B02 Rango de Aplicación de las Rompevirutas
- B04 Recomendada según pieza de trabajo
- B12 Características rompe virutas

## Insertos

- B26 Insertos para Torneado Sistema de Codificación (ISO)
- B28 Insertos para Torneado (Negativo)
- B66 Insertos para Torneado (Positivo)
- B90 Insertos para Aluminio (Positivo)
- B98 Insertos cBN
- B102 Insertos PCD

## SAVE TURN

- B104 Información técnica SAVE TURN
- B105 Insertos SAVE TURN
- B106 Porta herramientas SAVE TURN
- B109 Barras torneado interior SAVE TURN

## Auto Tools

- B111 Información Técnica para Herramientas para Auto Tools
- B112 Tipo ISO
- B117 KHP Coolant
- B121 Tipo Blade
- B124 Tipo multiusos
- B127 Tipo KGT/MGT
- B130 Micro Boreado de Carburo (MSB)
- B136 Sleeve

## Multi Turn

- B137 Información Técnica de Herramientas Multi Turn
- B139 Multi Turn

## Solución en Rodamientos

- B140 Información Técnica para Solución en Rodamientos
- B141 Solución en Rodamientos
- B147 Formato para Inserto Rodamientos Especial



## Portainserto Externo

- B148 Sistema Codificación para Portalinsertos(ISO)
- B149 Índice de Portalinsertos Externos
- B152 Instrucciones de porta insertos externos
- B153 Características Doble Brida / Sistema de Palanca
- B154 Sistema de Brida Doble
- B159 Sistema de Palanca
- B167 Sistema Brida Amplia
- B169 Sistema de Brida
- B171 Sistema Multi-trabe
- B178 Sistema con tornillo
- B185 Portaherramientas insertos de cerámica

## Porta provisto de refrigerante a alta presión

- B187 Información técnica para KHP Coolant
- B189 KHP

## Barras para Interior

- B191 Sistema de Codificación (ISO)
- B192 Índice de Barras para Interior

## Barras para Interior

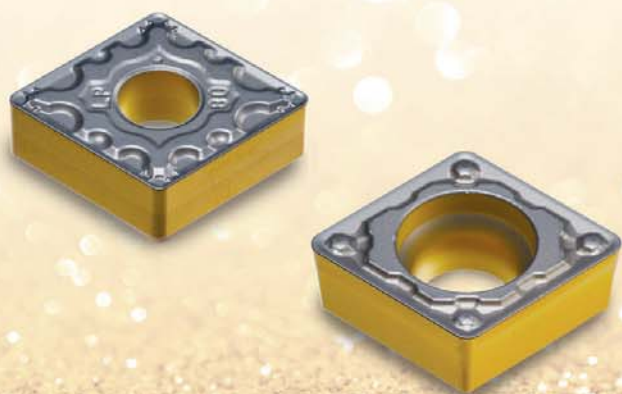
- B194 Instrucciones de Ensamblado Barras para Interior
- B195 Sistema de Brida Doble
- B197 Sistema de Palanca
- B201 Sistema de Brida
- B202 Sistema Multi-trabe
- B204 Sistema con tornillo
- B214 Compact Mini

## Herramientales HSK/KM

- B217 Información Técnica para Herramientales HSK/ KM
- B219 Índice para Sistema HSK/KM
- B220 Herramienta con Sistema HSK
- B226 Herramienta con Sistema KM

## Cartuchos

- B230 Sistema de Codificación de Cartuchos (ISO)
- B231 Índice de Cartuchos
- B232 Sistema de Brida
- B234 Sistema con Tornillo



## Torneado

Las herramientas de torneado Korloy cubren una amplia gama de aplicaciones acorde a la norma ISO, herramientas e instrumentos FGT que producen alta calidad y piezas de alta precisión para todas las necesidades de los fabricantes.

# B

## Rango de Aplicación Rompevirutas

### Insertos Negativos

**Pza. Trabajo P**  
Acero

|                    |    |    |    |
|--------------------|----|----|----|
| Uso Pesado         | GH | VH | VT |
| Desbaste           | GR |    |    |
| Medio              | VM | MP | HM |
| Medio Corte Ligero | VC | LP | VQ |
| Acabado            | VL | VB | VF |

[Recomendado]

**Pza. Trabajo K**  
Fundición

|                    |    |    |     |
|--------------------|----|----|-----|
| Desbaste           | VR | RK | MA  |
| Medio              |    | MK |     |
| Medio Corte Ligero |    | MK | B25 |
| Acabado            |    | MP |     |

[Recomendado]

**Pza. Trabajo M**  
Acero Inoxidable

|                    |     |    |
|--------------------|-----|----|
| Desbaste           | RM  |    |
| Medio              | MP  | MM |
| Medio Corte Ligero | VP2 |    |
| Acabado            |     |    |

[Recommended]

**Pza. Trabajo N**  
Aleación Aluminio

|                    |    |
|--------------------|----|
| Desbaste           |    |
| Medio              |    |
| Medio Corte Ligero | HA |
| Acabado            |    |

[Recomendado]

**Pza. Trabajo S**  
Aleaciones Resist.alcalor

|                    |     |
|--------------------|-----|
| Desbaste           | VP4 |
| Medio              | VP3 |
| Medio Corte Ligero | VP2 |
| Acabado            | VP1 |

[Recomendado]



# Rango de Aplicación Rompevirutas

## Inserto Positivo

**Pza. Trabajo P**  
Acero

Desbaste

Medio **C25**

Medio Corte Ligero **HMP** **MP**

Acabado **VL** **VF**

[Recomendado]

**Pza. Trabajo K**  
Fundición

Desbaste

Medio **C25**

Medio Corte Ligero **MP**

Acabado

[Recomendado]

**Pza. Trabajo M**  
Acero Inoxidable

Desbaste

Medio **C25**

Medio Corte Ligero **HMP** **MP**

Acabado **VL**

[Recomendado]

**Pza. Trabajo N**  
Aleación Aluminio

Desbaste

Medio **AR**

Medio Corte Ligero **AK**

Acabado

[Recomendado]

**Pza. Trabajo S**  
Aleaciones Resist.alcalor

Desbaste

Medio

Medio Corte Ligero **MP**

Acabado **VPI** **VL**

[Recomendado]

## Rompeviruta Recomendada Según Pza. Trabajo

Material: SM10C, SM15C, SM25C, SS400, SCr415, SCM415, etc. Acero Suave

Dureza: Menor 180HB

| Profundidad de corte (mm)                 | C/B                                | Filo de corte      | Avance (mm/rev)                      | Grados   | Velocidad de Corte (m/min)             | Forma del inserto |                |                |                |                |                |
|---|------------------------------------|--------------------|--------------------------------------|--|--|-------------------|----------------|----------------|----------------|----------------|----------------|
|   |                                    |                    |                                      |  |  | 80°               | 55°            | 90°            | 60°            | 35°            | 80°            |
| Negativo                                  | 0.2 ~ 0.8 ~ 1.5<br>Acabado         | VL                 | 0.10 ~ 0.20 ~ 0.35                   | NC3215<br>NC3225<br>CN1500<br>CN2500                     | 305<br>250<br>260<br>230               | CNMG<br>p. B29    | DNMG<br>p. B37 | SNMG<br>p. B46 | TNMG<br>p. B55 | VNMG<br>p. B60 | WNMG<br>p. B62 |
|   | 0.5 ~ 1.0 ~ 2.0<br>Acabado         | VB                 | 0.15 ~ 0.20 ~ 0.40                   | NC3215<br>NC3225<br>CN1500<br>CN2500                     | 340<br>250<br>240<br>210               | CNMG<br>p. B28    | DNMG<br>p. B36 |                | TNMG<br>p. B54 |                | WNMG<br>p. B62 |
|   | 0.5 ~ 1.0 ~ 1.5<br>Acabado         | VF                 | 0.05 ~ 0.15 ~ 0.35                   | NC3215<br>NC3220<br>NC3225<br>NC5330                     | 305<br>270<br>270<br>210               | CNMG<br>p. B28    | DNMG<br>p. B37 | SNMG<br>p. B46 | TNMG<br>p. B55 | VNMG<br>p. B60 | WNMG<br>p. B62 |
|   | 0.5 ~ 1.5 ~ 3.5<br>Medio a Acabado | VC                 | 0.12 ~ 0.25 ~ 0.45                   | NC3215<br>NC3220<br>NC3225<br>NC5330                     | 285<br>250<br>255<br>200               | CNMG<br>p. B29    | DNMG<br>p. B38 | SNMG<br>p. B46 | TNMG<br>p. B55 | VNMG<br>p. B60 | WNMG<br>p. B63 |
|   | 0.5 ~ 1.0 ~ 2.5<br>Medio a Acabado | LP                 | 0.10 ~ 0.25 ~ 0.40                   | NC3215<br>NC3225<br>NC5330                               | 300<br>250<br>200                      | CNMG<br>p. B29    | DNMG<br>p. B38 | SNMG<br>p. B46 | TNMG<br>p. B55 | VNMG<br>p. B60 | WNMG<br>p. B63 |
|   | 0.5 ~ 1.3 ~ 3.5<br>Medio a Acabado | VQ                 | 0.12 ~ 0.28 ~ 0.42                   | NC3215<br>NC3225<br>NC5330                               | 300<br>250<br>200                      | CNMG<br>p. B30    | DNMG<br>p. B38 | SNMG<br>p. B47 | TNMG<br>p. B56 | VNMG<br>p. B61 | WNMG<br>p. B63 |
|   | 0.5 ~ 1.5 ~ 4.5<br>Medio           | MP                 | 0.15 ~ 0.30 ~ 0.45                   | NC3215<br>NC3225<br>NC5330                               | 300<br>265<br>200                      | CNMG<br>p. B31    | DNMG<br>p. B39 | SNMG<br>p. B48 | TNMG<br>p. B56 | VNMG<br>p. B61 | WNMG<br>p. B64 |
|   | 1.0 ~ 2.5 ~ 5.0<br>Medio           | VM                 | 0.10 ~ 0.25 ~ 0.50                   | NC3215<br>NC3220<br>NC3225<br>NC5330<br>CN1500<br>CN2500 | 295<br>260<br>260<br>205<br>220<br>200 | CNMG<br>p. B32    | DNMG<br>p. B40 | SNMG<br>p. B48 | TNMG<br>p. B57 | VNMG<br>p. B61 | WNMG<br>p. B64 |
|   | 1.5 ~ 2.5 ~ 5.5<br>Medio           | HM                 | 0.12 ~ 0.28 ~ 0.52                   | NC3215<br>NC3225<br>NC5330                               | 300<br>265<br>200                      | CNMG<br>p. B30    | DNMG<br>p. B39 | SNMG<br>p. B47 | TNMG<br>p. B56 | VNMG<br>p. B61 | WNMG<br>p. B63 |
|   | 1.0 ~ 3.0 ~ 4.5<br>Desbaste        | GR                 | 0.20 ~ 0.35 ~ 0.50                   | NC3125<br>NC3225<br>NC5330                               | 180~370<br>150~330<br>130~280          | CNMG<br>p. B33    | DNMG<br>p. B41 | SNMG<br>p. B49 | TNMG<br>p. B58 |                | WNMG<br>p. B64 |
| 3.0 ~ 7.0 ~ 11.0<br>Pesado                | GH                                 | 0.30 ~ 0.80 ~ 1.30 | NC3125<br>NC3225<br>NC5330           | 180~370<br>150~330<br>130~280                            | CNMM<br>p. B35                         |                   | SNMM<br>p. B51 |                |                |                |                |
| 6.0 ~ 10.0 ~ 15.0<br>Pesado (general)     | VH                                 | 0.70 ~ 1.00 ~ 1.40 | NC3215<br>NC3030<br>NC500H<br>NC5330 | 50~250<br>50~150<br>50~150<br>50~150                     | CNMM<br>p. B35                         |                   | SNMM<br>p. B51 |                |                |                |                |
| 7.0 ~ 12.0 ~ 17.0<br>Pesado (alto avance) | VT                                 | 0.75 ~ 1.20 ~ 1.60 | NC3215<br>NC3030<br>NC500H<br>NC5330 | 50~250<br>50~150<br>50~150<br>50~150                     | CNMM<br>p. B35                         |                   | SNMM<br>p. B51 |                |                |                |                |

●: Primera condición de corte recomendada



Pza. Trabajo  
**P**  
Acero

## Rompeviruta Recomendada Según Pza. Trabajo

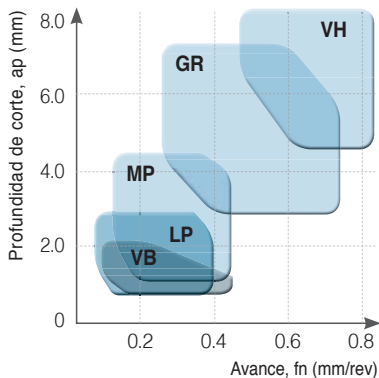
Material: SM10C, SM15C, SM25C, SS400, SCr415, SCM415, etc. Acero Suave

Dureza: Menor 180HB

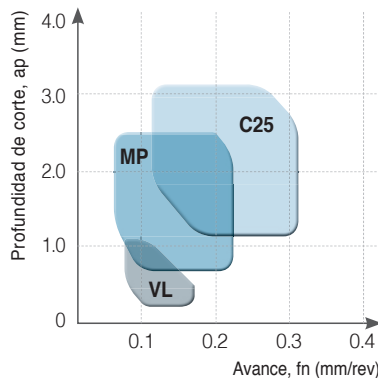
| Profundidad de corte (mm)               | C/B | Filo de corte | Avance (mm/rev) | Grados   | Velocidad de Corte (m/min)  | Forma del inserto |     |     |     |     |     |
|---|-----|---------------|-----------------|--|---|-------------------|-----|-----|-----|-----|-----|
|   |     |               |                 |  |   | 80°               | 55° | 90° | 60° | 35° | 80° |
| <b>Positivo</b><br>0.1 ~ 1.0<br>Acabado | VL  |               | 0.05 ~ 0.20     | NC3215 305<br>NC3220 270<br>NC3225 270<br>NC5330 210<br>CN1500 260<br>CN2500 240               | CCMT p. B68<br>DCMT p. B73<br>SCMT p. B75<br>TCMT p. B79<br>VB(C)MT p. B85    |                   |     |     |     |     |     |
|   | VF  |               | 0.05 ~ 0.25     | NC3215 305<br>NC3220 270<br>NC3225 270<br>NC5330 210<br>CC1500 260<br>CN1500 250<br>CN2500 230 | CCMT p. B68<br>DCMT p. B72<br>SCMT p. B74<br>TC(P)MT p. B79<br>VB(C)MT p. B84 |                   |     |     |     |     |     |
|   | HMP |               | 0.08 ~ 0.40     | NC3215 320<br>NC3220 285<br>NC3225 285<br>NC5330 225<br>CN1500 240<br>CN2500 220               | CCMT p. B69<br>DCMT p. B73<br>SCMT p. B75<br>TCMT p. B79<br>VB(C)MT p. B85    |                   |     |     |     |     |     |
|   | MP  |               | 0.10 ~ 0.35     | NC3215 300<br>NC3225 250<br>CN1500 240<br>CN2500 200   | CCMT p. B69<br>DCMT p. B73<br>SCMT p. B75<br>TC(P)MT p. B79<br>VB(C)MT p. B84 |                   |     |     |     |     |     |
|   | C25 |               | 0.10 ~ 0.35     | NC3215 320<br>NC3220 285<br>NC3225 285<br>NC5330 225<br>CN1500 230<br>CN2500 210               | CCMT p. B69<br>DCMT p. B73<br>SCMT p. B75<br>TCMT p. B80                      |                   |     |     |     |     |     |

●: Primera condición de corte recomendada

### **P** Negativo



### **P** Positivo



## Rompeviruta Recomendada Según Pza. Trabajo

Material: SM45C, SM55C, SCM430, SCM440, etc. Acero en General

Dureza: Menor 180~260HB

| Profundidad de corte (mm) | C/B                                       | Filo de corte | Avance (mm/rev)    | Grados   | Velocidad de Corte (m/min)                    | Forma del inserto |                |                |                   |                   |                |
|---------------------------|---|---------------|--------------------|--|---|-------------------|----------------|----------------|-------------------|-------------------|----------------|
|                           |   |               |                    |  |   | 80°               | 55°            | 90°            | 60°               | 35°               | 80°            |
| Negativo                  | 0.5 ~ 1.0 ~ 2.0<br>Acabado                | VB            | 0.15 ~ 0.20 ~ 0.40 | NC3215<br>NC3225<br>CN1500<br>CN2500                               | 340<br>250<br>230<br>190                      | CNMG<br>p. B28    | DNMG<br>p. B36 |                | TNMG<br>p. B54    |                   | WNMG<br>p. B62 |
|                           | 0.5 ~ 1.0 ~ 1.5<br>Acabado                | VF            | 0.05 ~ 0.15 ~ 0.35 | NC3215<br>NC3225<br>NC5330   | 305<br>270<br>250                             | CNMG<br>p. B28    | DNMG<br>p. B37 | SNMG<br>p. B46 | TNMG<br>p. B55    | VNMG<br>p. B60    | WNMG<br>p. B62 |
|                           | 0.5 ~ 1.5 ~ 3.5<br>Medio a Acabado        | VC            | 0.12 ~ 0.25 ~ 0.45 | NC3215<br>NC3220<br>NC3225<br>NC5330                               | 285<br>255<br>250<br>200                      | CNMG<br>p. B29    | DNMG<br>p. B38 | SNMG<br>p. B46 | TNMG<br>p. B55    | VNMG<br>p. B60    | WNMG<br>p. B63 |
|                           | 0.5 ~ 1.0 ~ 2.5<br>Medio a Acabado        | LP            | 0.10 ~ 0.25 ~ 0.40 | NC3215<br>NC3225<br>NC5330   | 300<br>250<br>200                             | CNMG<br>p. B29    | DNMG<br>p. B38 | SNMG<br>p. B46 | TNMG<br>p. B55    | VNMG<br>p. B60    | WNMG<br>p. B63 |
|                           | 0.5 ~ 1.5 ~ 4.5<br>Medio                  | MP            | 0.15 ~ 0.30 ~ 0.45 | NC3215<br>NC3225<br>NC5330   | 300<br>250<br>200                             | CNMG<br>p. B31    | DNMG<br>p. B39 | SNMG<br>p. B48 | TNMG<br>p. B56    | VNMG<br>p. B61    | WNMG<br>p. B64 |
|                           | 1.0 ~ 2.5 ~ 5.0<br>Medio                  | VM            | 0.10 ~ 0.25 ~ 0.50 | NC3215<br>NC3220<br>NC3225<br>NC5330<br>CN1500<br>CN2500           | 260<br>245<br>245<br>205<br>210<br>170        | CNMG<br>p. B32    | DNMG<br>p. B40 | SNMG<br>p. B48 | TNMG<br>p. B57    | VNMG<br>p. B61    | WNMG<br>p. B64 |
|                           | 1.0 ~ 3.0 ~ 4.5<br>Desbaste               | GR            | 0.20 ~ 0.35 ~ 0.50 | NC3125<br>NC3225<br>NC5330   | 180~370<br>150~330<br>130~280                 | CNMG<br>p. B33    | DNMG<br>p. B41 | SNMG<br>p. B49 | TNMG<br>p. B58    |                   | WNMG<br>p. B64 |
|                           | 6.0 ~ 10.0 ~ 15.0<br>Pesado (general)     | VH            | 0.70 ~ 1.00 ~ 1.40 | NC3215<br>NC3030<br>NC500H<br>NC5330                               | 50~250<br>50~150<br>50~150<br>50~150          | CNMM<br>p. B35    |                | SNMM<br>p. B51 |                   |                   |                |
|                           | 7.0 ~ 12.0 ~ 17.0<br>Pesado (alto avance) | VT            | 0.75 ~ 1.20 ~ 1.60 | NC3215<br>NC3030<br>NC500H<br>NC5330                               | 50~250<br>50~150<br>50~150<br>50~150          | CNMM<br>p. B35    |                | SNMM<br>p. B51 |                   |                   |                |
| Positivo                  | 0.1 ~ 0.5 ~ 1.0<br>Acabado                | VL            | 0.05 ~ 0.10 ~ 0.20 | NC3215<br>NC3220<br>NC3225<br>NC5330<br>CN1500<br>CN2500           | 345<br>310<br>310<br>240<br>250<br>210        | CCMT<br>p. B68    | DCMT<br>p. B73 | SCMT<br>p. B75 | TCMT<br>p. B79    | VB(C)MT<br>p. B85 |                |
|                           | 0.1 ~ 0.5 ~ 1.5<br>Acabado                | VF            | 0.05 ~ 0.15 ~ 0.25 | NC3215<br>NC3220<br>NC3225<br>NC5330<br>CC1500<br>CN1500<br>CN2500 | 265<br>300<br>300<br>230<br>260<br>240<br>210 | CCMT<br>p. B68    | DCMT<br>p. B72 | SCMT<br>p. B74 | TC(P)MT<br>p. B79 | VCMT<br>p. B84    |                |
|                           | 0.3 ~ 1.5 ~ 3.0<br>Medio a Acabado        | MP            | 0.05 ~ 0.15 ~ 0.35 | NC3215<br>NC3225   | 300<br>250                                    | CCMT<br>p. B69    | DCMT<br>p. B73 | SCMT<br>p. B75 | TC(P)MT<br>p. B80 | VB(C)MT<br>p. B85 |                |
|                           | 1.0 ~ 2.0 ~ 3.0<br>Medio                  | C25           | 0.10 ~ 0.15 ~ 0.35 | NC3215<br>NC3220<br>NC3225<br>NC5330<br>CN1500<br>CN2500           | 320<br>285<br>285<br>225<br>230<br>200        | CCMT<br>p. B69    | DCMT<br>p. B73 | SCMT<br>p. B75 | TCMT<br>p. B80    |                   |                |

●: Primera condición de corte recomendada





Pza. Trabajo  
**P**  
Acero

## Rompeviruta Recomendada Según Pza. Trabajo

Material: SNC415, SNC815, SNCM240, SNCM439, STS12, STS61, etc  
SCM440, Acero Endurecido

Dureza: 260~350HB

| Profundidad de corte (mm)       | C/B                                    | Filo de corte           | Avance (mm/rev)    | Grados   | Velocidad de Corte (m/min)                               | Forma del inserto                      |                |                |                   |                   |                   |
|---------------------------------|--|-------------------------|--------------------|--|--|--|----------------|----------------|-------------------|-------------------|-------------------|
|                                 |  |                         |                    |  |  | 80°                                    | 55°            | 90°            | 60°               | 35°               | 80°               |
| Negativo                        | 0.5 ~ 1.0 ~ 2.0 Acabado                | VB                      | 0.15 ~ 0.20 ~ 0.40 | NC3215<br>NC3225<br>CN1500<br>CN2500                               | 200<br>148<br>220<br>200                                 | CNMG<br>p. B28                         | DNMG<br>p. B36 |                | TNMG<br>p. B55    |                   | WNMG<br>p. B62    |
|                                 | 0.5 ~ 1.0 ~ 1.5 Acabado                | VF                      | 0.08 ~ 0.15 ~ 0.30 | NC3215<br>NC3225   | 180<br>159   | CNMG<br>p. B28                         | DNMG<br>p. B37 | SNMG<br>p. B46 | TNMG<br>p. B55    | VNMG<br>p. B60    | WNMG<br>p. B62    |
|                                 | 0.5 ~ 1.5 ~ 3.5 Medio a Acabado        | VC                      | 0.12 ~ 0.25 ~ 0.45 | NC3215<br>NC3220<br>NC3225<br>NC5330                               | 168<br>148<br>150<br>200                                 | CNMG<br>p. B29                         | DNMG<br>p. B38 | SNMG<br>p. B46 | TNMG<br>p. B55    | VNMG<br>p. B60    | WNMG<br>p. B63    |
|                                 | 0.5 ~ 1.0 ~ 2.5 Medio a Acabado        | LP                      | 0.10 ~ 0.25 ~ 0.40 | NC3215<br>NC3225<br>NC5330   | 250<br>200<br>200  | CNMG<br>p. B29                         | DNMG<br>p. B38 | SNMG<br>p. B46 | TNMG<br>p. B55    | VNMG<br>p. B60    | WNMG<br>p. B63    |
|                                 | 0.5 ~ 1.5 ~ 4.5 Medio                  | MP                      | 0.15 ~ 0.30 ~ 0.45 | NC3215<br>NC3225<br>NC5330   | 250<br>200<br>200  | CNMG<br>p. B31                         | DNMG<br>p. B39 | SNMG<br>p. B48 | TNMG<br>p. B56    | VNMG<br>p. B61    | WNMG<br>p. B64    |
|                                 | 1.0 ~ 2.5 ~ 5.0 Medio                  | VM                      | 0.15 ~ 0.25 ~ 0.50 | NC3215<br>NC3220<br>NC3225<br>CN1500<br>CN2500                     | 174<br>153<br>153<br>120<br>100                          | CNMG<br>p. B32                         | DNMG<br>p. B40 | SNMG<br>p. B48 | TNMG<br>p. B57    | VNMG<br>p. B61    | WNMG<br>p. B64    |
|                                 | 1.0 ~ 3.0 ~ 4.5 Desbaste               | GR                      | 0.20 ~ 0.35 ~ 0.50 | NC3125<br>NC3225<br>NC5330   | 180~370<br>150~330<br>130~280                            | CNMG<br>p. B33                         | DNMG<br>p. B41 | SNMG<br>p. B49 | TNMG<br>p. B58    |                   | WNMG<br>p. B64    |
|                                 | 6.0 ~ 10.0 ~ 15.0 Pesado (general)     | VH                      | 0.70 ~ 1.00 ~ 1.40 | NC3215<br>NC3030<br>NC500H<br>NC5330                               | 50~250<br>50~150<br>50~150<br>50~150                     | CNMM<br>p. B35                         |                | SNMM<br>p. B51 |                   |                   |                   |
|                                 | 7.0 ~ 12.0 ~ 17.0 Pesado (alto avance) | VT                      | 0.75 ~ 1.20 ~ 1.60 | NC3215<br>NC3030<br>NC500H<br>NC5330                               | 50~250<br>50~150<br>50~150<br>50~150                     | CNMM<br>p. B35                         |                | SNMM<br>p. B51 |                   |                   |                   |
|                                 | Positivo                               | 0.1 ~ 0.5 ~ 1.0 Acabado | VL                 | 0.05 ~ 0.10 ~ 0.20   | NC3215<br>NC3220<br>NC3225<br>NC5330<br>CN1500<br>CN2500 | 305<br>310<br>310<br>240<br>210<br>190 | CCMT<br>p. B68 | DCMT<br>p. B73 | SCMT<br>p. B75    | TCMT<br>p. B79    | VB(C)MT<br>p. B85 |
| 0.1 ~ 0.5 ~ 1.5 Acabado         |  | VF                      | 0.05 ~ 0.15 ~ 0.25 | NC3215<br>NC3220<br>NC3225<br>NC5330<br>CC1500<br>CN1500<br>CN2500 | 330<br>300<br>300<br>230<br>260<br>250<br>240            | CCMT<br>p. B68                         | DCMT<br>p. B72 | SCMT<br>p. B74 | TC(P)MT<br>p. B79 | VB(C)MT<br>p. B84 |                   |
| 0.3 ~ 1.5 ~ 3.0 Medio a Acabado |  | MP                      | 0.05 ~ 0.15 ~ 0.35 | NC3215<br>NC3225<br>NC5300<br>CN1500<br>CN2500                     | 305<br>285<br>225<br>240<br>220                          | CCMT<br>p. B69                         | DCMT<br>p. B73 | SCMT<br>p. B75 | TC(P)MT<br>p. B80 | VB(C)MT<br>p. B85 |                   |
| 1.0 ~ 2.0 ~ 3.0 Medio           |  | C25                     | 0.10 ~ 0.15 ~ 0.35 | NC3215<br>NC3220<br>NC3225<br>NC5330<br>CN1500<br>CN2500           | 320<br>285<br>285<br>225<br>100<br>80                    | CCMT<br>p. B69                         | DCMT<br>p. B73 | SCMT<br>p. B75 | TCMT<br>p. B80    |                   |                   |

●: Primera condición de corte recomendada

## Rompeviruta Recomendada Según Pza. Trabajo

Material: STS304, STS316, STS430, STS630

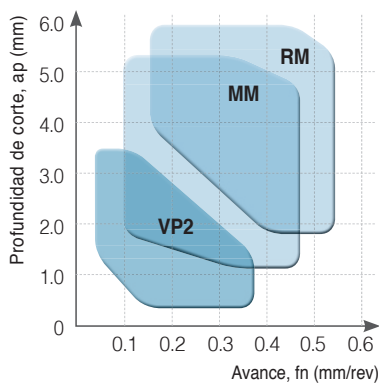
Aceros inoxidables: ferrítico, austenítico, martensítico, endurecido por precipitación

Dureza: 135~300HB

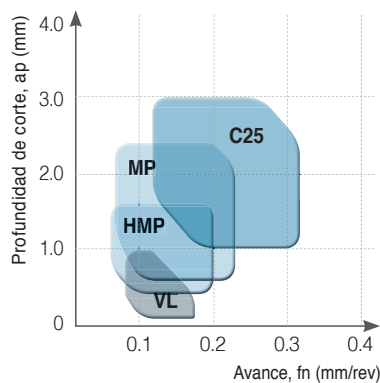
| Profundidad de corte (mm)                      | C/B | Filo de corte | Avance (mm/rev)    | Grados   | Velocidad de Corte (m/min) | Forma del inserto |             |             |                |                            |     |
|--|-----|---------------|--------------------|--|----------------------------|-------------------|-------------|-------------|----------------|----------------------------|-----|
|  |     |               |                    |  |                            | 80°               | 55°         | 90°         | 60°            | 35°                        | 80° |
| Negativo<br>0.5 ~ 1.5 ~ 4.0<br>Medio a Acabado | VP2 |               | 0.10 ~ 0.20 ~ 0.40 | PC8105 185<br>PC8110 170<br>PC8115 160<br>PC5300 135<br>PC5400 120                             | 185                        | CNMG p. B30       | DNMG p. B38 | SNMG p. B46 | TNMG p. B55    | WNMG p. B63                |     |
|  | MP  |               | 0.15 ~ 0.23 ~ 0.45 | PC8105 175<br>PC8110 160<br>PC8115 150<br>PC5300 130<br>PC5400 110                             | 175                        | CNMG p. B31       | DNMG p. B39 | SNMG p. B48 | TNMG p. B56    | VNMG p. B61<br>WNMG p. B64 |     |
|  | MM  |               | 0.12 ~ 0.25 ~ 0.45 | NC9115 190<br>NC9125 170<br>NC9135 130<br>PC8110 160<br>PC8115 150<br>PC5300 130               | 190                        | CNMG p. B31       | DNMG p. B39 | SNMG p. B47 | TNMG p. B56    | VNMG p. B61<br>WNMG p. B63 |     |
|  | RM  |               | 0.15 ~ 0.30 ~ 0.55 | NC9115 190<br>NC9125 170<br>NC9135 130<br>PC8110 160<br>PC8115 150<br>PC5300 130               | 190                        | CNMG p. B33       | DNMG p. B42 | SNMG p. B50 | TNMG p. B58    | VNMG p. B61<br>WNMG p. B65 |     |
| Positivo<br>0.1 ~ 0.5 ~ 1.0<br>Acabado         | VL  |               | 0.05 ~ 0.10 ~ 0.20 | PC8105 215<br>PC8110 195<br>PC8115 190<br>PC5300 165<br>PC5400 135<br>NC5330 165<br>NC9025 165 | 215                        | CCMT p. B68       | DCMT p. B73 | SCMT p. B75 | TCMT p. B79    | VB(C)MT p. B85             |     |
|  | HMP |               | 0.05 ~ 0.10 ~ 0.25 | PC8105 190<br>PC8110 175<br>PC8115 170<br>PC5300 135<br>PC5400 120<br>NC5330 150<br>NC9025 150 | 190                        | CCMT p. B69       | DCMT p. B73 | SCMT p. B75 | TCMT p. B79    | VB(C)MT p. B85             |     |
|  | MP  |               | 0.05 ~ 0.15 ~ 0.35 | PC8105 190<br>PC8110 175<br>PC8115 170<br>PC5300 135<br>PC5400 120<br>NC5330 150<br>NC9025 150 | 190                        | CCMT p. B69       | DCMT p. B73 | SCMT p. B75 | TC(P)MT p. B80 | VB(C)MT p. B85             |     |
|  | C25 |               | 0.08 ~ 0.13 ~ 0.25 | PC8110 170<br>PC9030 155   | 170                        | CCMT p. B69       | DCMT p. B73 | SCMT p. B75 | TCMT p. B80    |                            |     |

●: Primera condición de corte recomendada

### M Negativo



### M Positivo



Pza. Trabajo  
**K**  
Fundición

## Rompeviruta Recomendada Según Pza. Trabajo

Material: GC250, GC300, GCD400, GCD700, etc : Fundición Gris, FundiciónDuctil

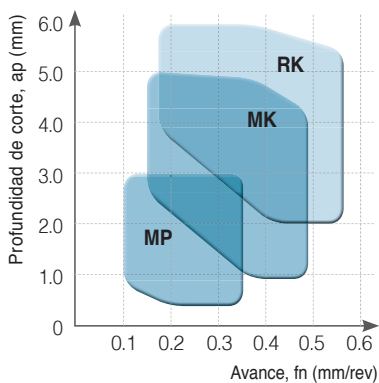
Dureza: 135~185HB

Resistencia Tensil: Menor 450N/mm<sup>2</sup>

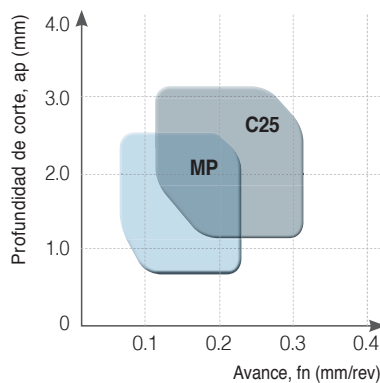
| Profundidad de corte (mm) | C/B                                      | Filo de corte | Avance (mm/rev)          | Grados  | Velocidad de Corte (m/min)                           | Forma del inserto |                |                |                   |                   |                |
|---------------------------|--|---------------|--------------------------|---|--|-------------------|----------------|----------------|-------------------|-------------------|----------------|
|                           |  |               |                          |   |  | 80°               | 55°            | 90°            | 60°               | 35°               | 80°            |
| <b>Negativo</b>           | 1.0 ~<br>3.0<br>~ 4.5<br>Desbaste        | VR            | 0.20 ~<br>0.35<br>~ 0.60 | NC6310  | 220~420  | CNMG<br>p. B34    | DNMG<br>p. B42 | SNMG<br>p. B50 | TNMG<br>p. B58    |                   | WNMG<br>p. B65 |
|                           | 1.5 ~<br>3.0<br>~ 6.0<br>Desbaste        | RK            | 0.20 ~<br>0.30<br>~ 0.60 | NC6310  | 350~550  | CNMG<br>p. B33    | DNMG<br>p. B41 | SNMG<br>p. B49 | TNMG<br>p. B58    |                   | WNMG<br>p. B65 |
|                           | 1.0 ~<br>2.5<br>~ 6.0<br>Desbaste        | C/B libre     | 0.15 ~<br>0.30<br>~ 0.60 | DB1000<br>DBN500<br>DBN700A<br>NC6310<br>NC6315 | 150~200<br>200~500<br>500~2000<br>140~420<br>120~290 | CNMA<br>p. B28    | DNMA<br>p. B36 | SNMA<br>p. B45 | TNMA<br>p. B54    |                   |                |
|                           | 1.0 ~<br>2.5<br>~ 5.0<br>Medio a Acabado | MK            | 0.10 ~<br>0.25<br>~ 0.50 | NC6310  | 350~550  | CNMG<br>p. B30    | DNMG<br>p. B39 | SNMG<br>p. B47 | TNMG<br>p. B56    | VNMG<br>p. B61    | WNMG<br>p. B63 |
|                           | 0.5 ~<br>2.0<br>~ 3.5<br>Medio a Acabado | B25           | 0.20 ~<br>0.35<br>~ 0.60 | NC6310<br>NC6315                                | 140~380<br>120~290                                   | CNMG<br>p. B32    | DNMG<br>p. B41 | SNMG<br>p. B49 | TNMG<br>p. B57    |                   |                |
|                           | 0.5 ~<br>1.0<br>~ 2.5<br>Acabado         | MP            | 0.10 ~<br>0.25<br>~ 0.45 | NC6310<br>NC6315                                | 140~380<br>120~290                                   | CNMG<br>p. B31    | DNMG<br>p. B39 | SNMG<br>p. B48 | TNMG<br>p. B56    | VNMG<br>p. B61    | WNMG<br>p. B64 |
| <b>Positivo</b>           | 0.3 ~<br>1.5<br>~ 3.0<br>Medio a Acabado | MP            | 0.10 ~<br>0.20<br>~ 0.35 | NC6310  | 225~290  | CCMT<br>p. B69    | DCMT<br>p. B73 | SCMT<br>p. B75 | TC(P)MT<br>p. B80 | VB(C)MT<br>p. B85 |                |
|                           | 1.0 ~<br>2.0<br>~ 3.5<br>Medio           | C25           | 0.10 ~<br>0.25<br>~ 0.40 | NC6310<br>NC6315                                | 285~340<br>200                                       | CCMT<br>p. B69    | DCMT<br>p. B73 | SCMT<br>p. B75 | TCMT<br>p. B80    |                   |                |

● : Primera condición de corte recomendada

### **K** Negativo



### **K** Positivo



## Rompeviruta Recomendada Según Pza. Trabajo

Material: Aleación de Aluminio

Dureza: 20~110HB

| Profundidad de corte (mm)                             | C/B | Filo de corte | Avance (mm/rev)    | Grados                  | Velocidad de Corte (m/min) | Forma del inserto |                |                |                |                   |                |
|---|-----|---------------|--------------------|-------------------------|----------------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|
|   |     |               |                    |                         |                            | 80°               | 55°            | 90°            | 60°            | 35°               | 80°            |
| <b>Negativo</b><br>0.5 ~ 2.0 ~ 6.0<br>Medio a Acabado | HA  |               | 0.10 ~ 0.20 ~ 0.50 | H01                     | 500                        | CNMG<br>p. B29    | DNMG<br>p. B37 | SNMG<br>p. B46 | TNMG<br>p. B55 | VNMG<br>p. B60    | WNMG<br>p. B62 |
|   |     |               |                    |                         |                            |                   |                |                |                |                   |                |
| <b>Positivo</b><br>0.1 ~ 1.0 ~ 4.0<br>Medio a Acabado | AK  |               | 0.03 ~ 0.20 ~ 0.40 | H01<br>ND1000<br>PD1000 | 1000                       | CCGT<br>p. B91    | DCGT<br>p. B92 | SCGT<br>p. B94 | TCGT<br>p. B93 | VB(C)GT<br>p. B95 | RCGT<br>p. B93 |
|   | AR  |               | 0.05 ~ 0.30 ~ 0.50 | H01<br>ND1000<br>PD1000 | 1000                       | CCGT<br>p. B91    | DCGT<br>p. B92 | SCGT<br>p. B94 | TCGT<br>p. B95 | VB(C)GT<br>p. B96 | RCGT<br>p. B93 |

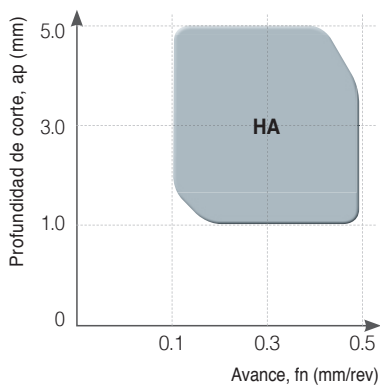
Material: Aleación de Cobre y Bronce

Dureza: 20~110HB

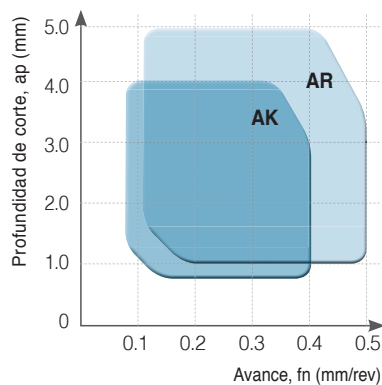
| Profundidad de corte (mm)                             | C/B | Filo de corte | Avance (mm/rev)    | Grados | Velocidad de Corte (m/min) | Forma del inserto |                |                |                |                   |                |
|---|-----|---------------|--------------------|--------|----------------------------|-------------------|----------------|----------------|----------------|-------------------|----------------|
|   |     |               |                    |        |                            | 80°               | 55°            | 90°            | 60°            | 35°               | 80°            |
| <b>Negativo</b><br>0.5 ~ 2.0 ~ 4.0<br>Medio a Acabado | HA  |               | 0.10 ~ 0.20 ~ 0.50 | H01    | 1000                       | CNMG<br>p. B29    | DNMG<br>p. B37 | SNMG<br>p. B46 | TNMG<br>p. B55 | VNMG<br>p. B60    | WNMG<br>p. B62 |
|   |     |               |                    |        |                            |                   |                |                |                |                   |                |
| <b>Positivo</b><br>0.1 ~ 1.0 ~ 3.0<br>Medio a Acabado | AK  |               | 0.03 ~ 0.20 ~ 0.30 | H01    | 1000                       | CCGT<br>p. B91    | DCGT<br>p. B92 | SCGT<br>p. B94 | TCGT<br>p. B95 | VB(C)GT<br>p. B96 | RCGT<br>p. B93 |
|   | AR  |               | 0.05 ~ 0.25 ~ 0.40 | H01    | 1000                       | CCGT<br>p. B91    | DCGT<br>p. B92 | SCGT<br>p. B94 | TCGT<br>p. B95 | VB(C)GT<br>p. B96 | RCGT<br>p. B93 |

●: Primera condición de corte recomendada

### N Negativo



### N Positivo



Pza. Trabajo  
**S**  
Aleaciones Resist. al calor

## Rompeviruta Recomendada Según Pza. Trabajo

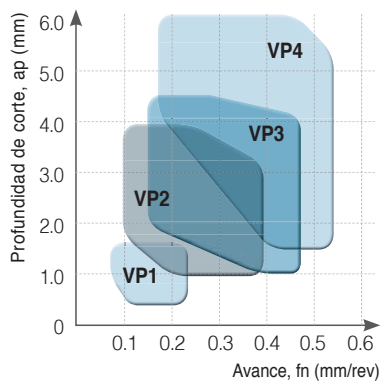
Material: Inconel, Nimonic, Estellita, Aleacion Titanio

Dureza: 160~350HB

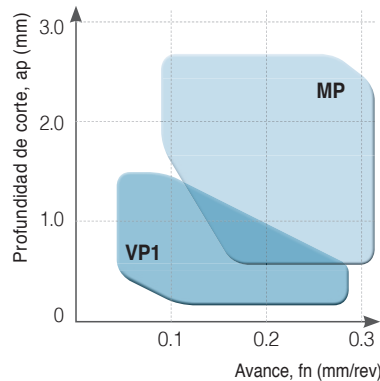
| Profundidad de corte (mm)               | C/B | Filo de corte | Avance (mm/rev)      | Grados                     | Velocidad de Corte (m/min) | Forma del inserto |                |                |                   |                |                        |
|---|-----|---------------|----------------------|----------------------------|----------------------------|-------------------|----------------|----------------|-------------------|----------------|------------------------|
|   |     |               |                      |                            |                            | 80°               | 55°            | 90°            | 60°               | 35°            | 80°                    |
| <b>Negativo</b><br>0.1 ~ 1.5<br>Acabado | VP1 |               | 0.05 ~ 0.10<br>~0.20 | PC8110<br>PC5300<br>NC5330 | 60<br>50<br>50             | CNGG<br>p. B28    | DNGG<br>p. B36 |                |                   |                |                        |
|   | VP2 |               | 0.10 ~ 0.20<br>~0.40 | PC8110<br>PC5300           | 60<br>45                   | CNMG<br>p. B30    | DNMG<br>p. B38 | SNMG<br>p. B46 | TNMG<br>p. B55    |                | WNMG<br>p. B63         |
|   | VP3 |               | 0.05 ~ 0.15<br>~0.25 | PC8110<br>PC5300           | 60<br>40                   | CNMG<br>p. B32    | DNMG<br>p. B40 | SNMG<br>p. B48 | TNMG<br>p. B57    | VNMG<br>p. B61 | WNMG<br>p. B64         |
|   | VP4 |               | 0.15 ~ 0.20<br>~0.35 | PC8115                     | 60<br>40                   | CNMG<br>p. B34    | DNMG<br>p. B42 | SNMG<br>p. B50 | TNMG<br>p. B58    |                | WNMG<br>p. B65         |
| <b>Positivo</b><br>0.1 ~ 1.5<br>Acabado | VP1 |               | 0.05 ~ 0.10<br>~0.20 | PC8110<br>PC5300           | 60<br>45                   | CCGT<br>p. B67    | DCGT<br>p. B72 |                |                   | VCGT<br>p. B86 |                        |
|   | VL  |               | 0.05 ~ 0.10<br>~0.20 | PC8110<br>PC8115           | 60<br>50                   | CCMT<br>p. B68    | DCMT<br>p. B73 | SCMT<br>p. B75 | TCMT<br>p. B79    |                | VCMT<br>p. B87         |
|   | MP  |               | 0.10 ~ 0.20<br>~0.35 | PC8110<br>PC8115           | 60<br>50                   | CCMT<br>p. B69    | DCMT<br>p. B73 | SCMT<br>p. B75 | TC(P)MT<br>p. B80 |                | VB(C)MT<br>p. B85(B87) |

●: Primera condición de corte recomendada

### S Negativo



### S Positivo



## Características rompe virutas

# Rompe virutas LP new [ Para corte medio a acabado ]

- Triturador de virutas para acero forjado de partes de automóviles y acero normal
- Los puntos cuádruples mejoran la productividad a través del control eficiente de chips en alta alimentación
- Ángulo de tierra minimiza la fuerza de corte

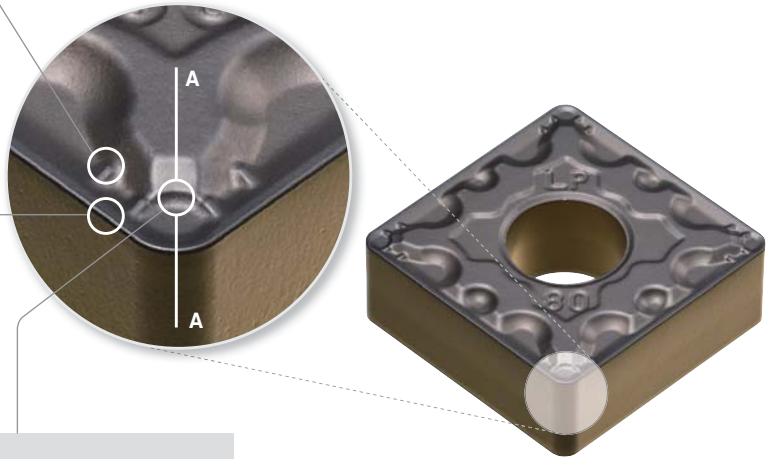
### Características rompe virutas LP

#### ► Punto frontal

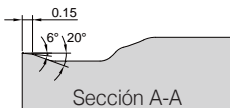
- Mayor estabilidad de los rizos de viruta en alta alimentación
- Excelente control de viruta al copiar.
- Menor fuerza de corte a baja profundidad de corte y alta alimentación

#### ► Ángulo del rompeviruta variable

- Menor desgaste en cara
- Ayuda a prevenir el despostillamiento en el filo secundario

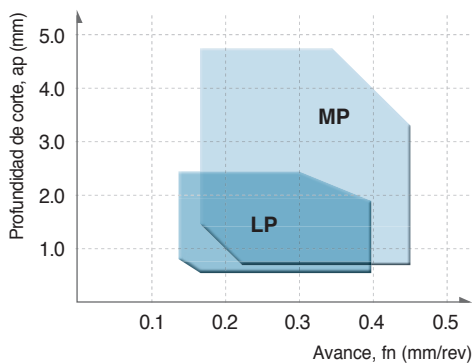


#### ► Espaciado rompe virutas



- Bolsillo de viruta más grande para una mejor evacuación de viruta en alta alimentación
- Fuerza de corte reducida con mayor contacto superficie de chips

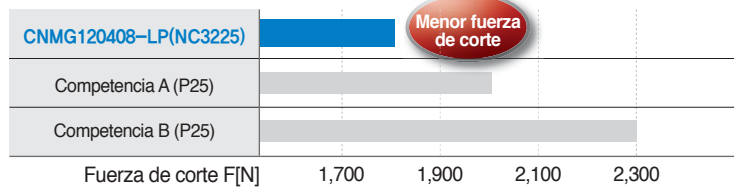
### Rango de aplicación



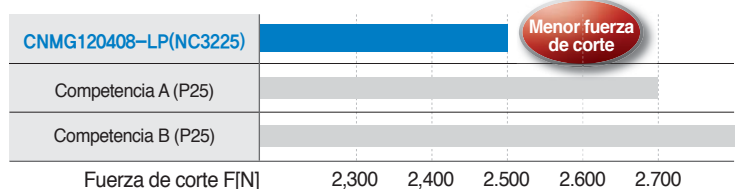
### Evaluación de prueba (medición fuerza de corte)

- **Pieza trabajo** SM45C, Ø100, Maquinado externo
- **Condiciones de corte**  $v_c$  (m/min) = 250,  $a_p$  (mm) = 1.0,  $f_n$  (mm/rev) = 0.25/0.40, con Lubricante
- **Herramientas** CNMG120408-□□

#### Avance medio (0.25 mm/rev)



#### Alto avance (0.40 mm/rev)



# Características rompe virutas

## Rompe virutas MP new [ Para corte medio ]

- Rompevirutas para acero forjado de partes de automóviles y todos los demás aceros
- Los puntos cuádruples mejoran la productividad a través del control eficiente de chips en alta alimentación
- Ángulo de tierra minimiza la fuerza de corte

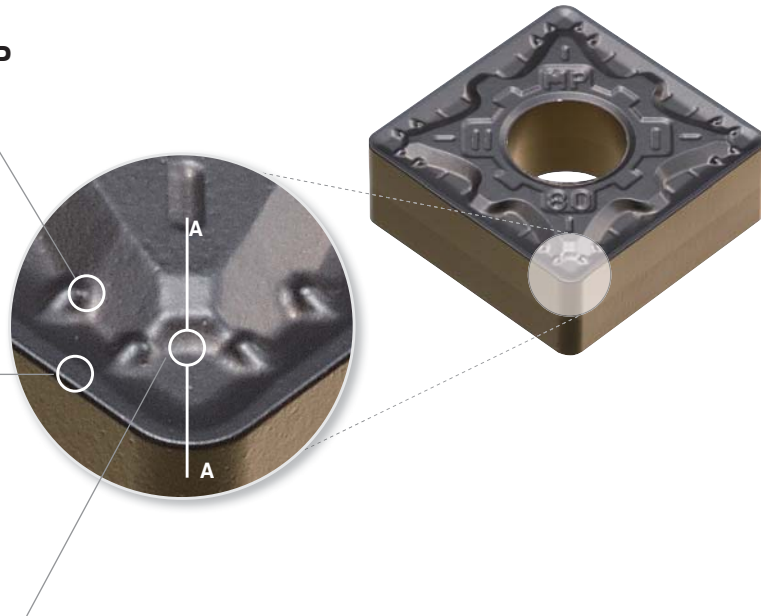
### Características rompe virutas MP

#### ► Rompe virutas con aristas frontales

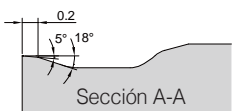
- Mayor estabilidad de los rizos de viruta en alta alimentación
- Excelente control de viruta al copiar.
- Menor fuerza de corte a baja profundidad de corte y alta alimentación

#### ► Ángulo del rompeviruta variable

- Menor desgaste en cara
- Evita el astillado en el borde de corte menor
- Mayor tenacidad a gran profundidad de corte y corte interrumpido

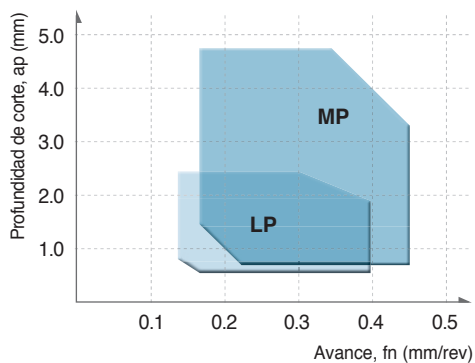


#### ► Espaciado rompe virutas



- Bolsillo de viruta más grande para una mejor evacuación de viruta en alta alimentación
- Fuerza de corte reducida con mayor contacto superficie de chips

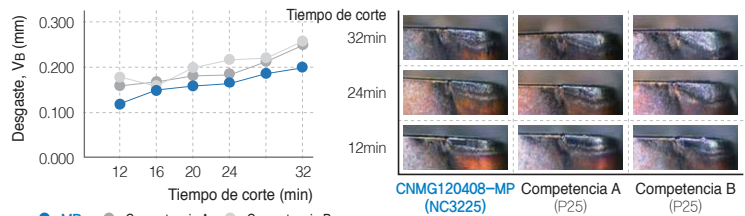
### Rango de aplicación



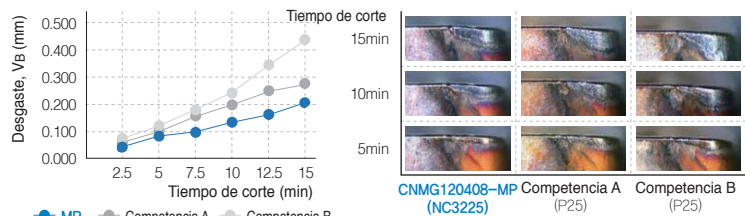
### Evaluación de prueba

- **Pieza trabajo** SCM440 (Acero aleado), Ø100, Maquinado exterior
- **Condiciones de corte**  $vc$  (m/min) = 280,  $ap$  (mm) = 1.5,  $fn$  (mm/rev) = 0.25/0.40, con Lubricante
- **Herramientas** CNMG120408-□□

#### Avance medio (0.25 mm/rev)



#### Avance medio (0.40 mm/rev)



## Características rompe virutas

### Rompe virutas MM new [ Para corte medio ]

- Primer rompevirutas recomendado para el mecanizado de acero inoxidable
- Cambio a: un doble ángulo del rompeviruta logra un rendimiento de corte agudo y mayor resistencia
- Bolsillos anchos para virutas para una evacuación estable de las virutas en grandes avances / profundidades de corte

#### Características rompe virutas MM

##### ▶ Ángulo del rompeviruta variable

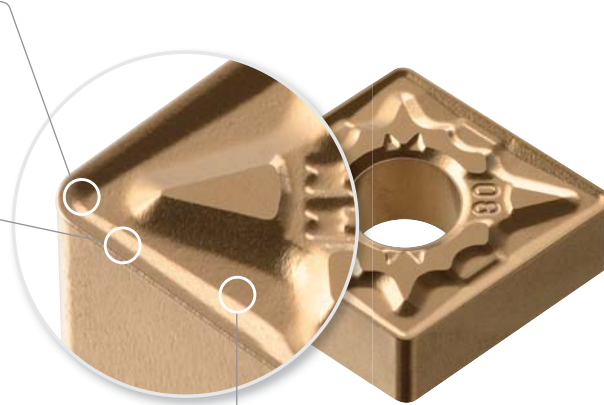
- Excelente control de viruta y corte agudo a bajas profundidades de corte
- Retrasa el desgaste del cráter
- Previene la deformación plástica

##### ▶ Ángulo doble en arista de corte

- Equilibrio entre requisitos de agudo y resistente los bordes de corte
- Filo afilado para el mecanizado de alta velocidad
- Evita el astillado en mecanizado interrumpido

##### ▶ Espaciado ancho para viruta

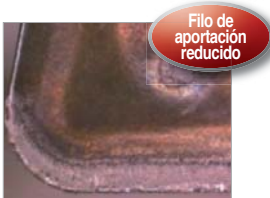
- Evacuación estable de viruta a altas velocidades / avances
- Acabado superficial mejorado al evitar melladuras y arañazos causados por virutas endurecidas de la pieza de trabajo al ser arrancadas en altas profundidades de corte
- Previene el recrecimiento del filo de corte (filo de aportación)



#### Evaluación de prueba

##### Filo de aportación

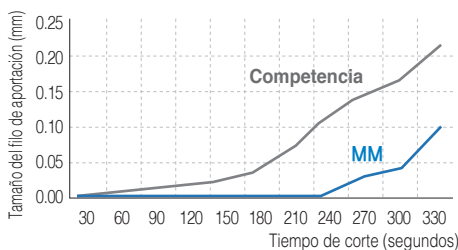
- **Pieza trabajo** STS405 (Ferrítico)
- **Condiciones de corte**  $vc$  (m/min) = 180,  $fn$  (mm/rev) = 0.3,  $ap$  (mm) = 3.0, con Lubricante
- **Herramientas** Inserto : CNMG120408-MM (NC9125)  
Porta : PCLNL2525-M12



MM(NC9125)



Competencia

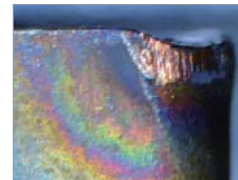


##### Deformación plástica

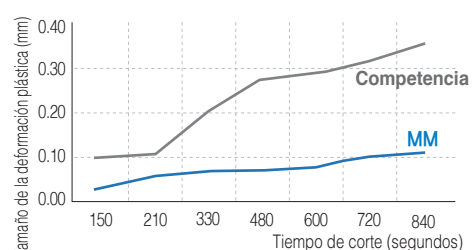
- **Pieza trabajo** STS316 (Austenítico)
- **Condiciones de corte**  $vc$  (m/min) = 200,  $fn$  (mm/rev) = 0.35,  $ap$  (mm) = 2.0, sin Lubricante
- **Herramientas** Inserto : CNMG120408-MM (NC9135)  
Porta : PCLNL2525-M12



MM(NC9135)



Competencia





# Características rompe virutas

## Rompe virutas RM new [ Para desbaste ]

- Primer rompe viruta recomendado para mecanizado fuertes e interrumpidos de acero inoxidable
- Previene el desgaste en muesca y las rebabas con avances altos y altas profundidades de corte
- La fuerza de corte reducida prolonga la vida útil de la herramienta en el mecanizado de alto avance

### Características rompe virutas RM

#### ▶ Ángulo del rompeviruta variable

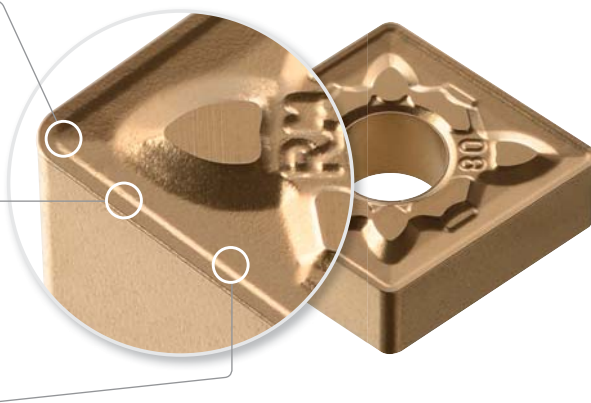
- Excelente control de viruta y corte agudo a bajas profundidades de corte
- Retrasa el desgaste en cara
- Previene la deformación plástica

#### ▶ Ángulo del rompevirutas leve espaciado

- Filo de corte afilado y borde de corte ancho para reducir la fuerza de corte
- Rebabas reducidas
- La carga de corte dispersa permite una mayor tenacidad

#### ▶ Diseño diferencial

- El diseño escalonado facilita la evacuación de viruta
- La suave evacuación de viruta evita la deformación plástica



### Evaluación de prueba

#### Desgaste en muesca

- **Pieza trabajo** STS410 (Martensite)
- **Condiciones de corte**  $vc$  (m/min) = 150,  $fn$  (mm/rev) = 0.25,  $ap$  (mm) = 3.0, con Lubricante
- **Herramientas** **Inserto** : CNMG120408-RM (NC9115)  
**Porta** : PCLNL2525-M12

#### Rebaba

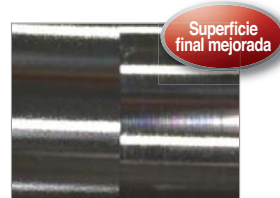
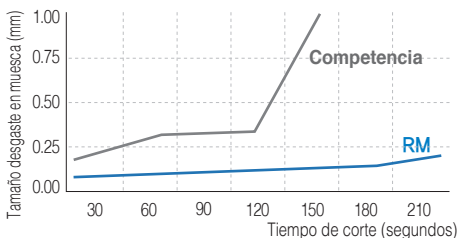
- **Pieza trabajo** Dúplex
- **Condiciones de corte**  $vc$  (m/min) = 120,  $fn$  (mm/rev) = 0.2,  $ap$  (mm) = 2.0, in Lubricante
- **Herramientas** **Inserto** : CNMG120408-RM (NC9125)  
**Porta** : PCLNL2525-M12



RM(NC9115)



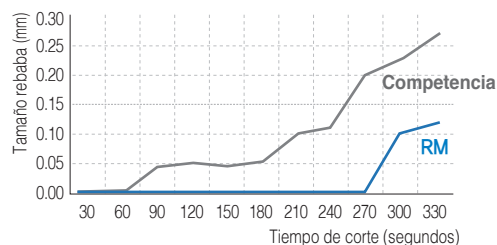
Competencia



RM(NC9125)



Competencia



## Características rompe virutas

### Rompe virutas MK new [ Para corte medio ]

- Ideal para cortes continuos de fundición dúctil y fundición gris
- Borde del filo de corte en ángulo proporciona un acabado de superficie mejorado

#### Características rompe virutas MK

##### Borde del filo de corte en ángulo



- Borde del filo de corte en ángulo proporciona un mejor rendimiento de corte
- Máxima resistencia al desgaste en corte continuo
- Resultados de alta calidad en acabado superficial

##### Área de soporte ancha

- Mayor estabilidad de sujeción
- Previene las astillas en las vibraciones durante la operación



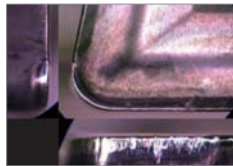
#### Evaluación de prueba

##### Prueba de resistencia al desgaste

- **Pieza trabajo** GCD500(KS), Ø90 (Tubo esférico) → Maquinado hasta Ø30
- **Condiciones de corte**  $vc$  (m/min) = 400,  $fn$  (mm/rev) = 0.35,  $ap$  (mm) = 2.5, con Lubricante
- **Tiempo de corte** 30 pasadas con buenos resultados indicando un desgaste normal tanto en cara como en flanco
- **Herramientas** Inserto: CNMG120408-MK (NC6315)  
Porta : DCLNR2525-M12

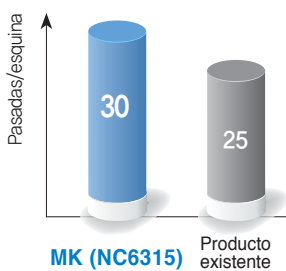


MK (NC6315)

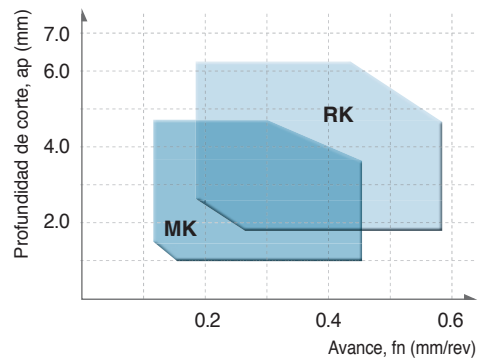


Producto existente

Resistencia al desgaste en flanco incrementada un 130%



#### Rango de corte recomendado



## Características rompe virutas

# Rompe virutas RK new [ Para desbaste ]

- Ideal para cortes de alta velocidad / avance de fundición dúctil y fundición gris
- Borde del filo de corte plano proporciona mejor resistencia al astillado

### Características rompe virutas RK

#### Borde plano



- Borde del filo de corte plano proporciona mayor tenacidad y mas resistencia al astillado
- Disponibilidad de mecanizado estable bajo altas cargas a gran profundidad de corte o corte interrumpido
- Ancho de tierra optimizado para maquinado de alto avance



#### Área de soporte ancha

- Mayor estabilidad de sujeción
- Minimiza vibración y astillado

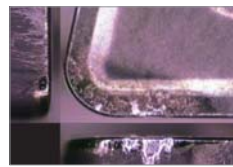
### Evaluación de prueba

#### Prueba de resistencia al impacto

- **Pieza trabajo** GCD500(KS), Ø90 (Pieza forma triangular) → Maquinado hasta Ø30
- **Condiciones de corte**  $vc$  (m/min) = 380,  $fn$  (mm/rev) = 0.35,  $ap$  (mm) = 2, con Lubricante
- **Tiempo de corte** 15 pasadas mostrando resultados de desgaste en cara normales y buena resistencia al astillado
- **Herramientas** **Insert** : CNMG120408-RK (NC6315)  
**Holder** : DCLNR2525-M12

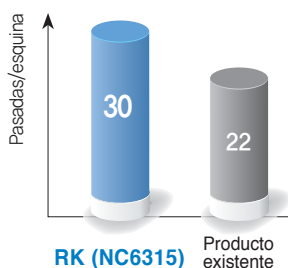


RK (NC6315)

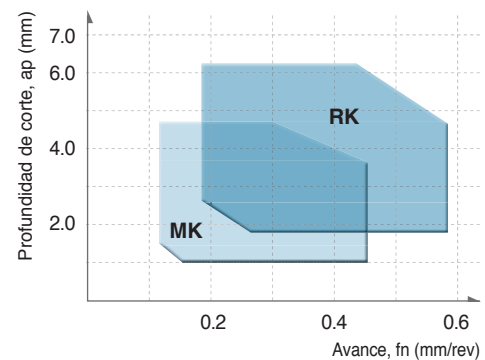


Producto existente

Resistencia al astillado incrementada un 125%



### Rango de corte recomendado



## Características rompe virutas

### Rompe virutas VP1 [ Para acabado ]

- Los filos de corte muy positivos
  - El área de contacto reducida entre la superficie de la cara y la viruta minimiza el calor de corte y mejora la vida útil de la herramienta
- Condiciones de corte recomendadas:  $f_n$  (mm/rev) = 0.05~0.2,  $a_p$  (mm) = 0.1~1.5

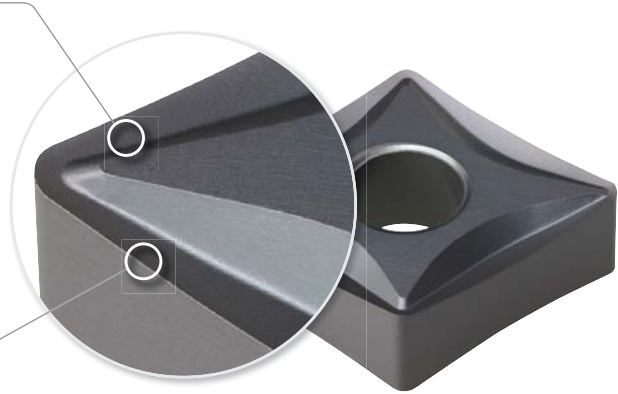
#### Diseño optimizado para acabado



- Obtiene un excelente rendimiento de corte y acabado superficial de calidad a bajo profundidad de corte y alta velocidad

#### Arista de corte muy positiva

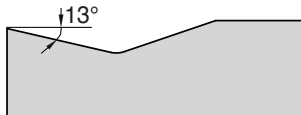
- Minimiza el calor de corte al reducir el área de contacto entre la superficie del flanco y las virutas
- Previene la acumulación de bordes y prolonga la vida útil de la herramienta



### Rompe virutas VP2 [ Para corte medio a acabado ]

- Diseño de filo de corte altamente positivo / ángulo de inclinación lateral aplicado
  - El control estable de viruta mejora la maquinabilidad en el mecanizado de bolas a profundidades de corte variables
- Condiciones de corte recomendadas:  $f_n$  (mm/rev) = 0.1~0.4,  $a_p$  (mm) = 0.5~4.5

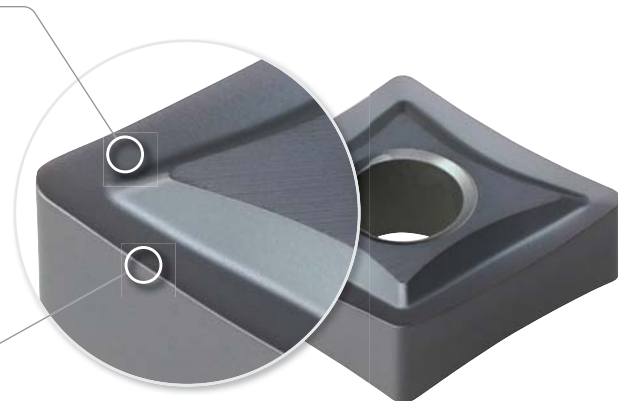
#### Filo de corte afilado y espaciado ancho para virutas



- Aumentar la productividad
- Ideal para corte medio a acabado

#### Arista de corte en ángulo muy positivo

- Mejora el rendimiento de corte con su control de viruta estable a diferentes profundidades de corte

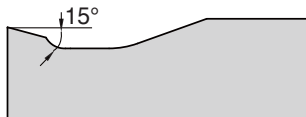


**Características rompe virutas**

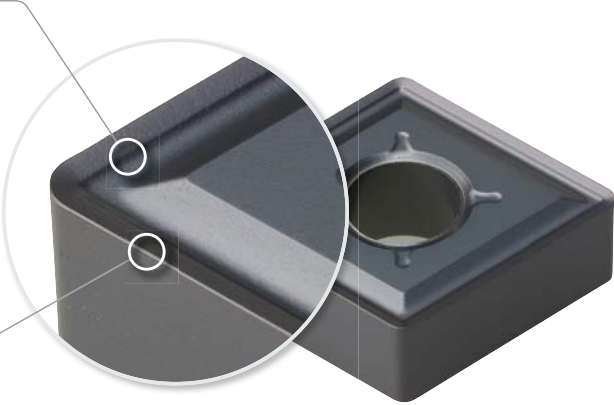
## Rompe virutas VP3 [ Para corte medio ]

- Diseño del filo de corte en ángulo muy positivo / espaciado para viruta muy amplio  
- mejora estabilidad en corte interrumpido y cuando se requiere un filo de corte resistente y tenaz
- Condiciones de corte recomendadas:  $f_n$  (mm/rev) = 0.1~0.45,  $a_p$  (mm) = 0.5~5.0

**Diseño del espaciado en pendiente con forma de R**



- Crea un espacio escalonado entre el borde y la tierra para Haga que el flujo de viruta sea suave a una profundidad alta y baja de los cortes



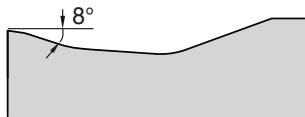
**Arista de corte positiva y amplia espaciado intermedio**

- Minimizar la concentración de calor en gran profundidad de corte
- Mejora la estabilidad en el mecanizado interrumpido de un pieza de trabajo tenaz

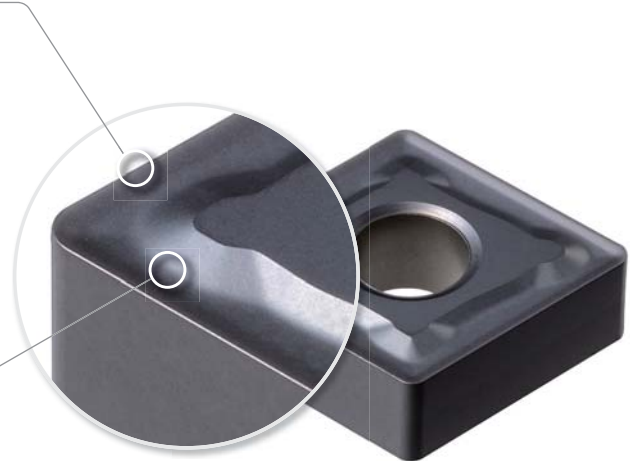
## Rompe virutas VP4 **new** [ Para desbaste ]

- Primera recomendación para maquinar inconel, con alta resistencia a la temperatura
- Gran estabilidad de mecanizado como resultado de filos de corte reforzados y amplios bolsillos de viruta

**Ángulo de ataque diseñado para alta resistencia a corte de materiales de alta dureza**



- Refuerza los bordes de corte y evita el desgaste de la muesca en mecanizado de superficies rugosas
- Previene el astillado en corte interrumpido



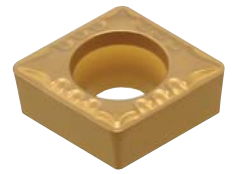
**Ancho espaciado para viruta**

- Reducir las cargas de corte y mejorar Estabilidad incluso a gran profundidad de corte en el desbaste

## Características rompe virutas

### Rompe virutas para inserto positivo VL

[ Para acabado ]



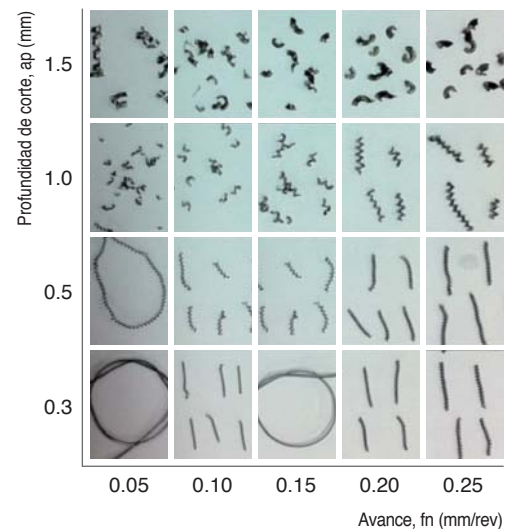
- Flanco y rompe virutas muy afiladas para mejorar el control de viruta de material tenaces como el acero con bajo contenido de carbono, acero de tuberías y discos de hierro
- El filo de corte ofrece una baja carga de corte y facilita control de viruta en profundidades de corte bajas. Muy buena opción para línea de producción automatizadas

#### Características del rompevirutas VL

- **Bordes de corte afilados**
  - Los bordes de corte de rastrillo alto proporcionan mejores acabados superficiales
  - La baja resistencia al corte reduce el calor de corte
- **Ángulo de inclinación posterior de 2 pasos**
  - Control de viruta estable independientemente de las velocidades de alimentación variables
  - Excelente maquinabilidad incluso al mecanizar piezas suaves

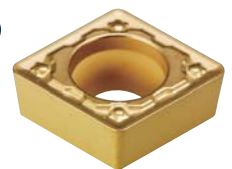
#### Prueba control de viruta

- **Pieza trabajo** SCM440 (Acero aleado), Ø50, Maquinado diametro interno
- **Condiciones de corte**  $vc = 250$  m/min,  $ap = 0.3 \sim 1.5$  mm,  $fn = 0.05 \sim 0.25$  mm/rev
- **Herramientas** CCMT09T304-VL



### Rompe virutas para inserto positivo MP

[ Para corte medio a acabado ]



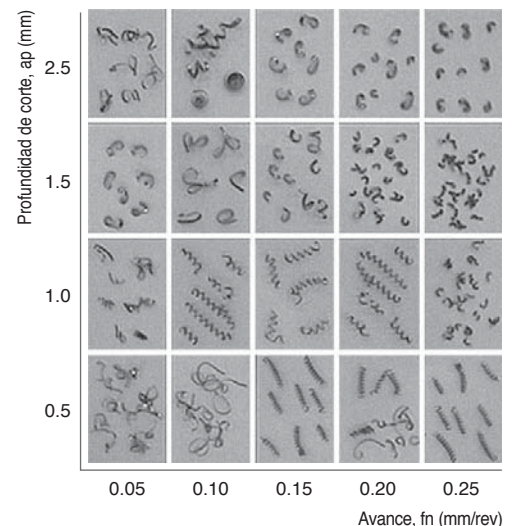
- Para el corte continuo de acero forjado en alto avance
- Tornillo de inserción para el mecanizado interno de componentes de automóviles

#### Características del rompevirutas MP

- **Rompeviruta tridimensional de 2 pasos**
  - Control estable de viruta en mecanizados interno inestables
  - Previene bloque de viruta
- **Borde de corte más fuerte y bolsillo de viruta ancho**
  - Mayor resistencia al desenchado en el mecanizado interno inestable

#### Prueba control de viruta

- **Pieza trabajo** SCM440
- **Condiciones de corte**  $vc = 200$  m/min,  $ap = 0.5 \sim 2.5$  mm,  $fn = 0.05 \sim 0.25$  mm/rev
- **Herramientas** CCMT09T304-MP



## Características rompe virutas

### Rompe virutas VL [ Para acabado ]



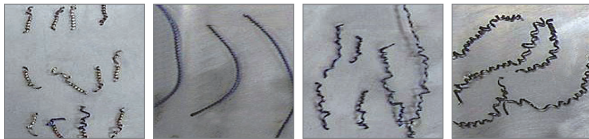
- Control de viruta mejorado para materiales con alta tenacidad como el acero al carbono, acero de tuberías, discos de acero, etc
- Control de viruta mejorado y reducción de carga de corte, en maquinado externo, torneado frontal y copiado
- Resistencia del filo de corte mejorada, con provada eficiencia en líneas de producción automatizadas

#### ➤ Características del rompevirutas VL

- **Rompeviruta diseñado de 2 pasos** - Acero suave adecuado  
- Control de viruta estable en la baja alimentación y profundidad de corte
- **Diseñado con puntos especiales** - Rotura estable de viruta en la baja profundidad de corte
- **Ángulo de inclinación lateral aplicado** - Control de viruta mejorado en aplicaciones de copiado y cara  
- Disminución de la carga de corte y mejor acabado superficial

#### ➤ Prueba control viruta

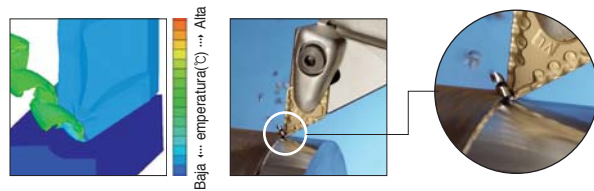
- **Pieza trabajo** SM20C
- **Condiciones de corte**  $vc = 250 \text{ m/min}$ ,  $ap = 0.5 \text{ mm}$   
 $fn = 0.2 \text{ mm/rev}$  (Parte), Con refrigerante
- **Herramientas** DNMG150408-VL



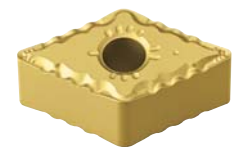
Rompeviruta VL Competencia A Competencia B Competencia C

#### ➤ Simulación FEM de corte del diseño del rompevirutas

- Para el diseño de geometría, las formas de viruta y el flujo de viruta son previsible
- Diseño óptimo del rompevirutas por diversas condiciones de corte y piezas de trabajo



### Rompe virutas VB [ Para acabado ]



- Excelente evacuación de viruta en corte continuo a alta velocidad de distintas piezas de trabajo
- Rompe virutas tridimensional que consigue reducir la carga de corte, aumentar rigidez de la arista decorte en maquinado y aumentar vida útil
- Control de viruta estable en copiado y maquinado interno

#### ➤ Características del rompevirutas VB

- **6 golpes en la esquina de inserción** - Control de viruta superior y corte de viruta en la copia con varias profundidades de corte
- **Ángulo de inclinación lateral** - Control de viruta excepcional en torneado frontal y copiado. Mayor vida útil gracias a una rugosidad superficial mejorada rugosidad y menor resistencia al corte
- **filo en parte de 100 grados para mecanizado medio** - Excelente evacuación de viruta y tenacidad en el mecanizado con gran profundidad de corte

#### ➤ Desempeño

Mejor maquinado    Mejor control de viruta    Mayor vida util



Rompeviruta VB



Rompe virutas convencional

## Características rompe virutas

### Rompe virutas VC [ Para corte medio a acabado ]



- Evacuación de viruta superior en alta velocidad y en maquinado continuo de piezas diferentes (acero al carbono, acero de aleación, etc)
- La rompevirutas de 3 dimensiones de KORLOY asegura una mayor vida útil debido a la baja carga de corte y mejora la fuerza del filo
- Control de viruta estable en maquinado interno y de copiado

#### Características del rompevirutas VC

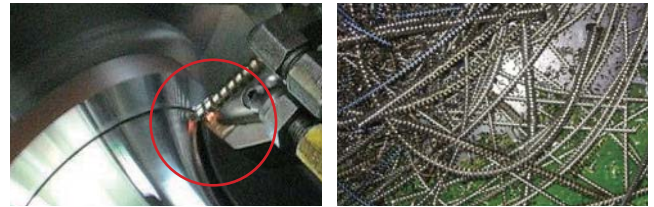
- 4 en la esquina del inserto
  - Excelente control de la viruta en diferentes profundidades de corte y un excelente corte de la viruta en maquinado externo, interno copiado, y careado

#### Evaluación del control de viruta (copiado)

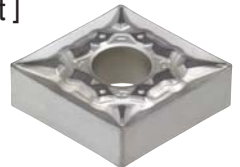
Rompeviruta VC



Rompevirutas Convencionales



### Rompe virutas VQ [ Para corte medio a acabado\_Para cermet ]



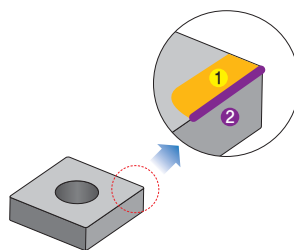
- Excelente rendimiento de corte y bordes de corte reforzados
- Control de viruta mejorado a baja profundidad de corte

#### Características del rompevirutas VQ

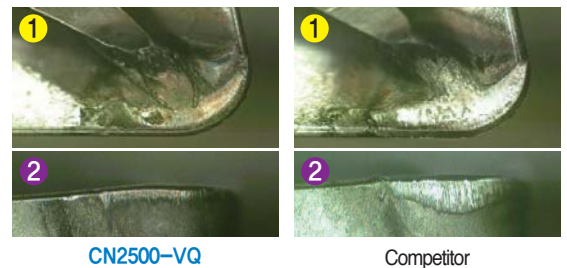
- **Ángulo de inclinación tridimensional**
  - Mejora el acabado de la superficie gracias a un excelente rendimiento de corte
  - Menos calor de corte y mayor vida útil de la herramienta gracias al bajo corte resistencia
- **Estructura sobresaliente biselada**
  - Flujo de viruta suave a baja rofundidad de corte
  - Amplia gama de aplicaciones

#### Evaluación de desempeño

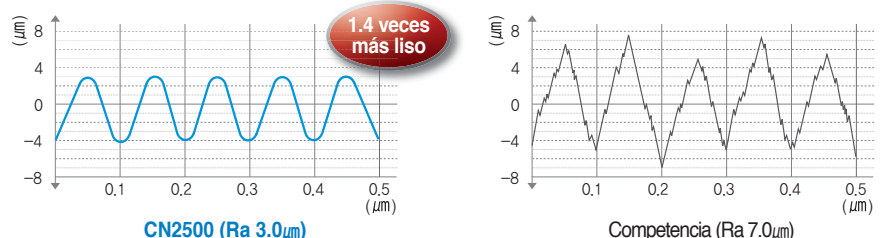
- **Pieza trabajo** SCM440(Acero aleado), Ø100, Torneado diámetro externo
- **Condiciones de corte** vc = 280 m/min, ap = 1.5 mm, fn = 0.25 mm/rev
- **Herramientas** CNMG120408-VQ(CN2500)



Comparación del desgaste



Comparación de rugosidad de superficie





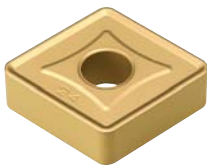
## Características rompe virutas

# Rompe virutas VH/VT [ Para maquinado pesado ]

- Resistente rompeviruta adecuada para maquinado pesado en la construcción naval y en las industrias de central eléctrica
- Recomendable para el maquinado horizontal de grandes rodillos, rotores, etc

### Características del rompevirutas VH

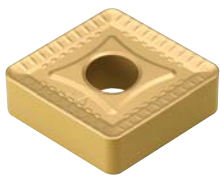
Para un buen control de viruta en mecanizado pesado (tipo general)



- Diseñado desde el estudio, para el maquinado pesado
- Buen control de viruta con alto angulo de incidencia
- Amplio filo de corte que provee buena resistencia en el corte
- Unico filo de corte tratado que provee un corte liso
- Optimizado diseño de la rompeviruta mejora control de virutas

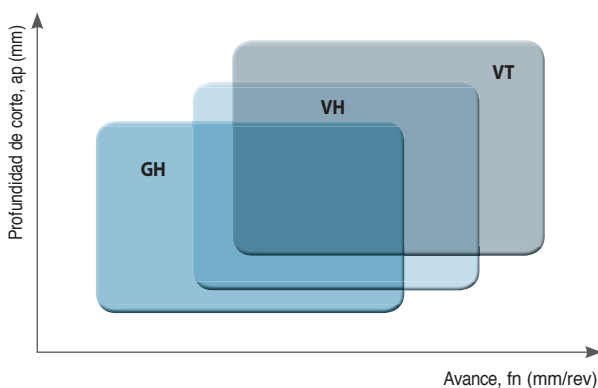
### Características del rompevirutas VT

Para una larga vida útil de la herramienta y un corte estable (avances más altos, gran profundidad) en mecanizado pesado



- Diseñado desde el estudio, para el maquinado pesado
- Diseño resistente que provee larga vida y un corte estable (2angulos de inclinación en el filo de corte)
- Variedad de filos de corte (fino de corte reforzado)
- La posicion convexa de la rompevirutas (desvía el calor de mecanizado, optimiza insertos de desgaste y absorber los golpes)

### Rango de Aplicaciones



**GH** :  $ap(mm) = 5.0\sim 12.0$ ,  $fn(mm/rev) = 0.55\sim 1.20$

**VH** :  $ap(mm) = 6.0\sim 15.0$ ,  $fn(mm/rev) = 0.70\sim 1.40$

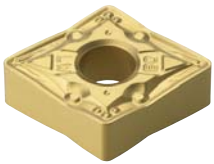
**VT** :  $ap(mm) = 7.0\sim 17.0$ ,  $fn(mm/rev) = 0.75\sim 1.60$

## Características rompe virutas

### Rompe virutas LW/VW [ Para maquinado de alto avance ]

- Mejora la productividad debido a su alto rango de avance y superficie de acabado
- Resistencia al desgaste y dureza mejoradas

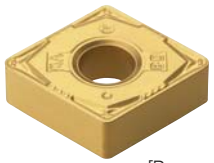
#### ➤ Características del rompevirutas LW



[Para corte medio]

- **Filo de corte curvilíneo** - Reducción de las fuerzas de corte
- **Filo de corte diseñado p/el corte en profundas profundidad de corte**
  - baja carga de corte & reducción de calor
- **Rompeviruta diseñada para profundidades de corte superficiales**
  - Excelente diseño del rompeviruta y buen control de la viruta
- **Para profundidades de corte superficiales y baja carga de corte**
  - Diseño 3dimensional en las esquinas

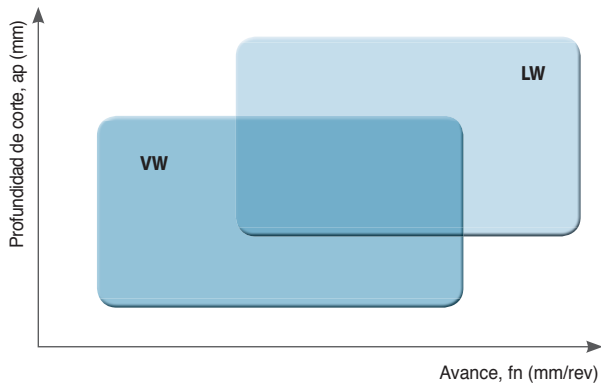
#### ➤ Características del rompevirutas VW



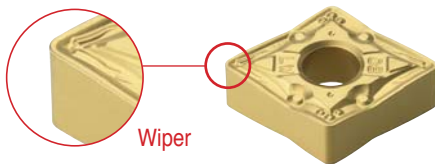
[Para corte medio]

- **Excelente para aplicaciones de acabado** - Excelente control de virutas
- **Inserto diseñado para una estable sujeción** - Rompeviruta diseñada cerca del borde de corte
- **Filo de corte similar de C/B para corte medio** - Filo de corte resistente
- **3 Diseño 3dimensional del filo de corte**
  - Reduce la fuerza de corte, buen control de viruta en profundidades de corte

#### Rango de Aplicaciones

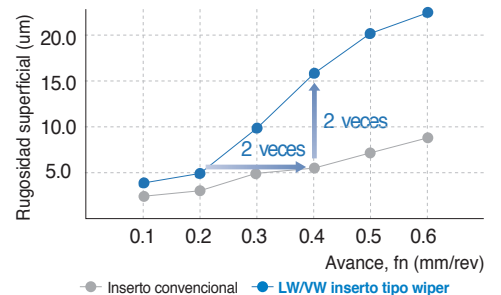


#### Inserto Wiper



Wiper

- Alta productividad
- Superficie de desbaste mejorada
- Su alto avance reduce el tiempo de maquinado
- Vida útil de la herramienta mejorada debido a la reducción de la carga de corte

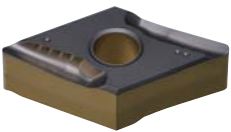


# Características rompe virutas

## SR/SH Chip Breaker new [ Para mecanizado de ejes ]

- Especializado para el mecanizado de barras o ejes de diámetros pequeños y paredes delgadas
- Ángulo de ataque positivo para reducir la resistencia al corte
- Para mecanizado de acero y acero inoxidable

### Características del rompevirutas SR



[Para acabado]

- El primer rompevirutas recomendado para mecanizado de ejes
- Para acabado en corte continuo
- Mejor evacuación de virutas y del calor gracias al ángulo de ataque altamente positivo y a la forma tridimensional
- Buen acabado superficial
- Fracturas prevenidas debido al filo con chaflán

### Características del rompevirutas SH



[Para corte medio]

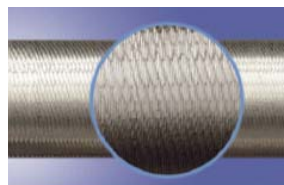
- Geometría especializada en cortes interrumpidos y corte medio
- Evacuación eficiente del calor generado en corte gracias a la forma cóncava del rompevirutas

#### Evaluación del acabado superficial



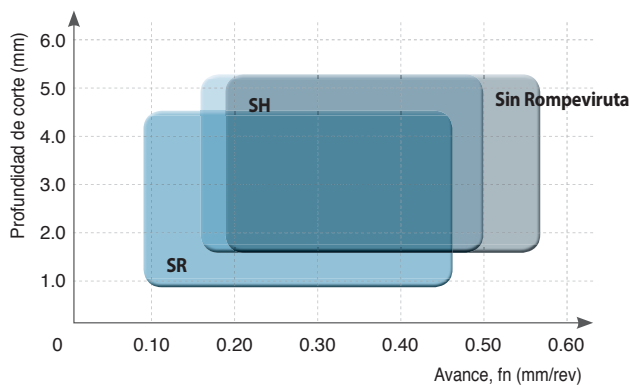
Rompevirutas SR

Acabado superficial mejorado



Otros rompevirutas

#### Rango de aplicación de ambos rompevirutas



| Mecanizado       | C/B             | ap(mm)           | fn(mm/rev)         |
|------------------|-----------------|------------------|--------------------|
| Medio a desbaste | Sin rompeviruta | 1.5 ~ 5.0        | 0.20 ~ 0.55        |
| Corte medio      | SH              | 1.5 ~ 5.0        | 0.15 ~ 0.50        |
| <b>Acabado</b>   | <b>SR</b>       | <b>1.0 ~ 4.5</b> | <b>0.12 ~ 0.45</b> |

# B Insertos para Torneado Sistema Codificación (ISO)



Forma de insertos

Angulo de Incidencia

Tolerancia

Selección transversal del Inserto

Tamaño del Filo del Inserto, Diámetro del Circulo Inscrito

### 1 Forma de insertos

C N M G 12 04 08 - MP

### 2 Angulo de incidencia

C N M G 12 04 08 - MP

### 3 Tolerancia

C N M G 12 04 08 - MP

d : Circulo Inscrito  
t : Espesor  
m : Ref. a la figura

| Clase | d             | m             | t      |
|-------|---------------|---------------|--------|
| A     | ±0.025        | ±0.005        | ±0.025 |
| C     | ±0.025        | ±0.013        | ±0.025 |
| H     | ±0.013        | ±0.013        | ±0.025 |
| E     | ±0.025        | ±0.025        | ±0.025 |
| G     | ±0.025        | ±0.025        | ±0.13  |
| J*    | ±0.05 ~ ±0.15 | ±0.005        | ±0.025 |
| K*    | ±0.05 ~ ±0.15 | ±0.013        | ±0.025 |
| L*    | ±0.05 ~ ±0.15 | ±0.025        | ±0.025 |
| M*    | ±0.05 ~ ±0.15 | ±0.08 ~ ±0.20 | ±0.13  |
| N*    | ±0.05 ~ ±0.15 | ±0.08 ~ ±0.18 | ±0.025 |
| U*    | ±0.08 ~ ±0.25 | ±0.13 ~ ±0.38 | ±0.13  |

\* El lado se basan en inserto sin moler

#### Tolerancia en clase C, H, R, T, W (Caso Excepcional)

| d      | Tolerancia on d |       | Tolerancia on m |       |
|--------|-----------------|-------|-----------------|-------|
|        | J, K, L, M, N   | U     | M, N            | U     |
| 6.35   | ±0.05           | ±0.08 | ±0.08           | ±0.13 |
| 9.525  | ±0.05           | ±0.08 | ±0.08           | ±0.13 |
| 12.7   | ±0.08           | ±0.13 | ±0.13           | ±0.20 |
| 15.875 | ±0.10           | ±0.18 | ±0.15           | ±0.27 |
| 19.05  | ±0.10           | ±0.18 | ±0.15           | ±0.27 |
| 25.4   | ±0.13           | ±0.25 | ±0.18           | ±0.38 |

#### Tolerancia en clase D (Caso Excepcional)

| d      | Tolerancia on d | Tolerancia on m |
|--------|-----------------|-----------------|
| 6.35   | ±0.05           | ±0.11           |
| 9.525  | ±0.05           | ±0.11           |
| 12.7   | ±0.08           | ±0.15           |
| 15.875 | ±0.10           | ±0.18           |
| 19.05  | ±0.10           | ±0.18           |

### 4 Selección Transversal del Inserto

C N M G 12 04 08 - MP



04

08

-

MP

6

7

8

Altura del Filo

Radio de Punta (Nose R)

Rompevirutas para Torneado

**5** Tamaño del Filo del Inserto, Diámetro del Circulo Inscrito

C N M G 12 04 08 - MP

| Símbolo |    |    |    |    |    |    |        | Inch   | IC<br>d(mm) |
|---------|----|----|----|----|----|----|--------|--------|-------------|
| C       | d  | S  | T  | R  | V  | W  |        |        |             |
| 03      | 04 | 03 | 06 | 03 | -  | 02 | 1.2(5) | 3.97   |             |
| 04      | 05 | 04 | 08 | 04 | 08 | S3 | 1.5(6) | 4.76   |             |
| 05      | 06 | 05 | 09 | 05 | 09 | 03 | 1.8(7) | 5.56   |             |
| -       | -  | -  | -  | 06 | -  | -  | -      | 6.00   |             |
| 06      | 07 | 06 | 11 | 06 | 11 | 04 | 2      | 6.35   |             |
| 08      | 09 | 07 | 13 | 07 | 13 | 05 | 2.5    | 7.94   |             |
| -       | -  | -  | -  | 08 | -  | -  | -      | 8.00   |             |
| 09      | 11 | 09 | 16 | 09 | 16 | 06 | 3      | 9.525  |             |
| -       | -  | -  | -  | 10 | -  | -  | -      | 10.00  |             |
| 11      | 13 | 11 | 19 | 11 | 19 | 07 | 3.5    | 11.11  |             |
| -       | -  | -  | -  | 12 | -  | -  | -      | 12.00  |             |
| 12      | 15 | 12 | 22 | 12 | 22 | 08 | 4      | 12.70  |             |
| 14      | 17 | 14 | 24 | 14 | 24 | 09 | 4.5    | 14.29  |             |
| 16      | 19 | 15 | 27 | 15 | 27 | 10 | 5      | 15.875 |             |
| -       | -  | -  | -  | 16 | -  | -  | -      | 16.00  |             |
| 17      | 21 | 17 | 30 | 17 | 30 | 11 | 5.5    | 17.46  |             |
| 19      | 23 | 19 | 33 | 19 | 33 | 13 | 6      | 19.05  |             |
| -       | -  | -  | -  | 20 | -  | -  | -      | 20.00  |             |
| 22      | 27 | 22 | 38 | 22 | 38 | 15 | 7      | 22.225 |             |
| -       | -  | -  | -  | 25 | -  | -  | -      | 25.00  |             |
| 25      | 31 | 25 | 44 | 25 | 44 | 17 | 8      | 25.40  |             |
| 32      | 38 | 31 | 54 | 31 | 54 | 21 | 10     | 31.75  |             |
| -       | -  | -  | -  | 32 | -  | -  | -      | 32.00  |             |

( ) Símbolo para inserto de tamaño pequeño

**7** Radio de Punta (Nose R)

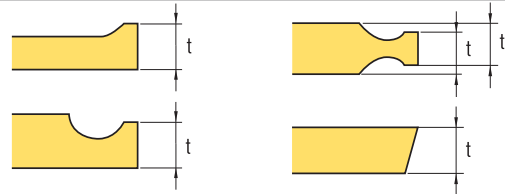
C N M G 12 04 08 - MP



| Símbolo |      | Radio de Punta         |       |
|---------|------|------------------------|-------|
| Métrico | Inch | Métrico                | Inch  |
| 003     | 0.1  | 0.03                   | 0.001 |
| 005     | 0.13 | 0.05                   | 0.002 |
| 01      | 0.2  | 0.1                    | 0.004 |
| 02      | 0.5  | 0.2                    | 0.008 |
| 04      | 1    | 0.4                    | 1/64  |
| 08      | 2    | 0.8                    | 1/32  |
| 12      | 3    | 1.2                    | 3/64  |
| 16      | 4    | 1.6                    | 1/16  |
| 20      | 5    | 2.0                    | 5/64  |
| 24      | 6    | 2.4                    | 3/32  |
| 28      | 7    | 2.8                    | 7/64  |
| 32      | 8    | 3.2                    | 1/8   |
| 00      | -    | Placa redondo(Inch)    |       |
| M0      | -    | Placa redondo(Métrico) |       |

**6** Altura del Filo

C N M G 12 04 08 - MP



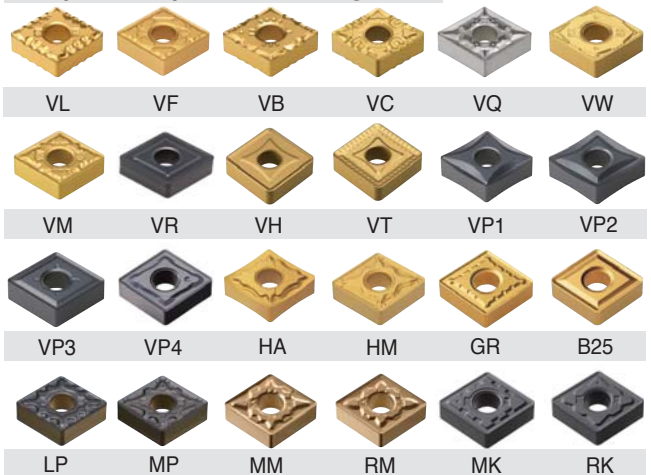
| Símbolo |        | Altura de filo de corte(t) |       |
|---------|--------|----------------------------|-------|
| mm      | Inch   | mm                         | Inch  |
| 01      | 1(2)   | 1.59                       | 1/16  |
| T0      | 1.125  | 1.79                       | 9/128 |
| T1      | 1.2    | 1.98                       | 5/64  |
| 02      | 1.5(3) | 2.38                       | 3/32  |
| T2      | 1.75   | 2.78                       | 7/64  |
| 03      | 2      | 3.18                       | 1/8   |
| T3      | 2.5    | 3.97                       | 5/32  |
| 04      | 3      | 4.76                       | 3/16  |
| 05      | 3.5    | 5.56                       | 7/32  |
| 06      | 4      | 6.35                       | 1/4   |
| 07      | 5      | 7.94                       | 5/16  |
| 09      | 6      | 9.52                       | 3/8   |
| 11      | 7      | 11.11                      | 7/16  |
| 12      | 8      | 12.70                      | 1/2   |

( ) Símbolo para inserto de tamaño pequeño

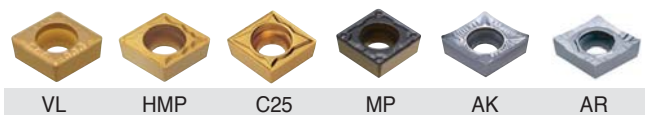
**8** Rompevirutas para Torneado

C N M G 12 04 08 - MP

Rompevirutas para insertos negativos



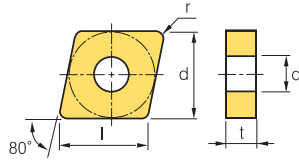
Rompevirutas para insertos positivos






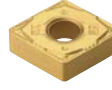



# CN○○○

## Rómbico 80° Negativo



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 09               | 9.525 | 3.18 | 3.81           |
| 12               | 12.7  | 4.76 | 5.16           |

| Pza. Trabajo                         | Compatibilidad |                  |           |                     |                                      |                  |   |   |   |   |   |   | Tipo de Maquinado |   |   |   |   |
|--------------------------------------|----------------|------------------|-----------|---------------------|--------------------------------------|------------------|---|---|---|---|---|---|-------------------|---|---|---|---|
|                                      | Acero          | Acero Inoxidable | Fundición | Metales No-Ferrosos | Aleaciones Resist. calor, de Titanio | Acero Endurecido | P | M | K | N | S | H | ●                 | ● | ● | ● |   |
| Acero                                | ●              | ●                | ●         | ●                   | ●                                    | ●                | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |
| Acero Inoxidable                     | ●              | ●                | ●         | ●                   | ●                                    | ●                | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |
| Fundición                            | ●              | ●                | ●         | ●                   | ●                                    | ●                | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |
| Metales No-Ferrosos                  | ●              | ●                | ●         | ●                   | ●                                    | ●                | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |
| Aleaciones Resist. calor, de Titanio | ●              | ●                | ●         | ●                   | ●                                    | ●                | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |
| Acero Endurecido                     | ●              | ●                | ●         | ●                   | ●                                    | ●                | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |

| Inserto  | Designación    | Cermet |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |                            |                        |           |
|--|----------------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|----------------------------|------------------------|-----------|
|  |                | CN1500 | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |           |
| Acabado<br><br>[Acero Medio]                | CNMG 120404-VL | ●      | ●      |             |        |            |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.05~0.25              | 0.10~1.00 |
|  | CNMG 120408-VL | ●      | ●      |             |        |            | ●      | ●      |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.35              | 0.20~1.50 |
|  | CNMG 120412-VL |        |        |             |        |            | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.35              | 0.20~1.50 |
| Acabado<br><br>[wiper]                      | CNMG 120404-VW |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.30              | 0.50~3.00 |
|  | CNMG 120408-VW |        |        |             |        |            | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.15~0.50              | 0.50~4.00 |
|  | CNMG 120412-VW |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.20~0.55              | 1.00~4.50 |
| Medio a Acabado<br>                       | CNMG 120404-HA |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        | ●      | ●   |     |                            | 0.05~0.20              | 0.80~3.50 |
|  | CNMG 120408-HA |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        | ●      | ●   | ●   |                            | 0.10~0.40              | 0.80~3.50 |
|  | CNMG 120412-HA |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        | ●      | ●   | ●   |                            | 0.13~0.55              | 0.80~3.50 |
| Medio a Acabado<br><br><small>new</small> | CNMG 090304-LP |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.07~0.30              | 0.30~1.50 |
|  | CNMG 090308-LP |        |        |             |        |            | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.30              | 0.30~1.50 |
|  | CNMG 120404-LP |        |        |             |        |            |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.35              | 0.30~2.00 |
|  | CNMG 120408-LP |        |        |             |        |            | ●      | ●      | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.40              | 0.50~2.50 |
|  | CNMG 120412-LP |        |        |             |        |            | ●      | ●      | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.13~0.45              | 0.80~3.00 |
| Medio a Acabado<br>                       | CNMG 120404-VC |        |        |             |        |            | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.35              | 0.30~2.00 |
|  | CNMG 120408-VC |        |        |             |        |            | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.15~0.40              | 0.50~3.00 |
|  | CNMG 120412-VC |        |        |             |        |            | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.15~0.45              | 0.50~3.00 |

 Filo de Corte **A52~A61**
 Rompeviruta Recomendada **B04~B11**
 Sistema Codificación **B26~B27**
● : En Almacen

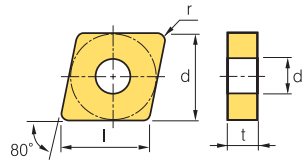
| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MCKNR/L                      | B171   | MCRNR/L     | B172   |
| MCLNR/L                      | B171   | PCBNR/L     | B159   |
| MCMNN                        | B171   | PCLNR/L     | B160   |



# B Insertos para Torneado (Negativo)

## CN○○○

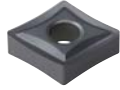

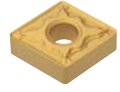

### Rómbico 80° Negativo



| Dimensiones (mm) |        |      |                |
|------------------|--------|------|----------------|
| Tamaño           | d      | t    | d <sub>1</sub> |
| 09               | 9.525  | 3.18 | 3.81           |
| 12               | 12.7   | 4.76 | 5.16           |
| 16               | 15.875 | 6.35 | 6.35           |
| 19               | 19.05  | 6.35 | 7.93           |

| Pza. Trabajo                         | Material |   | Código |   |   |   |   |   |   |   |   |    |    |    |    |    | Tipo de Maquinado |    |    |    |    |    |   |   |
|--------------------------------------|----------|---|--------|---|---|---|---|---|---|---|---|----|----|----|----|----|-------------------|----|----|----|----|----|---|---|
|                                      | P        | M | 1      | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15                | 16 | 17 | 18 | 19 | 20 |   |   |
| Acero                                | ●        | ● | ●      | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● |
| Acero Inoxidable                     | ●        | ● | ●      | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● |
| Fundición                            | ●        | ● | ●      | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● |
| Metales No-Ferrosos                  | ●        | ● | ●      | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● |
| Aleaciones Resist. calor, de Titanio | ●        | ● | ●      | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● |
| Acero Endurecido                     | ●        | ● | ●      | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● |

● Corte Continuo  
● Corte en general  
● Corte Interumpido

| Inserto  | Designación     | Cermet |        | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |     |     |                            |                        |           |
|--|-----------------|--------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|-----|-----|----------------------------|------------------------|-----------|
|  |                 | CN1500 | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125   | NC9135 | PC5300             | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |           |
| Medio a Acabado<br>               | CNMG 120404-VP2 |        |        |            |        |        |        | ●      |        |        |        |        |        |        |          | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●   | ●   | 0.05-0.30                  | 0.10-3.00              |           |
|  | 120408-VP2      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        | ●                  | ●      | ●      | ●      | ●      | ●      | ●   | ●   | 0.10-0.40                  | 0.50-4.50              |           |
|  | 160608-VP2      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      | ●   | ●   | 0.12-0.45                  | 0.80-5.00              |           |
|  | 190608-VP2      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        | ●      | ●      | ●      | ●      | ●   | ●   | 0.12-0.50                  | 1.00-5.20              |           |
|  | 190612-VP2      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        | ●      | ●      | ●      | ●   | ●   | ●                          | 0.15-0.50              | 1.20-5.50 |
|  | 190616-VP2      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        | ●      | ●      | ●   | ●   | ●                          | 0.18-0.50              | 1.50-5.50 |
| Medio a Acabado<br><br>[Cermet] | CNMG 090304-VQ  |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.05-0.30                  | 0.50-3.50              |           |
|  | 090308-VQ       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                            | 0.08-0.30              | 0.80-4.00 |
|  | 090408-VQ       |        |        |            |        |        |        |        |        |        | ●      |        |        |        |          |        |                    |        |        |        |        |        |     |     |                            | 0.05-0.30              | 0.50-3.50 |
|  | 090412-VQ       |        |        |            |        |        |        |        |        |        | ●      |        |        |        |          |        |                    |        |        |        |        |        |     |     |                            | 0.08-0.30              | 0.80-4.00 |
|  | 120404-VQ       | ●      | ●      | ●          | ●      | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                            | 0.05-0.30              | 0.80-4.00 |
|  | 120408-VQ       | ●      | ●      | ●          | ●      | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                            | 0.08-0.40              | 0.80-4.00 |
|  | 120412-VQ       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                            | 0.10-0.40              | 0.80-4.00 |
| Medio<br>                       | CNMG 090304-HM  |        |        |            |        |        |        |        |        |        | ●      |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.12-0.40                  | 0.50-3.80              |           |
|  | 120404-HM       |        |        |            |        |        |        | ●      | ●      | ●      |        |        |        |        |          |        |                    |        |        |        |        | ●      |     |     | 0.05-0.30                  | 0.90-5.00              |           |
|  | 120408-HM       |        |        |            |        |        |        | ●      | ●      | ●      |        |        |        |        |          | ●      |                    |        |        |        |        | ●      |     |     | 0.10-0.50                  | 1.00-5.00              |           |
|  | 120412-HM       |        |        |            |        |        | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        | ●   |     |                            | 0.18-0.50              | 1.00-5.00 |
|  | 190612-HM       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                            | 0.13-0.60              | 1.30-7.00 |
| Medio<br>                       | CNMG 120404-MK  |        |        |            |        |        |        |        |        |        |        | ●      | ●      |        |          |        |                    |        |        |        |        |        |     |     | 0.05-0.30                  | 0.90-4.00              |           |
|  | 120408-MK       |        |        |            |        |        |        |        |        |        |        | ●      | ●      |        |          |        |                    |        |        |        |        |        |     |     | 0.10-0.50                  | 1.00-5.00              |           |
|  | 120412-MK       |        |        |            |        |        |        |        |        |        |        | ●      | ●      |        |          |        |                    |        |        |        |        |        |     |     | 0.13-0.60                  | 1.30-5.00              |           |
|  | 120416-MK       |        |        |            |        |        |        |        |        |        |        |        | ●      | ●      |          |        |                    |        |        |        |        |        |     |     | 0.15-0.60                  | 1.30-5.00              |           |
|  | 160608-MK       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.28-0.70                  | 1.80-7.00              |           |
|  | 160612-MK       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.28-0.72                  | 2.00-8.00              |           |
|  | 160616-MK       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.28-0.74                  | 2.00-8.00              |           |
|  | 190608-MK       |        |        |            |        |        |        |        |        |        |        |        |        | ●      |          |        |                    |        |        |        |        |        |     |     | 0.33-0.78                  | 2.50-9.00              |           |
|  | 190612-MK       |        |        |            |        |        |        |        |        |        |        |        |        | ●      |          |        |                    |        |        |        |        |        |     |     |                            | 0.35-0.78              | 2.60-9.50 |
| 190616-MK  |                 |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.35-0.80                  | 2.60-10.00             |           |

🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MCKNR/L                      | B171   | MCRNR/L     | B172   |
| MCLNR/L                      | B171   | PCBNR/L     | B159   |
| MCMNN                        | B171   | PCLNR/L     | B160   |



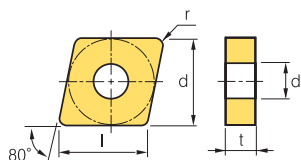




# B Insertos para Torneado (Negativo)





CN○○○

 Rómbico **80°** Negativo



| Dimensiones (mm) |        |      |                |
|------------------|--------|------|----------------|
| Tamaño           | d      | t    | d <sub>1</sub> |
| 09               | 9.525  | 3.18 | 3.81           |
| 12               | 12.7   | 4.76 | 5.16           |
| 16               | 15.875 | 6.35 | 6.35           |
| 19               | 19.05  | 6.35 | 7.93           |
| 25               | 25.4   | 9.52 | 9.12           |

| Pza. Trabajo | Material                             | Compatibilidad | Tipos de Maquinado   |
|--------------|--------------------------------------|----------------|--|
|              | Acero                                | P              | ● Corte Continuo<br>● Corte en general<br>✱ Corte Interrumpido |
|              | Acero Inoxidable                     | M              |  |
|              | Fundición                            | K              |  |
|              | Metales No-Ferrosos                  | N              |  |
|              | Aleaciones Resist. calor, de Titanio | S              |  |
|              | Acero Endurecido                     | H              |  |

| Inserto   | Designación     | Cermet |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |        |     |     |                         |                     |           |
|---|-----------------|--------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|--------|-----|-----|-------------------------|---------------------|-----------|
|   |                 | CN1500 | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115   | NC9125 | NC9135             | PC5300 | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |
| Medio<br>VM<br>      | CNMG 090304-VM  |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.05~0.30           | 0.90~3.50 |
|   | 090308-VM       |        |        |            |        |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.10~0.45           | 1.00~3.50 |
|   | 120404-VM       | ●      | ●      | ●          |        |        | ●      | ●      | ●      |        |        |        |        |          |        | ●                  | ●      |        |        |        |        | ●      |     |     |                         | 0.05~0.30           | 0.90~5.00 |
|   | 120408-VM       | ●      | ●      | ●          |        |        | ●      | ●      | ●      | ●      |        |        |        |          |        | ●                  | ●      |        |        |        | ●      | ●      |     |     |                         | 0.10~0.50           | 1.00~5.00 |
|   | 120412-VM       |        |        |            |        |        | ●      | ●      | ●      |        |        |        |        |          |        | ●                  | ●      |        |        |        | ●      |        |     |     |                         | 0.13~0.60           | 1.30~5.00 |
|   | 120416-VM       |        |        |            |        |        |        |        |        | ●      |        |        |        |          |        | ●                  | ●      |        |        |        |        |        |     |     |                         | 0.20~0.60           | 1.50~5.50 |
|   | 160608-VM       |        |        |            |        |        |        |        |        | ●      |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.10~0.50           | 1.00~6.70 |
|   | 160612-VM       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.13~0.60           | 1.30~6.70 |
|   | 190608-VM       |        |        |            |        |        |        |        |        | ●      |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.13~0.65           | 1.30~7.00 |
|   | 190612-VM       |        |        |            |        |        |        |        |        |        | ●      |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.15~0.70           | 1.50~7.00 |
| 190616-VM   |                 |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     | 0.18~0.75               | 1.80~7.00           |           |
| Medio<br>VP3<br>   | CNMG 120404-VP3 |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      |        | ●   | ●   | 0.05~0.30               | 0.10~3.00           |           |
|   | 120408-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        | ●      | ●      | ●      | ●      | ●      |     | ●   | ●                       | 0.10~0.40           | 0.50~4.50 |
|   | 120412-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        | ●      | ●      | ●      | ●      | ●      |     | ●   | ●                       | 0.12~0.50           | 0.50~5.00 |
|   | 120416-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     | ●   | ●                       | 0.25~0.45           | 1.00~4.00 |
|   | 160608-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.15~0.35           | 0.80~6.00 |
|   | 160612-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.20~0.40           | 1.00~6.00 |
|   | 160616-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.20~0.40           | 1.00~6.00 |
|   | 190608-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.20~0.50           | 1.00~7.00 |
|   | 190612-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.25~0.55           | 1.00~8.00 |
| 190616-VP3  |                 |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     | 0.30~0.60               | 1.00~8.00           |           |
| Medio<br>LW<br>    | CNMG 120408-LW  |        |        |            |        |        | ●      | ●      | ●      |        |        |        |        | ●        |        |                    |        |        |        |        |        |        |     |     |                         | 0.15~0.60           | 1.00~5.00 |
|   | 120412-LW       |        |        |            |        |        | ●      | ●      |        |        |        |        |        | ●        |        |                    |        |        |        |        |        |        |     |     |                         | 0.20~0.70           | 1.00~6.00 |
| General<br>B25<br> | CNMG 120404-B25 | ●      | ●      | ●          |        |        | ●      | ●      | ●      |        |        |        |        |          | ●      |                    |        |        |        |        |        |        |     |     |                         | 0.17~0.45           | 1.00~5.00 |
|   | 120408-B25      | ●      | ●      | ●          |        |        | ●      | ●      | ●      | ●      |        |        |        |          | ●      | ●                  |        |        |        |        | ●      | ●      |     |     |                         | 0.23~0.60           | 1.50~5.00 |
|   | 120412-B25      |        |        | ●          |        |        | ●      | ●      | ●      | ●      |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.25~0.60           | 2.00~5.00 |
|   | 160608-B25      |        |        |            |        |        | ●      | ●      | ●      | ●      |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.25~0.60           | 2.00~6.50 |
|   | 160612-B25      |        |        |            |        |        | ●      | ●      | ●      |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.27~0.60           | 2.00~6.50 |
|   | 160616-B25      |        |        |            |        |        | ●      | ●      | ●      |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.27~0.60           | 2.00~6.50 |
|   | 190604-B25      |        |        |            |        |        |        |        |        | ●      | ●      |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.20~0.45           | 3.00~8.00 |
|   | 190608-B25      |        |        |            |        |        |        | ●      | ●      | ●      | ●      |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.25~0.60           | 3.00~8.00 |
|   | 190612-B25      |        |        |            |        |        |        | ●      | ●      | ●      | ●      |        |        |          |        | ●                  | ●      |        |        |        | ●      |        |     |     |                         | 0.30~0.60           | 3.00~8.00 |
| 190616-B25  |                 |        |        |            |        |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     | 0.23~0.70               | 3.00~8.00           |           |

🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27

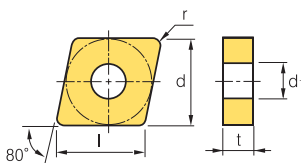
● : En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MCKNR/L                      | B171   | MCRNR/L     | B172   |
| MCLNR/L                      | B171   | PCBNR/L     | B159   |
| MCMNN                        | B171   | PCLNR/L     | B160   |



# CN○○○

## ◻ Rómbico 80° Negativo



| Dimensiones (mm) |        |      |      |
|------------------|--------|------|------|
| Tamaño           | d      | t    | d1   |
| 12               | 12.7   | 4.76 | 5.16 |
| 16               | 15.875 | 6.35 | 6.35 |
| 19               | 19.05  | 6.35 | 7.93 |
| 25               | 25.4   | 9.52 | 9.12 |

| Pza. Trabajo | Acero                               | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|--------------|-------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|              | Acero Inoxidable                    | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|              | Fundición                           | K | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|              | Metales No-Ferrosos                 | N | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|              | Aleaciones Resist. calor de Titanio | S | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|              | Acero Endurecido                    | H | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

● Corte Continuo  
 ● Corte en general  
 ● Corte Interrumpido

| Inserto      | Designación    | Cermet |        |        | Recubierto |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |        |        |        |     |     |             |            |            |
|--------------|----------------|--------|--------|--------|------------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|-----|-----|-------------|------------|------------|
|              |                | CN1500 | CN2000 | CN2500 | CC1500     | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310   | NC6315 | NC9115             | NC9125 | NC9135 | PC5300 | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | fn (mm/rev) | ap (mm)    |            |
| Desbaste<br> | CNMG 120408-GR |        |        |        |            |        | ●      | ●      | ●      | ●      | ●      |          |        |                    |        |        |        |        |        |        |        |        |     |     | 0.20~0.50   | 1.00~7.00  |            |
|              | 120412-GR      |        |        |        |            |        | ●      | ●      | ●      | ●      | ●      |          |        |                    |        |        |        |        |        |        |        |        |     |     |             | 0.25~0.50  | 1.30~7.00  |
|              | 120416-GR      |        |        |        |            |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |     |     |             | 0.25~0.60  | 1.80~6.00  |
|              | 160608-GR      |        |        |        |            |        |        |        |        | ●      |        |          |        |                    |        |        |        |        |        |        |        |        |     |     |             | 0.20~0.70  | 1.00~8.00  |
|              | 160612-GR      |        |        |        |            |        |        | ●      | ●      | ●      | ●      |          |        |                    |        |        |        |        |        |        |        |        |     |     |             | 0.25~0.70  | 1.30~8.00  |
|              | 160616-GR      |        |        |        |            |        |        |        |        | ●      |        |          |        |                    |        |        |        |        |        |        |        |        |     |     |             | 0.25~0.75  | 1.80~8.00  |
|              | 190608-GR      |        |        |        |            |        |        | ●      |        | ●      | ●      |          |        |                    |        |        |        |        |        |        |        |        |     |     |             | 0.20~0.70  | 1.70~10.00 |
|              | 190612-GR      |        |        |        |            |        |        | ●      | ●      | ●      | ●      | ●        |        |                    |        |        |        |        |        |        |        |        |     |     |             | 0.30~0.75  | 1.70~10.00 |
|              | 190616-GR      |        |        |        |            |        |        |        | ●      | ●      | ●      | ●        |        |                    |        |        |        |        |        |        |        |        |     |     |             | 0.30~0.80  | 1.80~10.00 |
|              | 190624-GR      |        |        |        |            |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |     |     |             | 0.35~0.85  | 2.00~12.00 |
|              | 250724-GR      |        |        |        |            |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |     |     |             | 0.40~1.00  | 2.30~15.00 |
| 250924-GR    |                |        |        |        |            |        |        | ●      |        | ●      | ●      |          |        |                    |        |        |        |        |        |        |        |        |     |     | 0.40~1.00   | 2.30~15.00 |            |
| Desbaste<br> | CNMG 120404-RK |        |        |        |            |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |     |     | 0.20~0.47   | 1.30~6.00  |            |
|              | 120408-RK      |        |        |        |            |        |        |        |        |        |        | ●        | ●      |                    |        |        |        |        |        |        |        |        |     |     |             | 0.20~0.50  | 1.50~6.00  |
|              | 120412-RK      |        |        |        |            |        |        |        |        |        |        | ●        | ●      |                    |        |        |        |        |        |        |        |        |     |     |             | 0.28~0.53  | 1.80~6.00  |
|              | 120416-RK      |        |        |        |            |        |        |        |        |        |        |          | ●      |                    |        |        |        |        |        |        |        |        |     |     |             | 0.28~0.63  | 2.00~6.00  |
|              | 160608-RK      |        |        |        |            |        |        |        |        |        |        |          | ●      |                    |        |        |        |        |        |        |        |        |     |     |             | 0.28~0.70  | 1.80~7.00  |
|              | 160612-RK      |        |        |        |            |        |        |        |        |        |        |          | ●      |                    |        |        |        |        |        |        |        |        |     |     |             | 0.28~0.72  | 2.00~8.00  |
|              | 160616-RK      |        |        |        |            |        |        |        |        |        |        |          | ●      | ●                  |        |        |        |        |        |        |        |        |     |     |             | 0.28~0.74  | 2.00~8.00  |
|              | 190612-RK      |        |        |        |            |        |        |        |        |        |        |          |        | ●                  |        |        |        |        |        |        |        |        |     |     |             | 0.35~0.78  | 2.60~9.50  |
|              | 190616-RK      |        |        |        |            |        |        |        |        |        |        |          |        | ●                  |        |        |        |        |        |        |        |        |     |     |             | 0.35~0.80  | 2.60~10.00 |
| Desbaste<br> | CNMG 120404-RM |        |        |        |            |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      |        |        |        |        |        |     |     | 0.10~0.50   | 2.00~6.00  |            |
|              | 120408-RM      |        |        |        |            |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      |        |        |        |        | ●      | ●   | ●   |             | 0.15~0.55  | 2.00~6.00  |
|              | 120412-RM      |        |        |        |            |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      |        |        |        |        | ●      | ●   | ●   |             | 0.20~0.60  | 2.00~6.00  |
|              | 120416-RM      |        |        |        |            |        |        |        |        |        |        |          |        |                    |        | ●      | ●      | ●      |        |        |        |        | ●   |     |             | 0.25~0.70  | 2.00~6.00  |
|              | 160608-RM      |        |        |        |            |        |        |        |        |        |        |          |        |                    |        | ●      | ●      | ●      |        |        |        |        | ●   |     |             | 0.15~0.55  | 2.00~8.00  |
|              | 160612-RM      |        |        |        |            |        |        |        |        |        |        |          |        |                    |        | ●      | ●      | ●      |        |        |        |        | ●   |     |             | 0.20~0.60  | 2.00~8.00  |
|              | 160616-RM      |        |        |        |            |        |        |        |        |        |        |          |        |                    |        | ●      | ●      | ●      |        |        |        |        | ●   |     |             | 0.25~0.70  | 2.00~8.00  |
|              | 190608-RM      |        |        |        |            |        |        |        |        |        |        |          |        |                    |        |        | ●      | ●      | ●      |        |        |        |     | ●   |             | 0.15~0.55  | 2.00~10.00 |
|              | 190612-RM      |        |        |        |            |        |        |        |        |        |        |          |        |                    |        |        | ●      | ●      | ●      |        |        |        |     | ●   |             | 0.20~0.60  | 2.00~10.00 |
|              | 190616-RM      |        |        |        |            |        |        |        |        |        |        |          |        |                    |        |        | ●      | ●      | ●      |        |        |        |     | ●   |             | 0.25~0.70  | 2.00~10.00 |
|              | 250924-RM      |        |        |        |            |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |     |     |             | 0.40~1.20  | 4.00~14.00 |

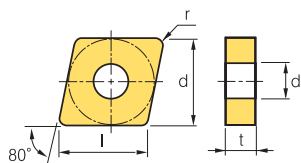
🔩 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ●: En Almacén

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MCKNR/L                      | B171   | MCRNR/L     | B172   |
| MCLNR/L                      | B171   | PCBNR/L     | B159   |
| MCMNN                        | B171   | PCLNR/L     | B160   |

# B Insertos para Torneado (Negativo)

## CN○○○

### ◻ Rómbico 80° Negativo



| Dimensiones (mm) |        |           |                |
|------------------|--------|-----------|----------------|
| Tamaño           | d      | t         | d <sub>1</sub> |
| 12               | 12.7   | 4.76      | 5.16           |
| 16               | 15.875 | 4.76~6.35 | 6.35           |
| 19               | 19.05  | 6.35      | 7.93           |

| Pza. Trabajo                         | Material |         | Compatibilidad |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Tipo de Maquinado |    |    |    |   |   |   |   |
|--------------------------------------|----------|---------|----------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------------|----|----|----|---|---|---|---|
|                                      | Color    | Simbolo | 1              | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17                | 18 | 19 | 20 |   |   |   |   |
| Acero                                | P        | ▶       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Acero Inoxidable                     | M        | ▶       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Fundición                            | K        | ▶       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Metales No-Ferrosos                  | N        | ▶       |                |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |                   |    |    |    | ● | ● | ● | ● |
| Aleaciones Resist. calor, de Titanio | S        | ▶       |                |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |                   |    |    |    | ● | ● | ● | ● |
| Acero Endurecido                     | H        | ▶       |                |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |                   |    |    |    | ● | ● | ● | ● |

| Inserto             | Designación     | Cermet |        | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |     |           |                         |                     |           |
|---------------------|-----------------|--------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|-----|-----------|-------------------------|---------------------|-----------|
|                     |                 | CN1500 | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125   | NC9135 | PC5300             | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05       | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |
| Desbaste<br>        | CNMG 120408-VP4 |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           |                         | 0.15~0.35           | 1.00~4.00 |
|                     | 120412-VP4      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           |                         | 0.20~0.40           | 1.00~4.00 |
|                     | 160608-VP4      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           |                         | 0.20~0.45           | 1.00~6.50 |
|                     | 160612-VP4      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           |                         | 0.25~0.50           | 1.50~6.50 |
|                     | 190608-VP4      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           |                         | 0.15~0.45           | 1.00~8.00 |
|                     | 190612-VP4      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           |                         | 0.20~0.50           | 1.20~8.50 |
| Desbaste<br>        | CNMG 120404-VR  |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           | 0.20~0.50               | 1.00~6.50           |           |
|                     | 120408-VR       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           | 0.25~0.55               | 1.20~7.00           |           |
|                     | 120412-VR       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           | 0.30~0.60               | 1.50~7.00           |           |
|                     | 120416-VR       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           | 0.35~0.65               | 1.70~7.00           |           |
|                     | 120508-VR       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           | 0.25~0.55               | 1.20~7.00           |           |
|                     | 120512-VR       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           | 0.30~0.60               | 1.50~7.00           |           |
|                     | 160612-VR       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           | 0.35~0.70               | 2.00~8.00           |           |
|                     | 160616-VR       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |           | 0.35~0.75               | 2.20~8.00           |           |
| 190612-VR           |                 |        |        |            |        |        |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |        |     | 0.35~0.70 | 2.00~10.00              |                     |           |
| 190616-VR           |                 |        |        |            |        |        |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |        |     | 0.35~0.75 | 2.20~10.00              |                     |           |
| Medio a Acabado<br> | CNMM 120408-HA  |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     | 0.10~0.40 | 0.80~3.50               |                     |           |
| Desbaste<br>        | CNMM 120408-GR  |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     | 0.20~0.50 | 1.00~7.00               |                     |           |
|                     | 120412-GR       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     | 0.25~0.50 | 1.30~7.00               |                     |           |
|                     | 190612-GR       |        |        |            |        |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |        |     | 0.30~0.75 | 1.70~10.00              |                     |           |
|                     | 190616-GR       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     | 0.30~0.80 | 1.80~10.00              |                     |           |

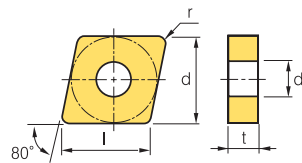
🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MCKNR/L                      | B171   | MCRNR/L     | B172   |
| MCLNR/L                      | B171   | PCBNR/L     | B159   |
| MCMNN                        | B171   | PCLNR/L     | B160   |



# CN ○ ○

## Rómbico **80° Negativo**



| Dimensiones (mm) |        |           |      |
|------------------|--------|-----------|------|
| Tamaño           | d      | t         | d1   |
| 12               | 12.7   | 4.76      | 5.16 |
| 16               | 15.875 | 4.76~6.35 | 6.35 |
| 19               | 19.05  | 6.35      | 7.93 |
| 25               | 25.4   | 7.94~9.52 | 9.12 |

| Pza. Trabajo     | Acero                                | <span style="color: blue;">P</span>   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tipo de Maquinado |                    |                      |
|------------------|--------------------------------------|---------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------------------|--------------------|----------------------|
|                  | Acero Inoxidable                     | <span style="color: yellow;">M</span> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● Corte Continuo  | ● Corte en general | ● Corte Interrumpido |
|                  | Fundición                            | <span style="color: red;">K</span>    | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |                   |                    |                      |
|                  | Metales No-Ferrosos                  | <span style="color: green;">N</span>  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |                   |                    |                      |
|                  | Aleaciones Resist. calor. de Titanio | <span style="color: orange;">S</span> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                   |                    |                      |
| Acero Endurecido | <span style="color: grey;">H</span>  |                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                   |                    |                      |

| Inserto        | Designación    | Cermet |        | Cermet Rec. | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |     |           |                |            |
|----------------|----------------|--------|--------|-------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|-----|-----------|----------------|------------|
|                |                | CN1500 | CN2000 | CN2500      | CC1500     | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300   | PC5400 | PC8105             | PC8110 | PC8115 | PC9030 | H01 | H05       | fn<br>(mm/rev) | ap<br>(mm) |
| Uso Pesado<br> | CNMM 120408-GH |        |        |             |            |        |        | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.30~0.60      | 2.50~8.00  |
|                | 120412-GH      |        |        |             |            |        | ●      | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.30~0.70      | 2.50~8.00  |
|                | 160412-GH      |        |        |             |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.30~0.70      | 2.50~8.00  |
|                | 160424-GH      |        |        |             |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.30~1.20      | 2.50~8.00  |
|                | 160612-GH      |        |        |             |            |        |        |        |        | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.30~0.90      | 2.50~8.00  |
|                | 160616-GH      |        |        |             |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.30~1.20      | 2.50~8.00  |
|                | 160624-GH      |        |        |             |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.30~1.50      | 2.50~8.00  |
|                | 190608-GH      |        |        |             |            |        |        |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.30~0.60      | 2.50~8.00  |
|                | 190612-GH      |        |        |             |            |        |        | ●      | ●      | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.30~0.70      | 3.00~8.00  |
|                | 190616-GH      |        |        |             |            |        |        | ●      | ●      | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.45~0.90      | 3.00~8.00  |
|                | 190624-GH      |        |        |             |            |        |        | ●      | ●      | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.55~1.20      | 4.00~9.00  |
|                | 250716-GH      |        |        |             |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.50~1.00      | 4.50~10.00 |
|                | 250724-GH      |        |        |             |            |        |        | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.55~1.20      | 5.00~12.00 |
|                | 250924-GH      |        |        |             |            |        |        | ●      | ●      | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.55~1.20      | 5.00~12.00 |
| 250950-GH      |                |        |        |             |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     | 0.65~1.30 | 6.00~12.00     |            |
| Uso Pesado<br> | CNMM 190612-VH |        |        |             |            |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     | 0.50~0.90 | 5.00~10.00     |            |
|                | 190616-VH      |        |        |             |            |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     | 0.50~1.10 | 5.00~10.00     |            |
|                | 190624-VH      |        |        |             |            |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     | 0.60~1.20 | 6.00~12.00     |            |
|                | 250724-VH      |        |        |             |            |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     | 0.70~1.40 | 6.00~15.00     |            |
|                | 250924-VH      |        |        |             |            |        |        | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |           | 0.70~1.40      | 6.00~15.00 |
| Uso Pesado<br> | CNMM 190612-VT |        |        |             |            |        | ●      |        | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     | 0.60~1.00 | 6.00~13.00     |            |
|                | 190616-VT      |        |        |             |            |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     | 0.60~1.10 | 5.00~10.00     |            |
|                | 190624-VT      |        |        |             |            |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     | 0.60~1.60 | 7.00~13.00     |            |
|                | 250724-VT      |        |        |             |            |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     | 0.75~16.0 | 7.00~17.00     |            |
|                | 250924-VT      |        |        |             |            |        |        | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     | 0.75~16.0 | 7.00~17.00     |            |

🔄 Filo de Corte **A52~A61**   🔄 Rompeviruta Recomendada **B04~B11**   🔄 Sistema Codificación **B26~B27**

●: En Almacén

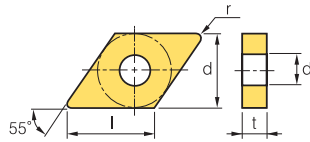
| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MCKNR/L                      | B171   | MCRNR/L     | B172   |
| MCLNR/L                      | B171   | PCBNR/L     | B159   |
| MCMNN                        | B171   | PCLNR/L     | B160   |





# DN

| Dimensiones (mm) |       |           |                |
|------------------|-------|-----------|----------------|
| Tamaño           | d     | t         | d <sub>1</sub> |
| 11               | 9.525 | 3.18~4.76 | 3.81           |
| 15               | 12.7  | 4.76~6.35 | 5.16           |



## Rómbico 55° **Negativo**

| Pza. Trabajo                         |          |          |   |   |   |   |   |   |   |   |   | Tipo de Maquinado |   |   |   |   |   |   |   |
|--------------------------------------|----------|----------|---|---|---|---|---|---|---|---|---|-------------------|---|---|---|---|---|---|---|
|                                      | Acero    | <b>P</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● | ● | ● |
| Acero Inoxidable                     | <b>M</b> |          |   |   |   |   |   |   |   |   |   |                   |   |   |   |   |   |   |   |
| Fundición                            | <b>K</b> |          |   |   |   |   |   |   |   |   |   |                   |   |   |   |   |   |   |   |
| Metalas No-Ferrosos                  | <b>N</b> |          |   |   |   |   |   |   |   |   |   |                   |   |   |   |   |   |   |   |
| Aleaciones Resist. calor, de Titanio | <b>S</b> |          |   |   |   |   |   |   |   |   |   |                   |   |   |   |   |   |   |   |
| Acero Endurecido                     | <b>H</b> |          |   |   |   |   |   |   |   |   |   |                   |   |   |   |   |   |   |   |

| Inserto                      | Designación  | Cermet |        |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |     |     |                            |                        |           |           |           |
|------------------------------|--|--------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|-----|-----|----------------------------|------------------------|-----------|-----------|-----------|
|                              |  | CN1500 | CN2000 | CN2500 | CC1500      | CC2500 | NC3215     | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300   | PC5400 | PC8105             | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |           |           |           |
| Acabado<br>                  | DNMG 110402-VF<br>110404-VF<br>110408-VF<br>150404-VF<br>150408-VF<br>150412-VF<br>150604-VF<br>150608-VF<br>150612-VF |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.05~0.20              | 0.20~1.00 |           |           |
|                              |  |        |        |        |             |        |            |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.07~0.30 | 0.50~1.50 |           |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        |           | 0.10~0.40 | 0.50~1.50 |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        |           | 0.07~0.30 | 0.50~1.50 |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        |           | 0.10~0.40 | 0.50~1.50 |
|                              |  |        |        |        |             |        |            |        |        |        |        |        | ●      |        |        |        |          |        |                    |        |        |        |     |     |                            |                        |           | 0.15~0.50 | 0.60~1.50 |
|                              |  |        |        |        |             |        |            |        |        |        |        | ●      |        | ●      |        |        |          |        |                    |        |        |        |     |     |                            |                        |           | 0.13~0.30 | 0.50~1.50 |
|                              |  |        |        |        |             |        |            |        |        |        |        | ●      |        | ●      |        |        |          |        |                    |        |        |        |     |     |                            |                        |           | 0.10~0.40 | 0.50~1.50 |
| Acabado<br><br>[Acero Medio] | DNMG 110408-VL<br>150404-VL<br>150408-VL<br>150412-VL<br>150604-VL<br>150608-VL<br>150612-VL                           |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.05~0.20              | 0.10~1.00 |           |           |
|                              |  |        |        |        |             |        |            |        |        |        |        | ●      |        | ●      |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.05~0.25 | 0.10~1.50 |           |
|                              |  |        |        |        |             |        |            |        |        |        | ●      |        | ●      | ●      |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.05~0.30 | 0.20~1.50 |           |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.10~0.30 | 0.25~1.50 |           |
|                              |  |        |        | ●      |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        |           | 0.05~0.25 | 0.10~1.50 |
|                              |  |        |        | ●      |             |        |            |        |        |        | ●      | ●      | ●      |        |        |        |          |        |                    |        |        |        |     |     |                            |                        |           | 0.05~0.30 | 0.20~1.50 |
| Acabado<br>                  | DNMG 150404-VP1<br>150408-VP1<br>150604-VP1<br>150608-VP1  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  | ●      | ●      |        | ●   |     | 0.05~0.15                  | 0.10~1.50              |           |           |           |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      |     | ●   |                            | 0.07~0.20              | 0.10~1.50 |           |           |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        | ●      | ●      | ●   |     | ●                          |                        | 0.05~0.15 | 0.10~1.50 |           |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        | ●      | ●      | ●   |     | ●                          |                        | 0.07~0.20 | 0.10~1.50 |           |
| Acabado<br><br>[wiper]       | DNMG 150404-VW<br>150408-VW<br>150604-VW<br>150608-VW  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.10~0.35              | 0.30~3.00 |           |           |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.10~0.40 | 0.30~3.00 |           |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.10~0.35 | 0.30~3.00 |           |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.10~0.40 | 0.30~3.00 |           |
| Medio a Acabado<br>          | DNMG 150404-HA<br>150408-HA<br>150604-HA<br>150608-HA  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        | ●   | ●   | 0.05~0.30                  | 0.80~3.50              |           |           |           |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     | ●   | ●                          | 0.10~0.40              | 0.80~3.50 |           |           |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | ●                          | ●                      | 0.05~0.30 | 0.80~3.50 |           |
|                              |  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | ●                          | ●                      | 0.10~0.40 | 0.80~3.50 |           |

Filo de Corte **A52~A61**  
 Rompeviruta Recomendada **B04~B11**  
 Sistema Codificación **B26~B27**  
 ●: En Almacén

| Porta herramienta disponible |        |                |        |
|------------------------------|--------|----------------|--------|
| Designación                  | Página | Designación    | Página |
| <b>MCKNR/L</b>               | B171   | <b>MCRNR/L</b> | B172   |
| <b>MCLNR/L</b>               | B171   | <b>PCBNR/L</b> | B159   |
| <b>MCMNN</b>                 | B171   | <b>PCLNR/L</b> | B160   |





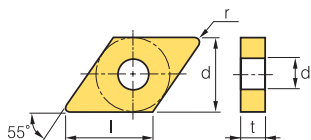




# B Insertos para Torneado (Negativo)

DN ○ ○




| Dimensiones (mm) |       |           |                |
|------------------|-------|-----------|----------------|
| Tamaño           | d     | t         | d <sub>1</sub> |
| 11               | 9.525 | 4.76      | 3.81           |
| 15               | 12.7  | 4.76~6.35 | 5.16           |



## ◻ Rómbico 55° Negativo

| Pza. Trabajo                         | Material |       | Código |   |   |   |   |   |   |   |   |    |    |    |    |    | Tipo de Maquinado |    |    |    |
|--------------------------------------|----------|-------|--------|---|---|---|---|---|---|---|---|----|----|----|----|----|-------------------|----|----|----|
|                                      | Color    | Letra | 1      | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15                | 16 | 17 | 18 |
| Acero                                | P        |       | ●      | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  |
| Acero Inoxidable                     | M        |       | ●      | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  |
| Fundición                            | K        |       | ●      | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  |
| Metales No-Ferrosos                  | N        |       |        |   |   |   |   |   |   |   |   |    |    |    |    |    |                   |    |    |    |
| Aleaciones Resist. calor, de Titanio | S        |       |        |   |   |   |   |   |   |   |   |    |    |    |    |    |                   |    |    |    |
| Acero Endurecido                     | H        |       |        |   |   |   |   |   |   |   |   |    |    |    |    |    |                   |    |    |    |

● Corte Continuo  
● Corte en general  
● Corte Interrompido

| Inserto   | Designación     | Cermet |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |        |     |     |                         |                     |           |           |
|---|-----------------|--------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|--------|-----|-----|-------------------------|---------------------|-----------|-----------|
|   |                 | CN1500 | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115   | NC9125 | NC9135             | PC5300 | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |           |
| Medio<br>              | DNMG 110404-VM  |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.05~0.30           | 0.90~4.00 |           |
|   | 110408-VM       |        |        |            |        |        | ●      |        |        | ●      |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.10~0.50 | 1.00~4.00 |
|   | 110412-VM       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.13~0.50 | 1.30~4.00 |
|   | 150404-VM       | ●      |        |            |        |        |        |        |        | ●      |        |        |        |          |        |                    | ●      | ●      |        |        |        |        |     |     |                         |                     | 0.05~0.30 | 0.90~5.00 |
|   | 150408-VM       | ●      |        | ●          |        |        |        |        |        | ●      | ●      |        |        |          |        |                    | ●      | ●      |        |        |        |        |     |     |                         |                     | 0.10~0.50 | 1.00~5.00 |
|   | 150412-VM       |        |        |            |        |        |        |        |        |        | ●      |        |        |          |        |                    | ●      | ●      |        |        |        |        |     |     |                         |                     | 0.13~0.60 | 1.30~5.00 |
|   | 150604-VM       | ●      |        | ●          |        |        |        | ●      |        | ●      | ●      |        |        |          |        |                    | ●      | ●      |        |        |        |        | ●   |     |                         |                     | 0.05~0.30 | 0.90~5.00 |
|   | 150608-VM       | ●      |        |            |        |        |        | ●      | ●      | ●      | ●      |        |        |          |        |                    | ●      | ●      |        |        |        |        | ●   |     |                         |                     | 0.10~0.50 | 1.00~5.00 |
|   | 150612-VM       |        |        |            |        |        |        |        |        |        | ●      |        |        |          |        |                    |        | ●      | ●      |        |        |        |     |     |                         |                     |           | 0.13~0.60 |
| Medio<br>            | DNMG 150404-VP3 |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      |        | ●   | ●   |                         | 0.05~0.30           | 0.10~3.00 |           |
|   | 150408-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      |        | ●   | ●   |                         |                     | 0.10~0.45 | 0.50~5.00 |
|   | 150412-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      |        | ●   | ●   |                         |                     | 0.12~0.50 | 0.50~5.00 |
|   | 150604-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      |        | ●   | ●   |                         |                     | 0.05~0.30 | 0.10~3.00 |
|   | 150608-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      |        | ●   | ●   |                         |                     | 0.10~0.45 | 0.50~5.00 |
|   | 150612-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      |        | ●   | ●   |                         |                     | 0.12~0.50 | 0.50~5.00 |
| Medio<br><br>[wiper] | DNMG 150408-LW  |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.15~0.50           | 0.70~4.50 |           |
|   | 150412-LW       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.20~0.60 | 1.00~5.00 |
|   | 150608-LW       |        |        |            |        |        |        | ●      |        | ●      |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.15~0.50 | 0.70~4.50 |
|   | 150612-LW       |        |        |            |        |        |        | ●      |        | ●      |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.20~0.60 | 1.00~5.00 |

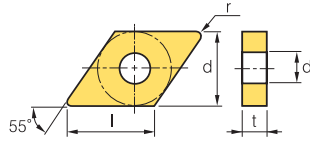
🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MCKNR/L                      | B171   | MCRNR/L     | B172   |
| MCLNR/L                      | B171   | PCBNR/L     | B159   |
| MCMNN                        | B171   | PCLNR/L     | B160   |



# DN

| Dimensiones (mm) |        |           |                |
|------------------|--------|-----------|----------------|
| Tamaño           | d      | t         | d <sub>1</sub> |
| 15               | 12.7   | 4.76~6.35 | 5.16           |
| 19               | 15.875 | 6.35      | 7.93           |



## ◊ Rómbico **55°** Negativo

| Pza. Trabajo                         | Material |         | Compatibilidad |   |   |   |   |   |   |   |   |    |    |    | Tipo de Maquinado |   |  |
|--------------------------------------|----------|---------|----------------|---|---|---|---|---|---|---|---|----|----|----|-------------------|---|--|
|                                      | Color    | Simbolo | 1              | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |                   |   |  |
| Acero                                | P        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● Corte Continuo<br>● Corte en general<br>✱ Corte Interrumpido |
| Acero Inoxidable                     | M        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● |  |
| Fundicion                            | K        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● |  |
| Metales No-Ferrosos                  | N        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● |  |
| Aleaciones Resist. calor, de Titanio | S        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● |  |
| Acero Endurecido                     | H        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● |  |

| Inserto      | Designación     | Cermet |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |                            |                        |           |           |
|--------------|-----------------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|----------------------------|------------------------|-----------|-----------|
|              |                 | CN1500 | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |           |           |
| General<br>  | DNMG 150402-B25 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.15~0.40              | 0.50~3.50 |           |
|              | 150404-B25      |        |        | ●           |        |            | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.17~0.45 | 1.00~4.00 |
|              | 150408-B25      |        |        | ●           |        |            | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.17~0.55 | 1.50~4.00 |
|              | 150412-B25      |        |        |             |        |            | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.25~0.55 | 1.50~4.00 |
|              | 150425-B25      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.35~0.65 | 2.50~5.50 |
|              | 150602-B25      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.15~0.40 | 0.50~3.50 |
|              | 150604-B25      |        | ●      |             |        |            |        | ●      | ●      | ●      | ●      |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.17~0.55 | 1.50~4.00 |
|              | 150608-B25      |        | ●      |             |        |            |        | ●      | ●      | ●      | ●      |        |        |        |        |          |        |                    |        |        |        |        | ●   |     |                            |                        | 0.17~0.55 | 1.50~4.00 |
|              | 150612-B25      |        |        |             |        |            |        | ●      | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        |           | 0.25~0.55 |
| 150625-B25   |                 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.35~0.65 | 2.50~5.50 |
| Desbaste<br> | DNMG 150408-GR  |        |        |             |        |            | ●      |        | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.20~0.50              | 1.00~7.00 |           |
|              | 150412-GR       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.25~0.90 | 1.30~7.00 |
|              | 150416-GR       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.30~0.75 | 1.80~7.00 |
|              | 150608-GR       |        |        |             |        |            |        |        | ●      | ●      | ●      |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.20~0.50 | 1.00~7.00 |
|              | 150612-GR       |        |        |             |        |            |        |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.25~0.70 | 1.30~7.00 |
|              | 150616-GR       |        |        |             |        |            |        |        |        |        | ●      |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.20~0.75 | 1.80~7.00 |
| Desbaste<br> | DNMG 150408-RK  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.15~0.50              | 1.50~5.00 |           |
|              | 150412-RK       |        |        |             |        |            |        |        |        |        |        |        | ●      |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.20~0.60 | 1.80~5.00 |
|              | 150608-RK       |        |        |             |        |            |        |        |        |        |        |        | ●      | ●      |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.15~0.50 | 1.50~5.00 |
|              | 150612-RK       |        |        |             |        |            |        |        |        |        |        |        | ●      |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.20~0.60 | 1.80~5.00 |

Filo de Corte **A52~A61**  
 Rompeviruta Recomendada **B04~B11**  
 Sistema Codificación **B26~B27**  
 ●: En Almacen

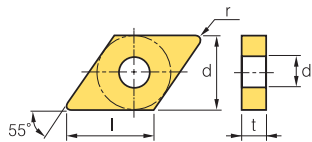
| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MCKNR/L                      | B171   | MCRNR/L     | B172   |
| MCLNR/L                      | B171   | PCBNR/L     | B159   |
| MCMNN                        | B171   | PCLNR/L     | B160   |



# B Insertos para Torneado (Negativo)

DN

Rómbico **55°** Negativo



| Dimensiones (mm) |      |           |                |
|------------------|------|-----------|----------------|
| Tamaño           | d    | t         | d <sub>1</sub> |
| 15               | 12.7 | 4.76~6.35 | 5.16           |

| Pza. Trabajo                         | Material |         | Corte |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Tipo de Maquinado |    |
|--------------------------------------|----------|---------|-------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------------|----|
|                                      | Color    | Simbolo | 1     | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17                | 18 |
| Acero                                | <b>P</b> |         | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  |
| Acero Inoxidable                     | <b>M</b> |         | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  |
| Fundicion                            | <b>K</b> |         | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  |
| Metales No-Ferrosos                  | <b>N</b> |         | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  |
| Aleaciones Resist. calor, de Titanio | <b>S</b> |         | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  |
| Acero Endurecido                     | <b>H</b> |         | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  |

| Inserto      | Designación | Cermet     |        | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |             |           |           |           |           |           |
|--------------|-------------|------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|-------------|-----------|-----------|-----------|-----------|-----------|
|              |             | CN1500     | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | fn (mm/rev) | ap (mm)   |           |           |           |           |
| Desbaste<br> | DNMG        | 150404-RM  |        |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        | ●      |                    |        |        |        |        |     |     |             | 0.10~0.50 | 2.00~6.00 |           |           |           |
|              |             | 150408-RM  |        |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        | ●      | ●                  |        |        |        |        |     |     |             |           | 0.15~0.55 | 2.00~6.00 |           |           |
|              |             | 150412-RM  |        |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        | ●      | ●                  |        |        |        |        |     |     |             |           | 0.20~0.60 | 2.00~6.00 |           |           |
|              |             | 150416-RM  |        |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        | ●      | ●                  |        |        |        |        |     |     |             |           | 0.25~0.70 | 2.00~6.00 |           |           |
|              |             | 150604-RM  |        |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        | ●      | ●                  |        |        |        |        | ●   | ●   |             |           | 0.10~0.50 | 2.00~6.00 |           |           |
|              |             | 150608-RM  |        |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        | ●      | ●                  |        |        |        | ●      |     | ●   |             |           | 0.15~0.55 | 2.00~6.00 |           |           |
|              |             | 150612-RM  |        |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        | ●      | ●                  |        |        |        |        |     |     |             |           | 0.20~0.60 | 2.00~6.00 |           |           |
|              |             | 150616-RM  |        |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        | ●      | ●                  |        |        |        |        |     |     |             |           | 0.25~0.70 | 2.00~6.00 |           |           |
| Desbaste<br> | DNMG        | 150408-VP4 |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.15~0.35 | 1.00~4.00 |           |           |           |
|              |             | 150412-VP4 |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.20~0.40 | 1.00~4.00 |           |           |
|              |             | 150608-VP4 |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        | ●      |     |     |             |           | 0.15~0.35 | 1.00~4.00 |           |           |
|              |             | 150612-VP4 |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        | ●      |     |     |             |           | 0.20~0.40 | 1.00~4.00 |           |           |
| Desbaste<br> | DNMG        | 150408-VR  |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.25~0.55 | 1.20~7.00 |           |           |
|              |             | 150412-VR  |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.30~0.60 | 1.50~7.00 |           |           |
|              |             | 150608-VR  |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.25~0.55 | 1.20~7.00 |           |           |
|              |             | 150612-VR  |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.30~0.60 | 1.50~7.00 |           |           |
| Acabado<br>  | DNMX        | 150404R-SR |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.10~0.40 | 0.70~4.50 |           |           |
|              |             | 150408R-SR |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           | 0.12~0.45 | 1.00~4.50 |           |
|              |             | 150604R-SR |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           | 0.10~0.40 | 0.70~4.50 |           |
|              |             | 150608R-SR |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           | 0.12~0.45 | 1.00~4.50 |           |
|              |             | 150404L-SR |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           | 0.10~0.40 | 0.70~4.50 |           |
|              |             | 150408L-SR |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           | 0.12~0.45 | 1.00~4.50 |           |
|              |             | 150604L-SR |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           | 0.10~0.40 | 0.70~4.50 |           |
|              |             | 150608L-SR |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           | 0.12~0.45 | 1.00~4.50 |           |
| Medio<br>    | DNMX        | 150404R-SH |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.15~0.30 | 1.00~4.00 |           |           |
|              |             | 150408R-SH |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           | 0.15~0.50 | 1.50~5.00 |           |
|              |             | 150604R-SH |        |            |        |        |        | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           | 0.15~0.30 | 1.00~4.00 |           |
|              |             | 150608R-SH |        |            |        |        |        | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           |           | 0.15~0.50 | 1.50~5.00 |
|              |             | 150404L-SH |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           |           | 0.15~0.30 | 1.00~4.00 |
|              |             | 150408L-SH |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           |           | 0.15~0.50 | 1.50~5.00 |
|              |             | 150604L-SH |        |            |        |        |        |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           |           | 0.15~0.30 | 1.00~4.00 |
|              |             | 150608L-SH |        |            |        |        |        |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           |           |           | 0.15~0.50 | 1.50~5.00 |

Filo de Corte A52~A61 Rompeviruta Recomendada B04~B11 Sistema Codificación B26~B27 ● : En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MCKNR/L                      | B171   | MCRNR/L     | B172   |
| MCLNR/L                      | B171   | PCBNR/L     | B159   |
| MCMNN                        | B171   | PCLNR/L     | B160   |



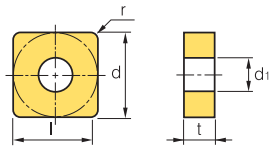






# B Insertos para Torneado (Negativo)

## SN



| Dimensiones (mm) |       |           |                |
|------------------|-------|-----------|----------------|
| Tamaño           | d     | t         | d <sub>1</sub> |
| 09               | 9.525 | 3.18      | 3.81           |
| 12               | 12.7  | 3.18~4.76 | 5.16           |

### Cuadrado 90° Negativo

| Pza. Trabajo                         | Material |         | Compatibilidad |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Tipo de Maquinado |    |   |
|--------------------------------------|----------|---------|----------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------------|----|---|
|                                      | Color    | Simbolo | 1              | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17                | 18 |   |
| Acero                                | P        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ● |
| Acero Inoxidable                     | M        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ● |
| Fundición                            | K        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ● |
| Metales No-Ferrosos                  | N        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ● |
| Aleaciones Resist. calor, de Titanio | S        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ● |
| Acero Endurecido                     | H        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ● |

● Corte Continuo  
 ● Corte en general  
 ● Corte Interrumpido

| Inserto         | Designación | Cermets         |        | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |                         |                     |           |           |           |           |
|-----------------|-------------|-----------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|-------------------------|---------------------|-----------|-----------|-----------|-----------|
|                 |             | CN1500          | CN2000 | CC1500     | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |           |           |           |
| Acabado         | VB          | SNMG 120404-VB  | ●      |            | ●      | ●      | ●      | ●      |        |        | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   |                         |                     |           |           |           |           |
|                 |             | 120408-VB       | ●      | ●          | ●      | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     |           |           |           |           |
| Acabado         | VF          | SNMG 090304-VF  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.15-0.35           | 0.30-2.00 |           |           |           |
|                 |             | 090308-VF       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.15-0.40 | 0.50-2.00 |           |           |
|                 |             | 120404-VF       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     |           |           |           |           |
|                 |             | 120408-VF       |        |            |        |        |        |        |        |        |        |        | ●      |        |          |        |                    |        |        |        |        |     |     |                         |                     |           |           |           |           |
|                 |             | 120412-VF       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     |           |           |           |           |
| Acabado         | VL          | SNMG 120408-VL  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     |           |           |           |           |
| Medio a Acabado | HA          | SNMG 120404-HA  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     | ●   | ●                       |                     | 0.10-0.35 | 0.80-3.50 |           |           |
|                 |             | 120408-HA       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     | ●                       | ●                   |           | 0.10-0.40 | 0.80-3.50 |           |
|                 |             | 120412-HA       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     |           |           | 0.13-0.55 | 0.80-3.50 |
| Medio a Acabado | LP          | SNMG 090308-LP  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     |           | 0.10-0.30 | 0.30-1.50 |           |
|                 |             | 090408-LP       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     |           |           | 0.10-0.30 | 0.30-1.50 |
|                 |             | 120404-LP       |        |            |        |        |        |        |        |        |        | ●      | ●      | ●      |          |        |                    |        |        |        |        |     |     |                         |                     |           |           | 0.10-0.35 | 0.30-2.00 |
|                 |             | 120408-LP       |        |            |        |        |        |        |        |        |        | ●      | ●      |        |          |        |                    |        |        |        |        |     |     |                         |                     |           |           | 0.10-0.40 | 0.50-2.50 |
|                 |             | 120412-LP       |        |            |        |        |        |        |        |        |        | ●      | ●      |        |          |        |                    |        |        |        |        |     |     |                         |                     |           |           |           | 0.13-0.45 |
| Medio a Acabado | VC          | SNMG 120408-VC  |        |            |        |        |        |        |        |        |        | ●      | ●      |        |          |        |                    |        |        |        |        |     |     |                         |                     |           |           | 0.15-0.40 | 0.50-3.50 |
| Medio a Acabado | VP2         | SNMG 120404-VP2 |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | ●         | 0.05-0.35 | 0.10-3.00 |           |
|                 |             | 120408-VP2      |        |            |        |        |        |        |        |        |        | ●      |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | ●         | 0.10-0.45 | 0.50-4.50 |           |
|                 |             | 120412-VP2      |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | ●         | 0.10-0.50 | 0.50-5.00 |           |

🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

| Porta herramienta disponible |        |             |        |             |           |
|------------------------------|--------|-------------|--------|-------------|-----------|
| Designación                  | Página | Designación | Página | Designación | Página    |
| MSBNR/L                      | B173   | MSRNR/L     | B174   | PSDNN       | B163      |
| MSDNN                        | B173   | MSSNR/L     | B175   | PSKNR/L     | B164, 199 |
| MSKNR/L                      | B174   | PSBNR/L     | B163   | PSSNR/L     | B164      |

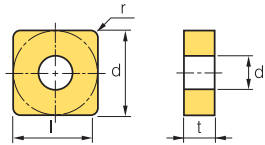






# B Insertos para Torneado (Negativo)

SN ○ ○



| Tamaño | Dimensiones (mm) |      |      |
|--------|------------------|------|------|
|        | d                | t    | d1   |
| 09     | 9.525            | 3.18 | 3.81 |
| 12     | 12.7             | 4.76 | 5.16 |
| 15     | 15.875           | 6.35 | 6.35 |
| 19     | 19.05            | 6.35 | 7.93 |
| 25     | 25.4             | 7.94 | 9.12 |

○ Cuadrado 90° Negativo

| Pza. Trabajo                        | Material | Código | Compatibilidad |   |   |   |   |   |   |   |   |    |    |    | Tipo de Maquinado |   |   |   |   |   |
|-------------------------------------|----------|--------|----------------|---|---|---|---|---|---|---|---|----|----|----|-------------------|---|---|---|---|---|
|                                     |          |        | 1              | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |                   |   |   |   |   |   |
| Acero                               | P        | ●      | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● | ● | ● | ● |
| Acero Inoxidable                    | M        | ●      | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● | ● | ● | ● |
| Fundición                           | K        | ●      | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● | ● | ● | ● |
| Metales No-Ferrosos                 | N        | ●      | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● | ● | ● | ● |
| Aleaciones Resist. calor de Titanio | S        | ●      | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● | ● | ● | ● |
| Acero Endurecido                    | H        | ●      | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● | ● | ● | ● |

● Corte Continuo  
● Corte en general  
● Corte Intermitente

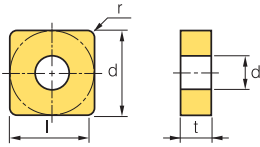
| Inserto             | Designación     | Cermet |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |        |     |     |             |           |           |           |
|---------------------|-----------------|--------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|--------|-----|-----|-------------|-----------|-----------|-----------|
|                     |                 | CN1500 | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115   | NC9125 | NC9135             | PC5300 | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | fn (mm/rev) | ap (mm)   |           |           |
| <b>Medio</b><br>MP  | SNMG 090304-MP  |        |        |            |        | ●      |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             | 0.10-0.40 | 0.40-3.80 |           |
|                     | 090308-MP       |        |        |            |        | ●      |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.15-0.40 | 0.50-4.00 |
|                     | 090312-MP       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.15-0.50 | 0.80-4.20 |
|                     | 090404-MP       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.10-0.40 | 0.40-3.80 |
|                     | 090408-MP       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.15-0.40 | 0.50-4.00 |
|                     | 090412-MP       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.15-0.50 | 0.80-4.20 |
|                     | 120404-MP       |        |        |            |        |        | ●      |        | ●      |        | ●      |        | ●      | ●        | ●      |                    |        |        |        | ●      | ●      |        |     |     |             |           | 0.10-0.40 | 0.40-4.00 |
|                     | 120408-MP       |        |        |            |        |        | ●      |        | ●      |        | ●      |        | ●      | ●        | ●      |                    |        |        |        | ●      | ●      |        |     |     |             |           | 0.15-0.45 | 0.50-4.50 |
|                     | 120412-MP       |        |        |            |        |        | ●      |        | ●      |        | ●      |        | ●      | ●        | ●      |                    |        |        |        |        |        |        |     |     |             |           | 0.15-0.50 | 0.80-5.00 |
|                     | 120416-MP       |        |        |            |        |        | ●      |        | ●      |        | ●      |        | ●      | ●        | ●      |                    |        |        |        |        |        |        |     |     |             |           | 0.18-0.60 | 0.80-7.00 |
|                     | 150608-MP       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.15-0.50 | 0.50-7.00 |
|                     | 150612-MP       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.18-0.60 | 0.80-8.50 |
|                     | 190608-MP       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.15-0.50 | 0.50-8.50 |
|                     | 190612-MP       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.18-0.60 | 0.80-8.50 |
| <b>Medio</b><br>VM  | SNMG 090304-VM  |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             | 0.05-0.30 | 0.90-3.50 |           |
|                     | 090308-VM       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.10-5.00 | 1.00-3.50 |
|                     | 120404-VM       | ●      |        |            |        |        |        |        |        | ●      |        |        |        |          |        | ●                  | ●      |        |        |        |        |        |     |     |             | 0.05-0.30 | 0.90-5.00 |           |
|                     | 120408-VM       | ●      |        |            |        |        |        |        | ●      | ●      | ●      |        |        |          |        | ●                  | ●      |        |        | ●      |        | ●      |     |     |             | 0.10-0.50 | 1.00-5.00 |           |
|                     | 120412-VM       |        |        |            |        |        |        |        |        | ●      |        |        |        |          |        | ●                  | ●      |        |        |        |        |        |     |     |             |           | 0.13-0.60 | 1.30-5.00 |
|                     | 190612-VM       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.25-0.60 | 2.50-7.50 |
|                     | 190616-VM       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.25-0.60 | 2.50-7.50 |
| <b>Medio</b><br>VP3 | SNMG 120404-VP3 |        |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  | ●      | ●      | ●      | ●      |        | ●      | ●   |     |             | 0.05-0.30 | 0.10-3.00 |           |
|                     | 120408-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  | ●      | ●      | ●      | ●      |        | ●      | ●   |     |             | 0.10-0.45 | 1.00-5.00 |           |
|                     | 120412-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  | ●      | ●      | ●      | ●      |        | ●      | ●   |     |             | 0.12-0.50 | 1.00-5.00 |           |
|                     | 120416-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  | ●      | ●      | ●      | ●      |        | ●      | ●   |     |             | 0.25-0.45 | 0.50-4.00 |           |
|                     | 150608-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             | 0.15-0.35 | 0.80-6.00 |           |
|                     | 150612-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             | 0.20-0.40 | 1.00-6.00 |           |
|                     | 150616-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             | 0.20-0.40 | 1.00-6.00 |           |
|                     | 190608-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.15-0.35 | 0.80-7.00 |
|                     | 190612-VP3      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.20-0.40 | 1.00-7.00 |
| 190616-VP3          |                 |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             | 0.25-0.45 | 1.00-7.00 |           |

🔗 Filo de Corte A52~A61 🔗 Rompeviruta Recomendada B04~B11 🔗 Sistema Codificación B26~B27 ● : En Almacen

| Porta herramienta disponible |        |             |        |             |           |
|------------------------------|--------|-------------|--------|-------------|-----------|
| Designación                  | Página | Designación | Página | Designación | Página    |
| MSBNR/L                      | B173   | MSRNR/L     | B174   | PSDNN       | B163      |
| MSDNN                        | B173   | MSSNR/L     | B175   | PSKNR/L     | B164, 199 |
| MSKNR/L                      | B174   | PSBNR/L     | B163   | PSSNR/L     | B164      |



# SN



| Dimensiones (mm) |        |      |                |
|------------------|--------|------|----------------|
| Tamaño           | d      | t    | d <sub>1</sub> |
| 09               | 9.525  | 3.18 | 3.81           |
| 12               | 12.7   | 4.76 | 5.16           |
| 15               | 15.875 | 6.35 | 6.35           |
| 19               | 19.05  | 6.35 | 7.93           |
| 25               | 25.4   | 7.94 | 9.12           |

**Cuadrado 90° Negativo**

| Pza. Trabajo                         | Material |         | Código de Materiales |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Tipo de Maquinado   |
|--------------------------------------|----------|---------|----------------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|---|
|                                      | Color    | Símbolo | 1                    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |   |
| Acero                                | P        | ●       | ●                    | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ● Corte Continuo<br>●● Corte en general<br>●●● Corte Interrumpido |
| Acero Inoxidable                     | M        | ●       |                      |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |
| Fundición                            | K        | ●       |                      |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |
| Metales No-Ferrosos                  | N        | ●       |                      |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |
| Aleaciones Resist. calor, de Titanio | S        | ●       |                      |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |
| Acero Endurecido                     | H        | ●       |                      |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |   |

| Inserto      | Designación     | Cermet |        |        |        |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |           |            |                         |                     |
|--------------|-----------------|--------|--------|--------|--------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|-----------|------------|-------------------------|---------------------|
|              |                 | CN1500 | CN2000 | CN2500 | CC1500 | CC2500 | NC3215     | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300   | PC5400 | PC8105             | PC8110 | PC8115 | PC9030 | H01       | H05        | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |
| General<br>  | SNMG 090308-B25 |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           |            | 0.17~0.45               | 0.80~3.50           |
|              | 120404-B25      | ●      | ●      |        |        |        | ●          | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |           |            | 0.17~0.45               | 1.00~3.50           |
|              | 120408-B25      | ●      | ●      |        |        |        | ●          | ●      | ●      | ●      |        |        |        |        |        |        | ●        | ●      |                    |        |        | ●      |           |            | 0.23~0.60               | 1.50~5.00           |
|              | 120412-B25      |        | ●      |        |        |        | ●          | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |           |            | 0.25~0.60               | 2.00~5.00           |
|              | 120416-B25      |        |        | ●      |        |        | ●          | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |           |            | 0.35~0.70               | 2.50~5.00           |
|              | 120420-B25      |        |        |        |        |        | ●          | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |           |            | 0.40~0.70               | 3.00~5.00           |
|              | 150608-B25      |        |        |        |        |        |            |        |        | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |           |            | 0.25~0.60               | 1.50~6.00           |
|              | 150612-B25      |        |        |        |        |        |            |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |           |            | 0.25~0.60               | 2.00~6.00           |
|              | 150616-B25      |        |        |        |        |        |            |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |           |            | 0.35~0.70               | 2.00~6.00           |
|              | 190608-B25      |        |        |        |        |        | ●          | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |           |            | 0.25~0.60               | 3.00~8.00           |
|              | 190612-B25      |        |        |        |        |        | ●          | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |           |            | 0.30~0.60               | 3.00~8.00           |
|              | 190616-B25      |        |        |        |        |        | ●          | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        | ●      |           |            | 0.35~0.70               | 3.00~8.00           |
|              | 250716-B25      |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           |            | 0.35~0.70               | 4.00~12.00          |
|              | 250724-B25      |        |        |        |        |        | ●          |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |           |            | 0.50~1.00               | 5.00~12.00          |
| 250924-B25   |                 |        |        |        |        | ●      |            |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |           | 0.50~1.00  | 5.00~12.00              |                     |
| Desbaste<br> | SNMG 120404-GR  |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.15~0.45  | 0.08~6.00               |                     |
|              | 120408-GR       |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.20~0.50  | 1.00~7.00               |                     |
|              | 120412-GR       |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.20~0.50  | 1.00~7.00               |                     |
|              | 150608-GR       |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.25~0.60  | 1.00~7.00               |                     |
|              | 150612-GR       |        |        |        |        |        | ●          | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.29~0.75  | 1.40~7.00               |                     |
|              | 190608-GR       |        |        |        |        |        |            |        |        | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.30~0.80  | 1.70~9.00               |                     |
|              | 190612-GR       |        |        |        |        |        | ●          | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.30~0.80  | 1.70~9.00               |                     |
|              | 190616-GR       |        |        |        |        |        | ●          | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.31~0.82  | 1.90~12.30              |                     |
|              | 190624-GR       |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.35~0.82  | 2.00~12.50              |                     |
|              | 250724-GR       |        |        |        |        |        |            |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |           | 0.45~1.20  | 2.60~14.00              |                     |
| 250924-GR    |                 |        |        |        |        | ●      |            |        |        | ●      |        |        |        |        |        |        |          |        |                    |        |        |        | 0.50~1.20 | 2.60~14.00 |                         |                     |
| Desbaste<br> | SNMG 120404-RK  |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.15~0.50  | 1.20~6.00               |                     |
|              | 120408-RK       |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.23~0.53  | 1.50~6.00               |                     |
|              | 120412-RK       |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.28~0.53  | 1.80~6.00               |                     |
|              | 120416-RK       |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.28~0.53  | 2.00~6.00               |                     |
|              | 150612-RK       |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.20~0.70  | 1.80~7.00               |                     |
|              | 150616-RK       |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.23~0.70  | 2.00~7.50               |                     |
|              | 190612-RK       |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.33~0.78  | 2.50~10.00              |                     |
|              | 190616-RK       |        |        |        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |           | 0.35~0.78  | 2.70~10.00              |                     |

🔧 Filo de Corte **A52~A61**    🔄 Rompeviruta Recomendada **B04~B11**    🔄 Sistema Codificación **B26~B27**

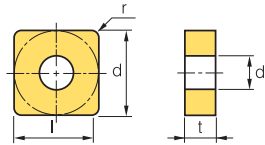
● : En Almacén

| Porta herramienta disponible |        |             |        |             |           |
|------------------------------|--------|-------------|--------|-------------|-----------|
| Designación                  | Página | Designación | Página | Designación | Página    |
| MSBNR/L                      | B173   | MSRNR/L     | B174   | PSDNN       | B163      |
| MSDNN                        | B173   | MSSNR/L     | B175   | PSKNR/L     | B164, 199 |
| MSKNR/L                      | B174   | PSBNR/L     | B163   | PSSNR/L     | B164      |





SN ○ ○



| Dimensiones (mm) |        |           |                |
|------------------|--------|-----------|----------------|
| Tamaño           | d      | t         | d <sub>1</sub> |
| 12               | 12.7   | 4.76      | 5.16           |
| 15               | 15.875 | 6.35      | 6.35           |
| 19               | 19.05  | 6.35      | 7.93           |
| 25               | 25.4   | 7.94~9.52 | 9.12           |

## **■** Cuadrado 90° Negativo

| Pza. Trabajo                         |  | P | M | K | N | S | H |   |   |   |   |   |   |   |   |   |   |   |   | Tipo de Maquinado |   |
|--------------------------------------|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------------------|---|
| Acero                                |  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● |
| Acero Inoxidable                     |  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● |
| Fundición                            |  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● |
| Metales No-Ferrosos                  |  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● |
| Aleaciones Resist. calor. de Titanio |  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● |
| Acero Endurecido                     |  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● |

● Corte Continuo  
●● Corte en general  
●●● Corte Interrumpido

| Inserto  | Designación    | Cermet |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |     |     |                         |                     |            |            |
|--|----------------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|-----|-----|-------------------------|---------------------|------------|------------|
|  |                | CN1500 | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300   | PC5400 | PC8105             | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |            |            |
| <b>Uso Pesado</b><br><br><b>GH</b>                           | SNMM 120408-GH |        |        |             |        |            |        |        | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         | 0.30~0.60           | 2.50~8.00  |            |
|  | 120412-GH      |        |        |             |        |            |        |        | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.30~0.70  | 2.50~8.00  |
|  | 150612-GH      |        |        |             |        |            |        |        |        | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.30~0.70  | 2.50~8.00  |
|  | 190612-GH      |        |        |             |        |            | ●      | ●      |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.30~0.70  | 3.00~8.00  |
|  | 190616-GH      |        |        |             |        |            | ●      | ●      |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.45~1.00  | 4.00~9.00  |
|  | 190624-GH      |        |        |             |        |            | ●      | ●      |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.55~1.20  | 4.00~9.00  |
|  | 250724-GH      |        |        |             |        |            | ●      | ●      |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.55~1.20  | 5.00~12.00 |
|  | 250924-GH      |        |        |             |        |            | ●      | ●      |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.55~1.20  | 5.00~12.00 |
| 250932-GH  |                |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         | 0.55~1.20           | 5.00~12.00 |            |
| <b>Uso Pesado</b><br><br><b>VH</b><br>[General]              | SNMM 190612-VH |        |        |             |        | ●          |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         | 0.50~0.90           | 5.00~10.00 |            |
|  | 190616-VH      |        |        |             |        | ●          |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.50~1.10  | 5.00~10.00 |
|  | 190624-VH      |        |        |             |        | ●          |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.60~1.20  | 6.00~12.00 |
|  | 250716-VH      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.70~1.40  | 6.00~15.00 |
|  | 250724-VH      |        |        |             |        |            | ●      |        |        | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.70~1.40  | 6.00~15.00 |
|  | 250920-VH      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.70~1.40  | 6.00~15.00 |
|  | 250924-VH      |        |        |             |        |            |        |        |        | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.70~1.50  | 6.00~14.00 |
| <b>Uso Pesado</b><br><br><b>VT</b><br>[Corte de gran avance] | SNMM 190612-VT |        |        |             |        | ●          |        |        |        | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         | 0.60~1.00           | 6.00~13.00 |            |
|  | 190616-VT      |        |        |             |        | ●          |        |        |        | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.60~1.10  | 6.00~13.00 |
|  | 190624-VT      |        |        |             |        | ●          |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.60~1.60  | 7.00~13.00 |
|  | 250716-VT      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.75~1.60  | 7.00~15.00 |
|  | 250724-VT      |        |        |             |        |            |        |        |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.75~1.60  | 7.00~15.00 |
|  | 250920-VT      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.75~1.60  | 7.00~15.00 |
|  | 250924-VT      |        |        |             |        |            |        |        |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     |                         |                     | 0.75~1.60  | 7.00~17.00 |

➤ Filo de Corte **A52~A61** ➤ Rompeviruta Recomendada **B04~B11** ➤ Sistema Codificación **B26~B27**

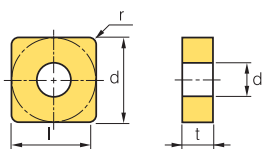
●: En Almacén

| Porta herramienta disponible |        |             |        |             |           |
|------------------------------|--------|-------------|--------|-------------|-----------|
| Designación                  | Página | Designación | Página | Designación | Página    |
| MSBNR/L                      | B173   | MSRNR/L     | B174   | PSDNN       | B163      |
| MSDNN                        | B173   | MSSNR/L     | B175   | PSKNR/L     | B164, 199 |
| MSKNR/L                      | B174   | PSBNR/L     | B163   | PSSNR/L     | B164      |



# B Insertos para Torneado (Negativo)

## SN



| Dimensiones (mm) |        |           |                |
|------------------|--------|-----------|----------------|
| Tamaño           | d      | t         | d <sub>1</sub> |
| 12               | 12.7   | 3.18~4.76 | 5.16           |
| 15               | 15.875 | 4.76      | -              |
| 19               | 19.05  | 4.76      | -              |
| 25               | 25.4   | 7.94      | -              |

**Cuadrado 90° Negativo**

| Pza. Trabajo                         | Material |         | Compatibilidad |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Tipo de Maquinado |    |    |    |   |   |   |   |
|--------------------------------------|----------|---------|----------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------------|----|----|----|---|---|---|---|
|                                      | Color    | Simbolo | 1              | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17                | 18 | 19 | 20 |   |   |   |   |
| Acero                                | P        | ◆       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Acero Inoxidable                     | M        | ◆       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Fundicion                            | K        | ◆       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Metales No-Ferrosos                  | N        | ◆       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Aleaciones Resist. calor, de Titanio | S        | ◆       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Acero Endurecido                     | H        | ◆       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |

| Inserto        | Designación | Cermet   |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |        |     |     |                         |                     |            |           |
|----------------|-------------|----------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|--------|-----|-----|-------------------------|---------------------|------------|-----------|
|                |             | CN1500   | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115   | NC9125 | NC9135             | PC5300 | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |            |           |
| Desbaste Medio | SNMN        | 120304   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.17~0.45           | 1.00~3.50  |           |
|                |             | 120308   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.23~0.60           | 1.50~6.00  |           |
|                |             | 120312   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.25~0.60           | 2.00~5.00  |           |
|                |             | 120404   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.17~0.45           | 1.00~3.50  |           |
|                |             | 120408   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.23~0.60           | 1.50~5.00  |           |
|                |             | 120412   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.25~0.60           | 2.00~5.00  |           |
|                |             | 150404   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.20~0.50           | 1.50~6.00  |           |
|                |             | 150408   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.25~0.60           | 1.50~6.00  |           |
|                |             | 150412   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.25~0.60  | 2.00~6.00 |
|                |             | 190416   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.35~0.70  | 2.00~6.00 |
| Medio          | SNMX        | 120408R  | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.15~0.35           | 1.00~4.00  |           |
| Desbaste Medio | SNUN        | 120408   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.23~0.60           | 1.50~5.00  |           |
|                |             | 120412   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.25~0.60           | 2.00~5.00  |           |
|                |             | 190412   | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.30~1.00           | 3.00~10.00 |           |
|                |             | 120412TN | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.25~0.60           | 2.00~5.00  |           |
|                |             | 250724TN | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.30~1.20           | 3.00~12.00 |           |

Filo de Corte **A52~A61**
 Rompeviruta Recomendada **B04~B11**
 Sistema Codificación **B26~B27**
● : En Almacen

| Porta herramienta disponible |        |             |        |             |           |
|------------------------------|--------|-------------|--------|-------------|-----------|
| Designación                  | Página | Designación | Página | Designación | Página    |
| MSBNR/L                      | B173   | MSRNR/L     | B174   | PSDNN       | B163      |
| MSDNN                        | B173   | MSSNR/L     | B175   | PSKNR/L     | B164, 199 |
| MSKNR/L                      | B174   | PSBNR/L     | B163   | PSSNR/L     | B164      |



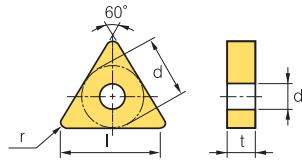






## TN ○ ○

### Triangular 60° Negativo



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 11               | 6.35  | 3.18 | 2.40           |
| 16               | 9.525 | 4.76 | 3.81           |
| 22               | 12.7  | 4.76 | 5.16           |

| Pza. Trabajo                         | Acero            | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tipo de Maquinado |   |
|--------------------------------------|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------------------|---|
|                                      | Acero Inoxidable | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |                   | ● |
| Fundición                            | K                | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● |
| Metales No-Ferrosos                  | N                | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● |
| Aleaciones Resist. calor. de Titanio | S                | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● |
| Acero Endurecido                     | H                | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● |

● Corte Continuo  
 ● Corte en general  
 ✱ Corte Interrumpido

| Inserto                    | Designación     | Cermet |        | Cermet Rec. |        | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |     |     |                            |                        |           |
|----------------------------|-----------------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|-----|-----|----------------------------|------------------------|-----------|
|                            |                 | CN1500 | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300   | PC5400 | PC8105             | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |           |
| <b>Acabado</b><br>         | TNMG 160404-VL  | ●      |        |             |        |            | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.05~0.25              | 0.10~1.00 |
|                            | 160408-VL       | ●      |        |             |        |            | ●      | ●      |        | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.10~0.35              | 0.20~1.50 |
|                            | 160412-VL       |        |        |             |        |            | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.15~0.40              | 0.20~1.50 |
|                            | 220408-VL       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.10~0.35              | 0.20~1.50 |
|                            | 220412-VL       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.10~0.35              | 0.50~2.00 |
| <b>Acabado</b><br>         | TNMG 110304-VF  | ●      | ●      |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.05~0.20              | 0.20~1.00 |
|                            | 160404-VF       | ●      |        |             |        |            |        | ●      |        | ●      |        |        |        |        |        |        |          |        |                    | ●      |        |        |     |     |                            | 0.07~0.30              | 0.50~1.50 |
|                            | 160408-VF       |        |        |             |        |            | ●      | ●      |        | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.10~0.40              | 0.50~1.50 |
|                            | 160412-VF       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.15~0.50              | 0.50~1.50 |
|                            | 220404-VF       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        | ●      |     |     |                            | 0.10~0.40              | 0.50~1.50 |
|                            | 220408-VF       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.10~0.40              | 0.50~1.50 |
| <b>Acabado</b><br>         | TNMG 160404-VW  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.10~0.35              | 0.30~3.00 |
|                            | 160408-VW       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.10~0.40              | 0.30~3.00 |
| <b>Medio a Acabado</b><br> | TNMG 160404-HA  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        | ●      | ●   | ●   |                            | 0.05~0.30              | 0.80~3.50 |
|                            | 160408-HA       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        | ●      | ●   | ●   |                            | 0.10~0.40              | 0.80~3.50 |
|                            | 160412-HA       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.13~0.55              | 0.80~3.50 |
|                            | 220408-HA       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        | ●   |     |                            | 0.10~0.40              | 0.80~5.30 |
| <b>Medio a Acabado</b><br> | TNMG 110304-LP  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.07~0.30              | 0.30~1.50 |
|                            | 110308-LP       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.10~0.30              | 0.30~1.50 |
|                            | 160404-LP       |        |        |             |        |            |        | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.10~0.35              | 0.30~2.00 |
|                            | 160408-LP       |        |        |             |        |            |        | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.10~0.40              | 0.50~2.50 |
|                            | 160412-LP       |        |        |             |        |            |        | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.13~0.45              | 0.80~3.00 |
| <b>Medio a Acabado</b><br> | TNMG 160404-VC  |        |        |             |        |            |        | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.10~0.35              | 0.30~2.00 |
|                            | 160408-VC       |        |        |             |        |            |        | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.15~4.00              | 0.50~3.00 |
|                            | 160412-VC       |        |        |             |        |            |        | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.15~4.50              | 0.50~3.00 |
|                            | 220408-VC       |        |        |             |        |            |        | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.15~0.40              | 0.50~3.00 |
|                            | 220412-VC       |        |        |             |        |            |        | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.15~0.45              | 0.50~3.00 |
| <b>Medio a Acabado</b><br> | TNMG 160404-VP2 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | ●                          | 0.05~0.30              | 0.10~3.00 |
|                            | 160408-VP2      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | ●                          | 0.10~0.45              | 0.50~5.00 |
|                            | 160412-VP2      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | ●                          | 0.13~0.55              | 0.80~3.30 |
|                            | 220404-VP2      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |                    | ●      |        |        |     |     | 0.05~0.30                  | 0.80~5.00              |           |
|                            | 220408-VP2      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |                    | ●      |        |        |     |     | 0.10~0.40                  | 0.80~5.00              |           |

Filo de Corte A52~A61 
 Rompeviruta Recomendada B04~B11 
 Sistema Codificación B26~B27 
 ● : En Almacén

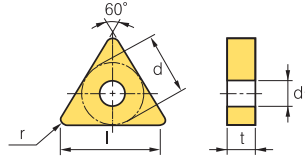
| Porta herramienta disponible |        |             |           |             |        |
|------------------------------|--------|-------------|-----------|-------------|--------|
| Designación                  | Página | Designación | Página    | Designación | Página |
| MTENN                        | B175   | PTFNR/L     | B165, 199 | WTJNR/L     | B167   |
| MTFNR/L                      | B175   | PTGNR/L     | B165      | WTXNR/L     | B167   |
| MTGNR/L                      | B176   | PTTNR/L     | B166      |             |        |
| MTJNR/L                      | B176   | WTENN       | B167      |             |        |





## TN ○ ○

### Triangular 60° Negativo



| Tamaño    | Dimensiones (mm) |           |                |
|-----------|------------------|-----------|----------------|
|           | d                | t         | d <sub>1</sub> |
| <b>11</b> | 6.35             | 3.18      | 2.40           |
| <b>16</b> | 9.525            | 4.76      | 3.81           |
| <b>22</b> | 12.7             | 4.76      | 5.16           |
| <b>27</b> | 15.875           | 6.35      | 6.35           |
| <b>33</b> | 19.05            | 7.94-9.52 | 7.93           |

| Pza. Trabajo | Acero                                | P | ● | ●   | ● | ●   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tipo de Maquinado |                        |
|--------------|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------------------|------------------------|
|              | Acero Inoxidable                     | M | ● | ● <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>● Corte Continuo</td> |   |   |   |   |   |   |   |   |   |   |   |   |                   | ● Corte Continuo       |
|              | Fundición                            | K | ● | ● <td>●</td> <td>●<td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>●● Corte en general</td> </td>     | ● | ● <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>●● Corte en general</td>  |   |   |   |   |   |   |   |   |   |   |                   | ●● Corte en general    |
|              | Metales No-Ferrosos                  | N |   | <td></td> <td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>●●● Corte Interrumpido</td> </td>      |   | <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>●●● Corte Interrumpido</td> |   |   |   |   |   |   |   |   |   |   |                   | ●●● Corte Interrumpido |
|              | Aleaciones Resist. calor. de Titanio | S |   | <td></td> <td><td>●</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td></td> </td>                           |   | <td>●</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>                      | ● |   |   |   |   |   |   |   |   |   |                   |                        |
|              | Acero Endurecido                     | H |   | <td></td> <td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td></td> </td>                            |   | <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>                       |   |   |   |   |   |   |   |   |   |   |                   |                        |

| Inserto    | Designación     | Cermet |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |     |     |                            |                        |           |
|------------|-----------------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|-----|-----|----------------------------|------------------------|-----------|
|            |                 | CN1500 | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300   | PC5400 | PC8105             | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |           |
| Medio      | TNMG 110308-VM  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.05~0.30              | 0.80~4.00 |
|            | 160404-VM       | ●      |        |             |        |            | ●      | ●      | ●      |        |        |        |        |        |        |        | ●        | ●      |                    |        |        |        |     |     |                            | 0.05~0.30              | 0.90~5.00 |
|            | 160408-VM       | ●      |        | ●           |        |            | ●      | ●      | ●      | ●      | ●      |        |        |        |        |        | ●        | ●      |                    |        |        | ●      |     |     |                            | 0.10~0.50              | 1.00~5.00 |
|            | 160412-VM       | ●      |        |             |        |            | ●      | ●      |        |        |        |        |        |        |        |        | ●        | ●      |                    |        |        |        |     |     |                            | 0.13~0.60              | 1.30~5.00 |
|            | 220404-VM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |                    |        |        |        |     |     |                            | 0.05~0.30              | 0.90~6.60 |
|            | 220408-VM       |        |        |             |        |            |        | ●      |        | ●      |        |        |        |        |        |        | ●        | ●      |                    | ●      |        |        |     |     |                            | 0.10~0.50              | 1.00~6.60 |
| 220412-VM  |                 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.13~0.60                  | 1.30~6.60              |           |
| Medio      | TNMG 160404-VP3 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      | ●                  | ●      | ●      |        | ●   | ●   | 0.05~0.30                  | 0.10~3.00              |           |
|            | 160408-VP3      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      | ●                  | ●      | ●      |        | ●   | ●   | 0.10~0.45                  | 0.50~5.00              |           |
|            | 160412-VP3      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.20~0.40                  | 0.50~3.50              |           |
|            | 220404-VP3      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.20~0.30                  | 0.80~4.00              |           |
|            | 220408-VP3      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.25~0.35                  | 0.80~5.00              |           |
|            | 220412-VP3      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.30~0.40                  | 1.00~5.00              |           |
| 220416-VP3 |                 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.30~0.40                  | 1.00~5.00              |           |
| Medio      | TNMG 160408-LW  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.15~0.50                  | 0.70~4.50              |           |
|            | 160412-LW       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.20~0.60                  | 1.00~5.00              |           |
| General    | TNMG 110308-B25 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.17~0.40                  | 1.50~3.00              |           |
|            | 160404-B25      | ●      |        | ●           |        |            | ●      | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        | ●   |     | 0.17~0.45                  | 2.00~3.50              |           |
|            | 160408-B25      | ●      |        | ●           |        |            | ●      | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.17~0.55                  | 2.00~3.50              |           |
|            | 160412-B25      |        |        | ●           |        |            | ●      | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.25~0.55                  | 2.00~3.50              |           |
|            | 160416-B25      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.30~0.60                  | 2.50~3.00              |           |
|            | 220404-B25      |        |        |             |        |            |        | ●      | ●      | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.17~0.45                  | 1.50~5.00              |           |
|            | 220408-B25      |        |        |             |        |            |        | ●      | ●      | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.17~0.55                  | 2.00~5.00              |           |
|            | 220412-B25      |        |        |             |        |            |        | ●      | ●      | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.25~0.55                  | 2.00~5.00              |           |
|            | 220416-B25      |        |        |             |        |            |        | ●      | ●      | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.30~0.60                  | 2.00~5.00              |           |
|            | 220424-B25      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.35~0.70              | 3.00~7.00 |
|            | 220432-B25      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.40~0.75              | 3.50~7.00 |
|            | 270608-B25      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.17~0.55              | 2.00~5.00 |
|            | 270612-B25      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.25~0.55              | 3.00~7.00 |
| 270616-B25 |                 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.30~0.60                  | 3.00~7.00              |           |
| 330716-B25 |                 |        |        |             |        |            |        | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.35~0.70                  | 3.00~9.00              |           |
| 330924-B25 |                 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.40~0.80                  | 3.00~9.00              |           |

🔄 Filo de Corte **A52~A61**    🔄 Rompeviruta Recomendada **B04~B11**    🔄 Sistema Codificación **B26~B27**      ● : En Almacén

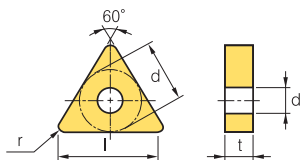
| Porta herramienta disponible |        |             |           |             |        |
|------------------------------|--------|-------------|-----------|-------------|--------|
| Designación                  | Página | Designación | Página    | Designación | Página |
| MTENN                        | B175   | PTFNR/L     | B165, 199 | WTJNR/L     | B167   |
| MTFNR/L                      | B175   | PTGNR/L     | B165      | WTXNR/L     | B167   |
| MTGNR/L                      | B176   | PTTNR/L     | B166      |             |        |
| MTJNR/L                      | B176   | WTENN       | B167      |             |        |



# B Insertos para Torneado (Negativo)

## TN ○ ○

### Triangular 60° Negativo



| Dimensiones (mm) |        |           |                |
|------------------|--------|-----------|----------------|
| Tamaño           | d      | t         | d <sub>1</sub> |
| 16               | 9.525  | 4.76      | 3.81           |
| 22               | 12.7   | 4.76      | 5.16           |
| 27               | 15.875 | 6.35      | 6.35           |
| 33               | 19.05  | 7.94~9.52 | 7.93           |

| Pza. Trabajo                         | Material | Código | Compatibilidad |   |   |   |   |   |   |   |   |   |   |   |   | Tipo de Maquinado |   |   |
|--------------------------------------|----------|--------|----------------|---|---|---|---|---|---|---|---|---|---|---|---|-------------------|---|---|
|                                      |          |        | ●              | ◐ | ◑ | ◒ | ◓ | ◔ | ◕ | ◖ | ◗ | ◘ | ◙ | ◚ | ◛ | ◜                 | ◝ | ● |
| Acero                                | P        | ●      | ◐              | ◑ | ◒ | ◓ | ◔ | ◕ | ◖ | ◗ | ◘ | ◙ | ◚ | ◛ | ◜ | ◝                 | ● | ◐ |
| Acero Inoxidable                     | M        | ●      | ◐              | ◑ | ◒ | ◓ | ◔ | ◕ | ◖ | ◗ | ◘ | ◙ | ◚ | ◛ | ◜ | ◝                 | ● | ◐ |
| Fundición                            | K        | ●      | ◐              | ◑ | ◒ | ◓ | ◔ | ◕ | ◖ | ◗ | ◘ | ◙ | ◚ | ◛ | ◜ | ◝                 | ● | ◐ |
| Metales No-Ferrosos                  | N        | ●      | ◐              | ◑ | ◒ | ◓ | ◔ | ◕ | ◖ | ◗ | ◘ | ◙ | ◚ | ◛ | ◜ | ◝                 | ● | ◐ |
| Aleaciones Resist. calor, de Titanio | S        | ●      | ◐              | ◑ | ◒ | ◓ | ◔ | ◕ | ◖ | ◗ | ◘ | ◙ | ◚ | ◛ | ◜ | ◝                 | ● | ◐ |
| Acero Endurecido                     | H        | ●      | ◐              | ◑ | ◒ | ◓ | ◔ | ◕ | ◖ | ◗ | ◘ | ◙ | ◚ | ◛ | ◜ | ◝                 | ● | ◐ |

| Inserto         | Designación     | Cermet |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |     |     |             |           |           |           |           |
|-----------------|-----------------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|-----|-----|-------------|-----------|-----------|-----------|-----------|
|                 |                 | CN1500 | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300 | PC5400 | PC8105   | PC8110 | PC8115             | PC9030 | H01 | H05 | fn (mm/rev) | ap (mm)   |           |           |           |
| Desbaste<br>GR  | TNMG 160408-GR  |        |        |             |        |            |        | ●      | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             | 0.20~0.50 | 1.00~7.00 |           |           |
|                 | 160412-GR       |        |        |             |        |            |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           | 0.23~0.54 | 1.20~8.00 |           |
|                 | 220408-GR       |        |        |             |        |            |        | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           | 0.22~0.61 | 1.10~7.80 |           |
|                 | 220412-GR       |        |        |             |        |            |        | ●      | ●      | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           | 0.28~0.78 | 1.20~7.80 |           |
|                 | 220416-GR       |        |        |             |        |            |        |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           | 0.31~0.75 | 1.50~7.80 |           |
|                 | 270608-GR       |        |        |             |        |            |        |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           | 0.31~0.75 | 1.50~7.80 |           |
|                 | 270612-GR       |        |        |             |        |            |        |        | ●      | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           | 0.31~0.75 | 1.50~7.80 |           |
|                 | 270616-GR       |        |        |             |        |            |        |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.36~1.00 | 1.60~7.80 |
| 330924-GR       |                 |        |        |             |        |            |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           | 0.40~1.00 | 2.00~9.00 |           |
| Desbaste<br>RK  | TNMG 160408-RK  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           | 0.23~0.53 | 1.50~5.00 |           |
|                 | 160412-RK       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.28~0.53 | 1.80~5.00 |
|                 | 160416-RK       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.28~0.53 | 1.80~5.00 |
|                 | 220408-RK       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.23~0.53 | 1.50~6.00 |
|                 | 220412-RK       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.28~0.53 | 1.80~6.00 |
|                 | 220416-RK       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.28~0.63 | 2.00~6.00 |
| Desbaste<br>RM  | TNMG 160404-RM  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           | 0.10~0.50 | 2.00~5.50 |           |
|                 | 160408-RM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.15~0.55 | 2.00~5.50 |
|                 | 160412-RM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.20~0.60 | 2.00~5.50 |
|                 | 220408-RM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.10~0.50 | 2.00~7.50 |
|                 | 220412-RM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.15~0.55 | 2.00~7.50 |
|                 | 220416-RM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.25~0.70 | 2.00~7.50 |
| Desbaste<br>VP4 | TNMG 160408-VP4 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           | 0.15~0.35 | 1.00~4.00 |           |
|                 | 160412-VP4      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.20~0.40 | 1.00~4.00 |
| Desbaste<br>VR  | TNMG 160404-VR  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.20~0.50 | 0.80~7.00 |
|                 | 160408-VR       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.25~0.55 | 1.20~7.00 |
|                 | 160412-VR       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.35~0.65 | 1.70~7.00 |
|                 | 160416-VR       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.35~0.70 | 2.00~10.0 |
|                 | 220408-VR       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.35~0.70 | 2.00~10.0 |
|                 | 220412-VR       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.35~0.70 | 2.00~10.0 |
|                 | 220416-VR       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |             |           |           | 0.35~0.75 | 2.20~10.0 |

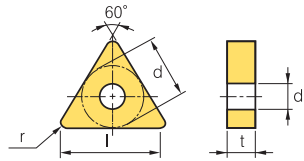
🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

| Porta herramienta disponible |        |             |           |             |        |
|------------------------------|--------|-------------|-----------|-------------|--------|
| Designación                  | Página | Designación | Página    | Designación | Página |
| MTENN                        | B175   | PTFNR/L     | B165, 199 | WTJNR/L     | B167   |
| MTFNR/L                      | B175   | PTGNR/L     | B165      | WTXNR/L     | B167   |
| MTGNR/L                      | B176   | PTTNR/L     | B166      |             |        |
| MTJNR/L                      | B176   | WTENN       | B167      |             |        |



# TN○○○

## Triangular 60° Negativo



| Dimensiones (mm) |        |           |                |
|------------------|--------|-----------|----------------|
| Tamaño           | d      | t         | d <sub>1</sub> |
| 16               | 9.525  | 4.76      | 3.81           |
| 22               | 12.7   | 4.76      | 5.16           |
| 27               | 15.875 | 6.35      | 6.35           |
| 33               | 19.05  | 7.94~9.52 | 7.93           |

| Pza. Trabajo | Acero                                | P | ●   | ●  | ●   | ●  | ●   | ●  | ●   | ●  | ●   | ●  | ●   | ●  | ●   | ●  | ●   | ●  | ●   | ●  | ●                                   | Tipo de Maquinado        |               |   |
|--------------|--------------------------------------|---|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|--|---|--|-------------------------------------|--------------------------|---------------|---|
|              | Acero Inoxidable                     | M | ●   | ●  | ●   | ●  | ●   | ●  | ●   | ●  | ●   | ●  | ●   | ●  | ●   | ●  | ●   | ●  | ●   | ●  | ●                                   | ●                        | ●             | ● |
|              | Fundición                            | K | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td></td> | ● <td>● <td>● <td>● <td>● <td>● </td></td></td></td></td> | ● <td>● <td>● <td>● <td>● </td></td></td></td> | ● <td>● <td>● <td>● </td></td></td> | ● <td>● <td>● </td></td> | ● <td>● </td> | ● |
|              | Metales No-Ferrosos                  | N |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |                                     |                          |               |   |
|              | Aleaciones Resist. calor. de Titanio | S |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |                                     |                          |               |   |
|              | Acero Endurecido                     | H |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |                                     |                          |               |   |

| Inserto        | Designación | Cermet         |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |     |     |                            |                        |            |
|----------------|-------------|----------------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|-----|-----|----------------------------|------------------------|------------|
|                |             | CN1500         | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300 | PC5400 | PC8105   | PC8110 | PC8115             | PC9030 | H01 | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |            |
| Desbaste       | GR          | TNMM 220408-GR |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.22~0.61              | 1.10~7.80  |
|                |             | 220412-GR      |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.28~0.78              | 1.20~7.80  |
|                |             | 220416-GR      |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.31~0.75              | 1.50~7.80  |
| Uso Pesado     | GH          | TNMM 160408-GH |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.20~0.50              | 1.00~7.00  |
|                |             | 220408-GH      |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.25~0.60              | 1.30~7.00  |
|                |             | 220412-GH      |        |             |        |            |        |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.20~0.50              | 1.00~8.00  |
|                |             | 220416-GH      |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.25~0.60              | 1.30~8.00  |
|                |             | 270616-GH      |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.32~0.70              | 1.80~8.00  |
|                |             | 270624-GH      |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.35~0.50              | 1.80~13.00 |
|                |             | 330924-GH      |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.35~0.70              | 2.30~13.00 |
| Desbaste Medio | TNMN        | 160408         |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.10~0.30              | 1.00~4.00  |
|                |             | 220408         |        | ●           |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.15~0.40              | 1.50~5.00  |
|                |             | 220412         |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.20~0.50              | 1.50~5.00  |
| Acabado        | TNMX        | 160404R-SR     |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.10~0.35              | 0.70~3.50  |
|                |             | 160408R-SR     |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.12~0.40              | 1.00~3.50  |
|                |             | 160404L-SR     |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.10~0.35              | 0.70~3.50  |
|                |             | 160408L-SR     |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.12~0.40              | 1.00~3.50  |
| Medio          | TNMX        | 160404R-SH     |        |             |        |            | ●      | ●      |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.15~0.30              | 0.50~4.00  |
|                |             | 160408R-SH     |        |             |        |            |        | ●      | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.15~0.45              | 1.00~4.00  |
|                |             | 160404L-SH     |        |             |        |            |        | ●      | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.15~0.30              | 0.50~4.00  |
|                |             | 160408L-SH     |        |             |        |            |        | ●      | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.15~0.45              | 1.00~4.00  |
| Desbaste Medio | TNMX        | 160402R        |        | ●           | ●      |            |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.10~0.30              | 0.50~3.00  |
|                |             | 160404R        |        | ●           |        |            |        | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.12~0.30              | 1.00~3.50  |
|                |             | 160408R        |        |             |        |            |        | ●      | ●      | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.15~0.35              | 1.30~3.40  |
|                |             | 220404R        |        |             |        |            |        |        | ●      | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.12~0.30              | 1.00~5.00  |
|                |             | 220408R        |        |             |        |            |        |        |        | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.15~0.35              | 1.30~5.00  |
|                |             | 160404L        |        |             |        |            |        |        | ●      | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.12~0.30              | 1.00~3.50  |
|                |             | 160408L        |        |             |        |            |        |        | ●      | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |     |     |                            | 0.15~0.35              | 1.30~3.40  |

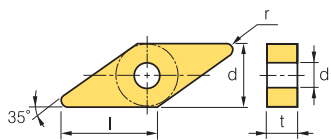
🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacén

| Porta herramienta disponible |        |             |           |             |        |
|------------------------------|--------|-------------|-----------|-------------|--------|
| Designación                  | Página | Designación | Página    | Designación | Página |
| MTENN                        | B175   | PTFNR/L     | B165, 199 | WTJNR/L     | B167   |
| MTFNR/L                      | B175   | PTGNR/L     | B165      | WTXNR/L     | B167   |
| MTGNR/L                      | B176   | PTTNR/L     | B166      |             |        |
| MTJNR/L                      | B176   | WTENN       | B167      |             |        |



# B Insertos para Torneado (Negativo)

## VN○○○



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 16               | 9.525 | 4.76 | 3.81           |

### Rómbico 35° Negativo

| Pza. Trabajo                         | Material |       | Compatibilidad |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Tipo de Maquinado |    |    |    |   |   |   |   |
|--------------------------------------|----------|-------|----------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------------|----|----|----|---|---|---|---|
|                                      | Material | Clase | 1              | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17                | 18 | 19 | 20 |   |   |   |   |
| Acero                                | P        | ●     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Acero Inoxidable                     | M        | ●     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Fundición                            | K        | ●     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Metales No-Ferrosos                  | N        | ●     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Aleaciones Resist. calor, de Titanio | S        | ●     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Acero Endurecido                     | H        | ●     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |

| Inserto         | Designación | Cermet          |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |                            |                        |           |
|-----------------|-------------|-----------------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|----------------------------|------------------------|-----------|
|                 |             | CN1500          | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |           |
| Medio a Acabado | HA          | VNMG 160408-HA  |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.40              | 0.80~3.50 |
|                 |             |                 |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        |           |
| Medio           | VP3         | VNMG 160404-VP3 |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.05~0.30              | 0.10~3.00 |
|                 |             | 160408-VP3      |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.45              | 0.50~5.00 |
| Acabado         | VB          | VNMG 160404-VB  | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                          | 0.10~0.35              | 0.30~1.50 |
|                 |             | 160408-VB       | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                          | 0.15~0.45              | 0.50~2.00 |
|                 |             | 160412-VB       |        |             |        |            |        | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.20~0.45              | 0.80~2.50 |
| Acabado         | VF          | VNMG 160402-VF  |        | ●           |        |            |        | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.06~0.20              | 0.30~1.00 |
|                 |             | 160404-VF       | ●      | ●           |        |            |        | ●      |        |        |        | ●      |        |        |        |          |        |                    |        | ●      |        |        |     |     |                            | 0.08~0.30              | 0.50~1.50 |
|                 |             | 160408-VF       | ●      |             |        |            |        | ●      | ●      |        | ●      |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.40              | 0.50~1.50 |
|                 |             | 160412-VF       |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.15~0.50              | 0.50~1.50 |
| Acabado         | VL          | VNMG 160404-VL  | ●      | ●           |        |            | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.05~0.20              | 0.10~1.00 |
|                 |             | 160408-VL       | ●      | ●           |        |            | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.25              | 0.20~1.50 |
|                 |             | 160412-VL       |        |             |        |            |        | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.15~0.30              | 0.50~2.00 |
| Medio a Acabado | HA          | VNMG 160404-HA  |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        | ●   |     | 0.08~0.35                  | 0.50~3.00              |           |
|                 |             | 160408-HA       |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.40              | 0.80~3.50 |
| Medio a Acabado | LP          | VNMG 160404-LP  |        |             |        |            | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.35              | 0.30~1.50 |
|                 |             | 160408-LP       |        |             |        |            | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.40              | 0.50~2.00 |
|                 |             | 160412-LP       |        |             |        |            | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.45              | 0.80~2.50 |
| Medio a Acabado | VC          | VNMG 160404-VC  | ●      |             | ●      |            | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.35              | 0.30~2.00 |
|                 |             | 160408-VC       | ●      |             |        |            | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.15~4.00              | 0.50~3.00 |
|                 |             | 160412-VC       |        |             |        |            | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.15~0.40              | 0.80~3.00 |

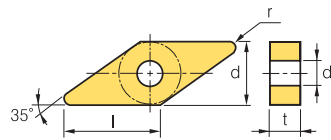
Filo de Corte A52~A61 
 Rompeviruta Recomendada B04~B11 
 Sistema Codificación B26~B27 
 ● : En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MVJNR/L                      | B176   | MVVNN       | B177   |
| MVQNR/L                      | B177   | MVUNR/L     | B203   |



# Insertos para Torneado (Negativo)

# B



| Dimensiones (mm) |       |      |      |
|------------------|-------|------|------|
| Tamaño           | d     | t    | di   |
| 16               | 9.525 | 4.76 | 3.81 |
| 22               | 12.7  | 4.76 | 5.16 |

## Rómbico 35° Negativo

| Pza. Trabajo                         | Material | Recomendado | Indicador | Tipo de Maquinado  |
|--------------------------------------|----------|-------------|-----------|--|
| Acero                                | P        | ● ● ●       | ● ● ●     | ● Corte Continuo<br>●● Corte en general<br>●●● Corte Interumpido |
| Acero Inoxidable                     | M        | ● ● ●       | ● ● ●     |  |
| Fundición                            | K        | ● ● ●       | ● ● ●     |  |
| Metales No-Ferrosos                  | N        |             | ● ● ●     |  |
| Aleaciones Resist. calor, de Titanio | S        |             | ● ● ●     |  |
| Acero Endurecido                     | H        |             | ● ● ●     |  |

| Inserto  | Designación     | Cermet |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |     |     |             |           |           |
|--|-----------------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|-----|-----|-------------|-----------|-----------|
|  |                 | CN1500 | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300 | PC5400   | PC8105 | PC8110             | PC8115 | PC9030 | H01 | H05 | fn (mm/rev) | ap (mm)   |           |
| Medio a Acabado<br>VQ<br><small>[Sermet]</small> | VNMG 160404-VQ  | ●      | ●      | ●           |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.10~0.40 | 0.50~3.50 |
|  | 160408-VQ       | ●      | ●      | ●           |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.12~0.45 | 0.50~3.50 |
|  | 160412-VQ       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.15~0.45 | 0.80~3.50 |
| Medio<br>HM                                      | VNMG 160404-HM  |        |        |             |        |            | ●      |        | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.13~0.40 | 0.80~3.80 |
|  | 160408-HM       |        |        |             |        |            | ●      |        | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.20~0.45 | 0.80~4.50 |
|  | 160412-HM       |        |        |             |        |            |        |        | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.10~0.60 | 1.00~4.00 |
| Medio<br>MK<br><small>new</small>                | VNMG 160404-MK  |        |        |             |        |            |        |        |        |        |        |        | ●      |        |        |        |        |          |        |                    |        |        |     |     |             | 0.08~0.45 | 0.50~3.00 |
|  | 160408-MK       |        |        |             |        |            |        |        |        |        |        |        | ●      | ●      |        |        |        |          |        |                    |        |        |     |     |             | 0.10~0.50 | 1.00~3.50 |
|  | 160412-MK       |        |        |             |        |            |        |        |        |        |        |        | ●      |        |        |        |        |          |        |                    |        |        |     |     |             | 0.20~0.50 | 1.50~4.00 |
| Medio<br>MM<br><small>new</small>                | VNMG 160404-MM  |        |        |             |        |            |        |        |        |        |        |        |        |        |        | ●      | ●      | ●        |        |                    | ●      | ●      |     |     |             | 0.10~0.40 | 0.50~4.80 |
|  | 160408-MM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        | ●      | ●      | ●        |        |                    | ●      | ●      |     |     |             | 0.12~0.45 | 0.50~4.80 |
|  | 160412-MM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.15~0.60 | 0.50~4.00 |
| Medio<br>MP<br><small>new</small>                | VNMG 160404-MP  |        |        |             |        |            | ●      | ●      | ●      |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |                    |        |        |     |     |             | 0.10~0.40 | 0.40~3.50 |
|  | 160408-MP       |        |        |             |        |            | ●      | ●      | ●      | ●      |        |        | ●      | ●      | ●      |        |        | ●        | ●      |                    |        |        |     |     |             | 0.15~0.45 | 0.50~4.00 |
|  | 160412-MP       |        |        |             |        |            | ●      | ●      | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.15~0.50 | 0.80~4.50 |
|  | 160416-MP       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.18~0.50 | 1.00~4.50 |
| Medio<br>RM<br><small>new</small>                | VNMG 160404-RM  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.10~0.50 | 2.00~5.00 |
|  | 160408-RM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.15~0.55 | 2.00~5.00 |
|  | 160412-RM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.20~0.60 | 2.00~5.00 |
| Medio<br>VM                                      | VNMG 160404-VM  | ●      |        |             |        |            |        |        | ●      | ●      |        |        |        |        |        | ●      | ●      |          |        |                    |        |        |     |     |             | 0.08~0.45 | 0.50~3.50 |
|  | 160408-VM       | ●      |        |             |        |            |        |        | ●      | ●      | ●      | ●      |        |        |        | ●      | ●      |          |        | ●                  | ●      |        |     |     |             | 0.10~0.50 | 1.00~4.00 |
|  | 160412-VM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.20~0.50 | 1.50~4.00 |
|  | 220404-VM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.08~0.45 | 1.00~5.00 |
|  | 220408-VM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.10~0.50 | 1.50~5.00 |
| Medio<br>VP3                                     | VNMG 160404-VP3 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        | ●        | ●      | ●                  | ●      | ●      | ●   | ●   | ●           | 0.05~0.30 | 0.10~3.00 |
|  | 160408-VP3      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        | ●        | ●      | ●                  | ●      | ●      | ●   | ●   | ●           | 0.10~0.45 | 0.50~5.00 |
|  | 160412-VP3      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |     |     |             | 0.20~0.40 | 0.50~3.50 |

↻ Filo de Corte A52~A61    ↻ Rompeviruta Recomendada B04~B11    ↻ Sistema Codificación B26~B27

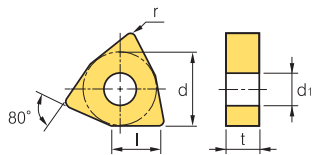
●: En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MVJNR/L                      | B176   | MVVNN       | B177   |
| MVQNR/L                      | B177   | MVUNR/L     | B203   |



# B Insertos para Torneado (Negativo)

WN ○ ○



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 06               | 9.525 | 4.76 | 3.81           |
| 08               | 12.7  | 4.76 | 5.16           |

## Trigon 80° Negativo

| Pza. Trabajo                         | Material |        | Corte |   |   |   |   |   |   |   |   |    |    |    | Tipo de Maquinado |   |   |   |
|--------------------------------------|----------|--------|-------|---|---|---|---|---|---|---|---|----|----|----|-------------------|---|---|---|
|                                      | Material | Color  | 1     | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |                   |   |   |   |
| Acero                                | P        | Blue   | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● | ● |
| Acero Inoxidable                     | M        | Yellow | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● | ● |
| Fundición                            | K        | Red    | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● | ● |
| Metales No-Ferrosos                  | N        | Green  | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● | ● |
| Aleaciones Resist. calor, de Titanio | S        | Orange | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● | ● |
| Acero Endurecido                     | H        | Grey   | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●                 | ● | ● | ● |

| Categoría       | Inserto | Designación     | Cermet |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |        |     |           |                            |                        |           |
|-----------------|---------|-----------------|--------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|--------|-----|-----------|----------------------------|------------------------|-----------|
|                 |         |                 | CN1500 | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115   | NC9125 | NC9135             | PC5300 | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05       | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |           |
| Medio           | VP3     | WNGG 080404-VP3 |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.10~0.45                  | 0.50~5.00              |           |
| Desbaste        | [Image] | WNMA 060404     |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.10~0.30                  | 0.50~3.00              |           |
|                 |         | 060408          |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.10~0.30                  | 0.50~3.00              |           |
|                 |         | 060412          |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           |                            | 0.10~0.40              | 1.00~3.00 |
|                 |         | 080404          |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           |                            | 0.15~0.60              | 1.00~5.00 |
|                 |         | 080408          |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           |                            | 0.15~0.60              | 1.00~6.00 |
|                 |         | 080412          |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           |                            | 0.15~0.70              | 1.50~6.00 |
| Acabado         | VB      | WNMG 080404-VB  |        |        |            |        |        |        | ●      | ●      | ●      |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.10~0.35                  | 0.30~1.50              |           |
|                 |         | 080408-VB       |        |        |            |        |        |        | ●      | ●      | ●      |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.15~0.45                  | 0.50~2.00              |           |
|                 |         | 080412-VB       |        |        |            |        |        |        | ●      | ●      | ●      |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.18~0.45                  | 0.80~2.50              |           |
| Acabado         | VF      | WNMG 060404-VF  |        | ●      |            |        |        |        |        |        | ●      |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.07~0.30                  | 0.50~1.50              |           |
|                 |         | 060408-VF       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.10~0.40                  | 0.50~1.50              |           |
|                 |         | 080404-VF       |        |        |            |        |        |        |        | ●      |        | ●      |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.07~0.30                  | 0.50~1.50              |           |
|                 |         | 080408-VF       |        |        |            |        |        |        |        |        |        | ●      |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.10~0.40                  | 0.50~1.50              |           |
|                 |         | 080412-VF       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.20~0.50                  | 0.50~1.50              |           |
| Acabado         | VL      | WNMG 060404-VL  |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.05~0.25                  | 0.20~1.50              |           |
|                 |         | 080404-VL       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.05~0.25                  | 0.10~1.00              |           |
|                 |         | 080408-VL       |        |        |            |        |        |        |        |        | ●      | ●      |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.10~0.35                  | 0.20~1.50              |           |
| Acabado         | VW      | WNMG 060404-VW  |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.05~0.30                  | 0.40~3.00              |           |
|                 |         | 060408-VW       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.08~0.30                  | 0.40~3.50              |           |
|                 |         | 080404-VW       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.10~0.30                  | 0.50~3.00              |           |
|                 |         | 080408-VW       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.15~0.50                  | 0.50~4.00              |           |
|                 |         | 080412-VW       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.18~0.50                  | 1.00~4.00              |           |
| Medio a Acabado | HA      | WNMG 060404-HA  |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        | ●      | ●      |     | 0.05~0.30 | 0.10~3.00                  |                        |           |
|                 |         | 060408-HA       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        | ●      | ●      |     | 0.10~0.40 | 0.80~3.50                  |                        |           |
|                 |         | 080404-HA       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        | ●      | ●      |     | 0.05~0.30 | 0.80~3.50                  |                        |           |
|                 |         | 080408-HA       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        | ●      | ●      |     | 0.10~0.40 | 0.80~3.50                  |                        |           |
|                 |         | 080412-HA       |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        | ●      | ●      |     | 0.13~0.55 | 0.80~3.50                  |                        |           |

🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MWLNLR/L                     | B177   | WWLNLR/L    | B168   |
| PWLNLR/L                     | B200   |             |        |



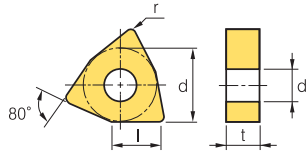






# WN

## Trigon 80° Negativo



| Dimensiones (mm) |        |      |                |
|------------------|--------|------|----------------|
| Tamaño           | d      | t    | d <sub>1</sub> |
| 06               | 9.525  | 4.76 | 3.81           |
| 08               | 12.7   | 4.76 | 5.16           |
| 10               | 15.875 | 6.35 | 6.35           |
| 13               | 19.05  | 6.35 | 7.93           |

| Pza. Trabajo | Material |                  |           |                     |                                      |                  |   |   |   |   |   |   | Tipo de Maquinado |   |   |   |  |
|--------------|----------|------------------|-----------|---------------------|--------------------------------------|------------------|---|---|---|---|---|---|-------------------|---|---|---|--|
|              | Acero    | Acero Inoxidable | Fundición | Metales No-Ferrosos | Aleaciones Resist. calor, de Titanio | Acero Endurecido | P | M | K | N | S | H | ●                 | ⊙ | ⊛ | ⊞ |  |
|              |          |                  |           |                     |                                      |                  |   |   |   |   |   |   |                   |   |   |   |  |

| Inserto            | Designación     | Cermet |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |                            |                        |           |            |
|--------------------|-----------------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|----------------------------|------------------------|-----------|------------|
|                    |                 | CN1500 | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |           |            |
| Desbaste<br>       | WNMG 060408-RK  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.40              | 1.00~3.50 |            |
|                    | 060412-RK       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.23~0.40 | 1.50~5.00  |
|                    | 080404-RK       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.23~0.50 | 1.50~6.00  |
|                    | 080408-RK       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.23~0.53 | 1.50~6.00  |
|                    | 080412-RK       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.28~0.53 | 1.80~6.00  |
|                    | 080416-RK       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.25~0.60 | 2.00~6.00  |
| Desbaste<br>       | WNMG 060404-RM  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.50              | 1.50~3.00 |            |
|                    | 060408-RM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.15~0.55 | 1.50~3.00  |
|                    | 060412-RM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.20~0.60 | 1.50~3.00  |
|                    | 080404-RM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.10~0.50 | 2.00~4.00  |
|                    | 080408-RM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.15~0.55 | 2.00~4.00  |
|                    | 080412-RM       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.20~0.60 | 2.00~4.00  |
| Desbaste<br>       | WNMG 080408-VP4 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.15~0.35              | 1.00~4.00 |            |
|                    | 080412-VP4      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.20~0.40 | 1.00~4.00  |
| Desbaste<br>       | WNMG 060408-VR  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.20~0.40              | 1.00~6.00 |            |
|                    | 080404-VR       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.20~0.50 | 0.80~7.00  |
|                    | 080408-VR       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.25~0.55 | 1.20~7.00  |
|                    | 080412-VR       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.30~0.60 | 1.50~7.00  |
|                    | 080416-VR       |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.40~0.60 | 1.50~4.00  |
| Desbaste Medio<br> | WNMM 100608-B25 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.30~0.80              | 3.00~8.00 |            |
|                    | 130612-B25      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.40~0.90 | 4.00~10.00 |
| Acabado<br>        | WNMX 080404R-SR |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.10~0.35              | 0.70~3.00 |            |
|                    | 080408R-SR      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.12~0.40 | 1.00~3.00  |
|                    | 080404L-SR      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.10~0.35 | 0.70~3.00  |
|                    | 080408L-SR      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.12~0.40 | 1.00~3.00  |
| Medio<br>          | WNMX 080404R-SH |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            | 0.15~0.30              | 1.00~4.00 |            |
|                    | 080408R-SH      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.15~0.50 | 1.50~5.00  |
|                    | 080404L-SH      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.15~0.30 | 1.00~4.00  |
|                    | 080408L-SH      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                            |                        | 0.15~0.50 | 1.50~5.00  |

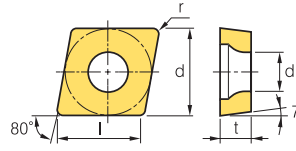
🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacén

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| MWLNLR/L                     | B177   | WWLNLR/L    | B168   |
| PWLNLR/L                     | B200   |             |        |





**Rómbico 80° Positivo**  
Angulo Incidencia: 7°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 06               | 6.35  | 2.38 | 2.8            |
| 09               | 9.525 | 3.97 | 4.4            |

| Pza. Trabajo                         |          |          |   |   |   |   |   |   |   |   | Tipo de Maquinado |   |
|--------------------------------------|----------|----------|---|---|---|---|---|---|---|---|-------------------|---|
|                                      | Acero    | <b>P</b> | ● | ● | ● | ● | ● | ● | ● | ● |                   | ● |
| Acero Inoxidable                     | <b>M</b> | ●        | ● | ● | ● | ● | ● | ● | ● | ● | ●                 |   |
| Fundición                            | <b>K</b> | ●        | ● | ● | ● | ● | ● | ● | ● | ● | ●                 |   |
| Metales No-Ferrosos                  | <b>N</b> |          |   |   |   |   |   |   |   |   |                   |   |
| Aleaciones Resist. calor, de Titanio | <b>S</b> |          |   |   |   |   |   |   |   |   |                   |   |
| Acero Endurecido                     | <b>H</b> |          |   |   |   |   |   |   |   |   |                   |   |

| Inserto                                       | Designación | Cermet        |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |        |     |     |                         |                     |           |           |           |
|---|-------------|---------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|--------|-----|-----|-------------------------|---------------------|-----------|-----------|-----------|
|   |             | CN1500        | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115   | NC9125 | NC9135             | PC5300 | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |           |           |
| <b>Acabado</b><br>KF<br>                      | CCGT        | 0602003R-KF   |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         | 0.01~0.06           | 0.04~1.30 |           |           |
|   |             | 060201R-KF    |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.02~0.08 | 0.05~1.50 |           |
|   |             | 060202R-KF    |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.03~0.11 | 0.06~1.70 |           |
|   |             | 09T3003R-KF   |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.02~0.08 | 0.05~1.50 |           |
|   |             | 09T301R-KF    |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.03~0.11 | 0.06~1.70 |           |
|   |             | 09T302R-KF    |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.04~0.15 | 0.08~2.00 |           |
|   |             | 0602003L-KF   |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.01~0.06 | 0.04~1.30 |           |
|   |             | 060201L-KF    |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     |           | 0.02~0.08 | 0.05~1.50 |
|   |             | 060202L-KF    |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     |           | 0.03~0.11 | 0.06~1.70 |
|   |             | 09T3003L-KF   |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     |           | 0.02~0.08 | 0.05~1.50 |
|   | 09T301L-KF  |               |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.03~0.11 | 0.06~1.70 |           |
|   | 09T302L-KF  |               |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |                         |                     | 0.04~0.15 | 0.08~2.00 |           |
| <b>Acabado</b><br>VP1<br>                     | CCGT        | 060201-VP1    |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.05~0.06           | 0.06~1.00 |           |           |
|   |             | 060202-VP1    |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.03~0.10 | 0.08~1.50 |           |
|   |             | 060204-VP1    |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.05~0.12 | 0.10~1.50 |           |
|   |             | 09T301-VP1    |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.03~0.13 | 0.06~1.00 |           |
|   |             | 09T302-VP1    |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.04~0.15 | 0.08~1.50 |           |
|   | 09T304-VP1  |               |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.06~0.20           | 0.10~1.50 |           |           |
| <b>Acabado</b><br>VP1<br><br>[Alta precisión] | CCGT        | 060201MFN-VP1 |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.03~0.06           | 0.06~1.00 |           |           |
|   |             | 060202MFN-VP1 |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.03~0.10 | 0.08~1.50 |           |
|   |             | 060204MFN-VP1 |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.05~0.12 | 0.10~1.50 |           |
|   |             | 09T301MFN-VP1 |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.03~0.13 | 0.06~1.00 |           |
|   |             | 09T302MFN-VP1 |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.04~0.15 | 0.08~1.50 |           |
|   |             | 09T304MFN-VP1 |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.06~0.20 | 0.10~1.50 |           |

Filo de Corte **A52~A61**
 Rompeviruta Recomendada **B04~B11**
 Sistema Codificación **B26~B27**
● : En Almacén

| Porta herramienta disponible |           |             |                     |
|------------------------------|-----------|-------------|---------------------|
| Designación                  | Página    | Designación | Página              |
| SCACR/L                      | B113, 178 | SCLCR/L     | B113, 178, 204, 214 |

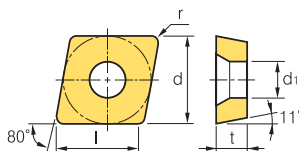




# B Insertos para Torneado (Positivo)

## CP

**Rómbico 80° Positivo**  
Angulo Incidencia: 11°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 06               | 6.35  | 2.38 | 2.8            |
| 08               | 7.94  | 2.38 | 3.4            |
| 09               | 9.525 | 3.18 | 4.4            |

| Pza. Trabajo                         | Material |       | Compatibilidad |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Tipo de Maquinado |    |    |    |    |    |   |   |   |   |
|--------------------------------------|----------|-------|----------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------------|----|----|----|----|----|---|---|---|---|
|                                      | Material | Grupo | 1              | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17                | 18 | 19 | 20 | 21 | 22 |   |   |   |   |
| Acero                                | P        | ●     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● | ● | ● |
| Acero Inoxidable                     | M        | ●     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● | ● | ● |
| Fundición                            | K        | ●     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● | ● | ● |
| Metales No-Ferrosos                  | N        | ●     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● | ● | ● |
| Aleaciones Resist. calor, de Titanio | S        | ●     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● | ● | ● |
| Acero Endurecido                     | H        | ●     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● | ● | ● |

| Inserto         | Designación | Cermet     |        | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |             |           |           |           |
|-----------------|-------------|------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|-------------|-----------|-----------|-----------|
|                 |             | CN1500     | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | fn (mm/rev) | ap (mm)   |           |           |
| Acabado         | CPGT        | 080202     |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.06~0.20 | 0.10~2.00 |           |
|                 |             | 080204     | ●      | ●          |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.08~0.20 | 0.30~2.00 |
|                 |             | 080208     |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.10~0.25 | 0.50~2.00 |
|                 |             | 090302     |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.04~0.20 | 0.30~1.50 |
|                 |             | 090304     | ●      | ●          |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.06~0.25 | 0.50~2.00 |
|                 |             | 090308     |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.08~0.30 | 0.70~2.50 |
| Medio a Acabado | CPGT        | 090308-HMP |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.05~0.20 | 0.70~2.00 |           |
| Acabado         | CPMT        | 080204-VF  |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.05~0.20 | 0.30~1.20 |           |
|                 |             | 080208-VF  |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.10~0.25 | 0.30~1.20 |           |
|                 |             | 090304-VF  |        |            |        |        |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.05~0.20 | 0.30~1.50 |           |
|                 |             | 090308-VF  |        |            |        |        |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.10~0.25 | 0.30~1.50 |           |
| Acabado         | CPMT        | 080204-VL  |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.03~0.08 | 0.08~1.00 |           |
|                 |             | 080208-VL  |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.04~0.12 | 0.10~1.00 |           |
|                 |             | 090304-VL  |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.05~0.10 | 0.10~1.00 |           |
|                 |             | 090308-VL  |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.08~0.15 | 0.10~1.00 |           |
| Medio           | CPMT        | 060204-C25 |        |            |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.05~0.15 | 0.60~2.30 |           |

🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| SCLPR/L                      | B205   |             |        |

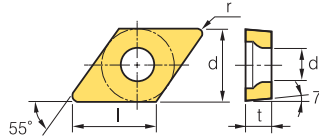




## DC ○ ○ ○



**Rómbico 55° Positivo**  
Angulo Incidencia: 7°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 07               | 6.35  | 2.38 | 2.8            |
| 11               | 9.525 | 3.97 | 4.4            |

| Pza. Trabajo                         | Compatibilidad |   |   |   |   |   |   |   |   |   |   |   | Tipo de Maquinado |   |   |   |   |   |
|--------------------------------------|----------------|---|---|---|---|---|---|---|---|---|---|---|-------------------|---|---|---|---|---|
|                                      | P              | M | K | N | S | H |   |   |   |   |   |   |                   |   |   |   |   |   |
| Acero                                | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
| Acero Inoxidable                     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
| Fundición                            | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
| Metales No-Ferrosos                  | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
| Aleaciones Resist. calor, de Titanio | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
| Acero Endurecido                     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |

● Corte Continuo  
● Corte en general  
✳ Corte Interrumpido

| Inserto                                 | Designación  | Cermet        |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |                         |                     |           |           |           |
|---|--------------|---------------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|-------------------------|---------------------|-----------|-----------|-----------|
|   |              | CN1500        | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |           |           |
| Acabado<br><br>[Alta precisión]         | DCET         | 0702005MFR-KF |        |             |        |            |        |        |        |        |        |        |        |        |        | ●        |        |                    |        | ●      |        |        |     |     |                         | 0.01~0.06           | 0.04~1.30 |           |           |
|   |              | 070201MFR-KF  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     | 0.02~0.08 | 0.05~1.50 |           |
|   |              | 070202MFR-KF  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     | 0.03~0.11 | 0.06~1.70 |           |
|   |              | 11T3005MFR-KF |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     | 0.02~0.08 | 0.05~1.50 |           |
|   |              | 11T301MFR-KF  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     | 0.03~0.11 | 0.06~1.70 |           |
|   |              | 11T302MFR-KF  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     | 0.04~0.15 | 0.08~2.00 |           |
|   |              | 0702005MFL-KF |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     | 0.01~0.06 | 0.04~1.30 |           |
|   |              | 070201MFL-KF  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     |           | 0.02~0.08 | 0.05~1.50 |
|   |              | 070202MFL-KF  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     |           | 0.03~0.11 | 0.06~1.70 |
|   |              | 11T3005MFL-KF |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     |           | 0.02~0.08 | 0.05~1.50 |
|   |              | 11T301MFL-KF  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     |           | 0.03~0.11 | 0.06~1.70 |
|   | 11T302MFL-KF |               |        |             |        |            |        |        |        |        |        |        |        |        |        | ●        |        |                    |        | ●      |        |        |     |     |                         |                     | 0.04~0.15 | 0.08~2.00 |           |
| Medio a Acabado<br><br>[Alta precisión] | DCET         | 0702005MFR-KM |        |             |        |            |        |        |        |        |        |        |        |        |        | ●        |        |                    |        | ●      |        |        |     |     |                         | 0.01~0.06           | 0.04~1.30 |           |           |
|   |              | 070201MFR-KM  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     | 0.02~0.08 | 0.05~1.50 |           |
|   |              | 070202MFR-KM  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     | 0.03~0.11 | 0.06~1.70 |           |
|   |              | 11T3005MFR-KM |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     | 0.02~0.08 | 0.05~1.50 |           |
|   |              | 11T301MFR-KM  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     | 0.03~0.11 | 0.06~1.70 |           |
|   |              | 11T302MFR-KM  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     | 0.04~0.15 | 0.08~2.00 |           |
|   |              | 0702005MFL-KM |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     | 0.01~0.06 | 0.04~1.30 |           |
|   |              | 070201MFL-KM  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     |           | 0.02~0.08 | 0.05~1.50 |
|   |              | 070202MFL-KM  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     |           | 0.03~0.11 | 0.06~1.70 |
|   |              | 11T3005MFL-KM |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     |           | 0.02~0.08 | 0.05~1.50 |
|   |              | 11T301MFL-KM  |        |             |        |            |        |        |        |        |        |        |        |        |        |          | ●      |                    |        |        | ●      |        |     |     |                         |                     |           | 0.03~0.11 | 0.06~1.70 |
|   | 11T302MFL-KM |               |        |             |        |            |        |        |        |        |        |        |        |        |        | ●        |        |                    |        | ●      |        |        |     |     |                         |                     | 0.04~0.15 | 0.08~2.00 |           |
| Acabado<br>                             | DCGT         | 0702003R-KF   |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.01~0.06           | 0.04~1.30 |           |           |
|   |              | 070201R-KF    |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.02~0.08 | 0.05~1.50 |           |
|   |              | 070202R-KF    |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.03~0.11 | 0.06~1.50 |           |
|   |              | 11T3003R-KF   |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.02~0.08 | 0.05~1.50 |           |
|   |              | 11T301R-KF    |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.03~0.11 | 0.06~1.70 |           |
|   |              | 11T302R-KF    |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        | ●   |     |                         |                     | 0.04~0.15 | 0.08~2.00 |           |
|   |              | 0702003L-KF   |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.01~0.06 | 0.04~1.30 |           |
|   |              | 070201L-KF    |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     |           | 0.02~0.08 | 0.05~1.50 |
|   |              | 070202L-KF    |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     |           | 0.03~0.11 | 0.06~1.50 |
|   |              | 11T3003L-KF   |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     |           | 0.02~0.08 | 0.05~1.50 |
|   |              | 11T301L-KF    |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     |           | 0.03~0.11 | 0.06~1.70 |
|   | 11T302L-KF   |               |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.04~0.15 | 0.08~2.00 |           |

🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ●: En Almacén

| Porta herramienta disponible |           |             |        |
|------------------------------|-----------|-------------|--------|
| Designación                  | Página    | Designación | Página |
| SDACR/L                      | B178      | SDQCR/L     | B206   |
| SDJCR/L                      | B113, 179 | SDUCR/L     | B207   |
| SDNCN                        | B114, 179 | SDZCR/L     | B208   |

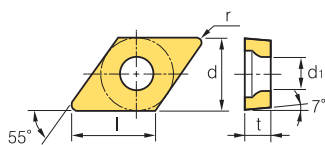


# B Insertos para Torneado (Positivo)

DC ○ ○ ○



Rómbico **55° Positivo**  
Angulo Incidencia: 7°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 07               | 6.35  | 2.38 | 2.8            |
| 11               | 9.525 | 3.97 | 4.4            |

| Pza. Trabajo | Compatibilidad |                  |           |                     |                                      |                  |        |             |            |          |    |    | Tipo de Maquinado |                    |                      |
|--------------|----------------|------------------|-----------|---------------------|--------------------------------------|------------------|--------|-------------|------------|----------|----|----|-------------------|--------------------|----------------------|
|              | Acero          | Acero Inoxidable | Fundición | Metales No-Ferrosos | Aleaciones Resist. calor, de Titanio | Acero Endurecido | Cermet | Cermet Rec. | Recubierta | Sin Rec. | fn | ap | ● Corte Continuo  | ● Corte en general | ✱ Corte Interrumpido |
|              | P              | M                | K         | N                   | S                                    | H                |        |             |            |          |    |    |                   |                    |                      |

| Inserto                         | Designación        | Cermet |        | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |        |     |     |             |           |           |           |           |
|---------------------------------|--------------------|--------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|--------|-----|-----|-------------|-----------|-----------|-----------|-----------|
|                                 |                    | CN1500 | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115   | NC9125 | NC9135             | PC5300 | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | fn (mm/rev) | ap (mm)   |           |           |           |
| Acabado<br>                     | DCGT 070201-VP1    |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      |        |        | ●   |     | 0.03~0.06   | 0.06~1.00 |           |           |           |
|                                 | 070202-VP1         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      |        |        | ●   |     | 0.03~0.10   | 0.08~1.50 |           |           |           |
|                                 | 070204-VP1         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      |        |        | ●   |     | 0.05~0.12   | 0.10~1.50 |           |           |           |
|                                 | 11T301-VP1         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        | ●      |        |        |        | ●   |     | 0.03~0.13   | 0.06~1.00 |           |           |           |
|                                 | 11T302-VP1         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      |        |        | ●   |     | 0.04~0.15   | 0.08~1.50 |           |           |           |
|                                 | 11T304-VP1         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      |        |        | ●   |     | 0.06~0.20   | 0.10~1.50 |           |           |           |
| Acabado<br><br>[Alta precisión] | DCGT 070201MFN-VP1 |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        | ●      |        |        |        |     |     | 0.03~0.06   | 0.06~1.00 |           |           |           |
|                                 | 070202MFN-VP1      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        | ●      |        |        |        |     |     | 0.03~0.10   | 0.08~1.50 |           |           |           |
|                                 | 070204MFN-VP1      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        | ●      |        |        |        |     |     | 0.05~0.12   | 0.10~1.50 |           |           |           |
|                                 | 11T301MFN-VP1      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        | ●      |        |        |        |     |     | 0.03~0.13   | 0.06~1.00 |           |           |           |
|                                 | 11T302MFN-VP1      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      |        |        |     |     | 0.04~0.15   | 0.08~1.50 |           |           |           |
|                                 | 11T304MFN-VP1      |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      | ●      | ●      | ●      |        |        |     |     | 0.06~0.20   | 0.10~1.50 |           |           |           |
| Medio a Acabado<br>             | DCGT 0702003R-KM   |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             | 0.01~0.06 | 0.04~1.30 |           |           |
|                                 | 070201R-KM         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.02~0.08 | 0.05~1.50 |           |
|                                 | 070202R-KM         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.03~0.11 | 0.06~1.50 |           |
|                                 | 11T3003R-KM        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.02~0.08 | 0.05~1.50 |           |
|                                 | 11T301R-KM         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.03~0.11 | 0.06~1.70 |           |
|                                 | 11T302R-KM         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.04~0.15 | 0.08~2.00 |           |
|                                 | 0702003L-KM        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.01~0.06 | 0.04~1.30 |           |
|                                 | 070201L-KM         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.02~0.08 | 0.05~1.50 |           |
|                                 | 070202L-KM         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           |           | 0.03~0.11 | 0.06~1.50 |
|                                 | 11T3003L-KM        |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           |           | 0.02~0.08 | 0.05~1.50 |
|                                 | 11T301L-KM         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           |           | 0.03~0.11 | 0.06~1.70 |
|                                 | 11T302L-KM         |        |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           |           | 0.04~0.15 | 0.08~2.00 |
| Acabado<br><br>[Alta precisión] | DCMT 070202-VF     |        |        | ●          |        |        |        |        | ●      |        |        |        |        |          |        |                    |        |        | ●      |        |        |        |     |     |             | 0.03~0.10 | 0.06~1.00 |           |           |
|                                 | 070204-VF          |        | ●      | ●          |        |        |        |        | ●      |        |        |        |        |          |        |                    | ●      |        | ●      |        |        |        |     |     |             |           | 0.05~0.20 | 0.30~1.20 |           |
|                                 | 11T302-VF          |        | ●      |            |        |        |        |        | ●      |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |     |             |           | 0.04~0.15 | 0.08~1.50 |           |
|                                 | 11T304-VF          |        | ●      | ●          | ●      |        |        |        | ●      |        |        |        |        |          |        |                    | ●      |        | ●      |        |        |        |     |     |             |           | 0.05~0.20 | 0.30~1.50 |           |
|                                 | 11T308-VF          |        | ●      | ●          |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        | ●      |        |        |        |     |     |             |           | 0.10~0.25 | 0.30~1.50 |           |

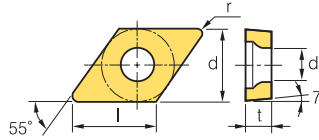
🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

| Porta herramienta disponible |           |             |        |
|------------------------------|-----------|-------------|--------|
| Designación                  | Página    | Designación | Página |
| SDACR/L                      | B178      | SDQCR/L     | B206   |
| SDJCR/L                      | B113, 179 | SDUCR/L     | B207   |
| SDNCN                        | B114, 179 | SDZCR/L     | B208   |



## DC ○ ○ ○

**Rómbico 55° Positivo**  
 Angulo Incidencia: 7°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 07               | 6.35  | 2.38 | 2.8            |
| 11               | 9.525 | 3.97 | 4.4            |

| Pza. Trabajo                         | Compatibilidad |   |   |   |   |   |   |   |   |   |   |   | Tipo de Maquinado |   |   |   |   |   |
|--------------------------------------|----------------|---|---|---|---|---|---|---|---|---|---|---|-------------------|---|---|---|---|---|
|                                      | P              | M | K | N | S | H | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
| Acero                                | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
| Acero Inoxidable                     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
| Fundición                            | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
| Metales No-Ferrosos                  | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
| Aleaciones Resist. calor. de Titanio | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
| Acero Endurecido                     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |

● Corte Continuo  
 ● Corte en general  
 ● Corte Interrumpido

| Inserto                | Designación     | Cermet |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |                         |                     |           |           |
|------------------------|-----------------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|-------------------------|---------------------|-----------|-----------|
|                        |                 | CN1500 | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |           |
| Acabado<br>VL          | DCMT 070202-VL  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.02~0.10           | 0.06~0.80 |           |
|                        | DCMT 070204-VL  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.04~0.10           | 0.08~0.90 |           |
|                        | DCMT 070208-VL  |        |        |             |        |            | ●      | ●      | ●      |        |        |        |        |        |        | ●        |        |                    |        |        |        |        |     |     |                         | 0.06~0.12           | 0.10~1.00 |           |
|                        | DCMT 11T302-VL  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.03~0.10 | 0.07~0.80 |
|                        | DCMT 11T304-VL  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.05~0.10 | 0.10~1.00 |
|                        | DCMT 11T308-VL  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | ●                   | 0.08~0.15 | 0.10~1.00 |
|                        | DCMT 11T312-VL  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.08~0.15 | 0.30~1.50 |
| Acabado<br>VP1         | DCMT 070204-VP1 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.05~0.12           | 0.10~1.50 |           |
|                        | DCMT 11T304-VP1 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.06~0.20           | 0.10~1.50 |           |
|                        | DCMT 11T308-VP1 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.08~0.23           | 0.10~1.50 |           |
| Medio a Acabado<br>HMP | DCMT 070202-HMP |        |        |             |        |            |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.03~0.12           | 0.10~1.50 |           |
|                        | DCMT 070204-HMP |        |        |             |        |            |        |        |        | ●      | ●      | ●      |        |        |        | ●        |        |                    |        | ●      | ●      |        |     |     |                         | 0.06~0.17           | 0.20~2.30 |           |
|                        | DCMT 070208-HMP |        |        |             |        |            |        |        |        | ●      | ●      |        |        |        |        |          |        |                    |        |        | ●      | ●      |     |     |                         | 0.08~0.23           | 0.40~2.30 |           |
|                        | DCMT 11T302-HMP |        |        |             |        |            |        |        |        |        | ●      |        |        |        |        |          | ●      |                    |        |        | ●      | ●      |     |     |                         | 0.04~0.22           | 0.10~2.00 |           |
|                        | DCMT 11T304-HMP |        |        | ●           |        |            |        |        |        |        | ●      | ●      | ●      | ●      |        |          | ●      |                    |        |        | ●      | ●      |     |     |                         | 0.08~0.23           | 0.30~3.00 |           |
|                        | DCMT 11T308-HMP |        |        |             |        |            |        |        |        |        | ●      | ●      | ●      |        |        |          | ●      |                    |        |        | ●      | ●      |     |     |                         | 0.10~0.30           | 0.50~3.00 |           |
| Medio a Acabado<br>MP  | DCMT 070202-MP  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.04~0.12           | 0.12~1.80 |           |
|                        | DCMT 070204-MP  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.05~0.15           | 0.30~1.80 |           |
|                        | DCMT 070208-MP  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.08~0.22           | 0.30~1.80 |           |
|                        | DCMT 11T302-MP  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.04~0.15           | 0.30~2.00 |           |
|                        | DCMT 11T304-MP  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.08~0.20           | 0.50~2.30 |           |
|                        | DCMT 11T308-MP  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.10~0.30           | 0.50~2.30 |           |
|                        | DCMT 11T312-MP  |        |        |             |        |            |        |        |        |        |        |        |        |        |        | ●        | ●      |                    |        |        |        |        |     |     |                         | 0.25~0.35           | 0.80~3.00 |           |
| Medio<br>C25           | DCMT 070202-C25 | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.03~0.15           | 0.30~2.00 |           |
|                        | DCMT 070204-C25 | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.05~0.20           | 0.50~2.50 |           |
|                        | DCMT 070208-C25 | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.06~0.25           | 0.80~2.50 |           |
|                        | DCMT 11T302-C25 | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.04~0.25           | 0.50~2.50 |           |
|                        | DCMT 11T304-C25 | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.08~0.30           | 0.80~3.00 |           |
|                        | DCMT 11T308-C25 | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   | ●                       | 0.10~0.30           | 1.00~3.00 |           |

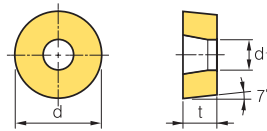
🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacén

| Porta herramienta disponible |           |             |        |
|------------------------------|-----------|-------------|--------|
| Designación                  | Página    | Designación | Página |
| SDACR/L                      | B178      | SDQCR/L     | B206   |
| SDJCR/L                      | B113, 179 | SDUCR/L     | B207   |
| SDNCN                        | B114, 179 | SDZCR/L     | B208   |



# B Insertos para Torneado (Positivo)

## RC ○○



| Dimensiones (mm) |      |      |                |
|------------------|------|------|----------------|
| Tamaño           | d    | t    | d <sub>1</sub> |
| 08               | 8.0  | 3.18 | 3.35           |
| 10               | 10.0 | 3.97 | 3.6            |
| 12               | 12.0 | 4.76 | 4.2            |
| 16               | 16.0 | 6.35 | 5.2            |
| 20               | 20.0 | 6.35 | 6.5            |
| 25               | 25.0 | 7.94 | 7.25           |
| 32               | 32.0 | 9.52 | 9.55           |

**Redondo R° Positivo**  
Angulo Incidencia: 7°

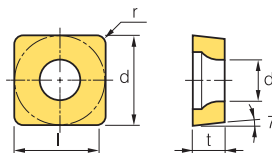
| Pza. Trabajo                         | Material |         | Corte |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Tipo de Maquinado |    |    |    |   |   |
|--------------------------------------|----------|---------|-------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------------|----|----|----|---|---|
|                                      | Color    | Simbolo | 1     | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17                | 18 | 19 | 20 |   |   |
| Acero                                | P        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● |
| Acero Inoxidable                     | M        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● |
| Fundicion                            | K        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● |
| Metales No-Ferrosos                  | N        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● |
| Aleaciones Resist. calor, de Titanio | S        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● |
| Acero Endurecido                     | H        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● |

| Inserto | Designación | Cermet    |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |        |     |           |                         |                     |           |
|---------|-------------|-----------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|--------|-----|-----------|-------------------------|---------------------|-----------|
|         |             | CN1500    | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115   | NC9125 | NC9135             | PC5300 | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05       | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |
| Medio   | RCMT        | 0803M0-VM |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.05~0.30               | 0.80~2.50           |           |
|         |             | 10T3M0-VM |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           | 0.05~0.35               | 0.90~3.00           |           |
|         |             | 1204M0-VM |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           |                         | 0.10~0.50           | 1.00~3.50 |
|         |             | 1606M0-VM |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |     |           |                         | 0.13~0.60           | 1.30~6.50 |
| Medio   | RCMX        | 1003M0    |        |            |        |        |        | ●      | ●      | ●      | ●      | ●      |        |          |        |                    |        |        |        |        |        |        |     | 0.25~0.50 | 1.50~4.00               |                     |           |
|         |             | 1204M0    |        |            |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      |          |        |                    |        |        |        |        |        |        |     | 0.30~0.60 | 2.50~5.00               |                     |           |
|         |             | 1606M0    |        |            |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        |        |                    |        |        |        |        |        |        |     |           | 0.40~0.70               | 3.00~7.00           |           |
|         |             | 2006M0    |        |            |        |        |        |        |        | ●      | ●      | ●      | ●      | ●        |        |                    |        |        |        |        |        |        |     |           | 0.48~0.90               | 3.50~9.00           |           |
|         |             | 2507M0    |        |            |        |        |        |        |        |        | ●      | ●      | ●      | ●        |        |                    |        |        |        |        |        |        |     |           | 0.55~1.20               | 4.00~12.00          |           |
|         |             | 3209M0    |        |            |        |        |        |        |        |        | ●      | ●      | ●      | ●        |        |                    |        |        |        |        |        |        |     |           | 0.65~1.50               | 5.00~15.00          |           |

Filo de Corte A52~A61 Rompeviruta Recomendada B04~B11 Sistema Codificación B26~B27 ● : En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| PRDCN                        | B162   | PRGCR/L     | B162   |

## SC ○○



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 09               | 9.525 | 3.97 | 4.4            |

**Cuadrado 90° Positivo**  
Angulo Incidencia: 7°

| Pza. Trabajo                         | Material |         | Corte |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Tipo de Maquinado |    |    |    |   |   |
|--------------------------------------|----------|---------|-------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------------|----|----|----|---|---|
|                                      | Color    | Simbolo | 1     | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17                | 18 | 19 | 20 |   |   |
| Acero                                | P        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● |
| Acero Inoxidable                     | M        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● |
| Fundicion                            | K        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● |
| Metales No-Ferrosos                  | N        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● |
| Aleaciones Resist. calor, de Titanio | S        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● |
| Acero Endurecido                     | H        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● |

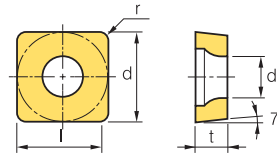
| Inserto | Designación | Cermet    |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |        |     |           |                         |
|---------|-------------|-----------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|--------|-----|-----------|-------------------------|
|         |             | CN1500    | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115   | NC9125 | NC9135             | PC5300 | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05       | f <sub>n</sub> (mm/rev) |
| Acabado | SCMT        | 09T304-VF |        |            |        |        |        | ●      |        |        |        |        |        |          |        |                    | ●      |        |        |        |        |        |     | 0.05~0.20 | 0.30~1.50               |

Filo de Corte A52~A61 Rompeviruta Recomendada B04~B11 Sistema Codificación B26~B27 ● : En Almacen

| Porta herramienta disponible |        |             |           |
|------------------------------|--------|-------------|-----------|
| Designación                  | Página | Designación | Página    |
| SSBCR/L                      | B180   | SSKCR/L     | B181, 208 |
| SSDCN                        | B180   | SSSCR/L     | B181, 234 |



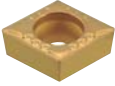

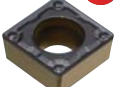

## SC ○ ○



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 06               | 6.35  | 2.38 | 2.8            |
| 09               | 9.525 | 3.97 | 4.4            |
| 12               | 12.7  | 4.76 | 5.5            |

**Cuadrado 90° Positivo**  
Angulo Incidencia: 7°

| Pza. Trabajo | Acero                                | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Tipo de Maquinado  |
|--------------|--------------------------------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|              | Acero Inoxidable                     | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|              | Fundicion                            | K |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | ● Corte Continuo<br>● Corte en general<br>✱ Corte Interrumpido |
|              | Metales No-Ferrosos                  | N |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|              | Aleaciones Resist. calor, de Titanio | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|              | Acero Endurecido                     | H |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

| Inserto  | Designación     | Cermet |        |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |     |     |                            |                        |           |
|--|-----------------|--------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|-----|-----|----------------------------|------------------------|-----------|
|  |                 | CN1500 | CN2000 | CN2500 | CC1500      | CC2500 | NC3215     | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300   | PC5400 | PC8105             | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |           |
| Acabado<br>           | SCMT 09T304-VL  | ●      | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | ●                          | 0.05~0.10              | 0.10~1.00 |
|  | SCMT 09T308-VL  | ●      | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | ●                          | 0.08~0.15              | 0.10~1.00 |
| Medio a Acabado<br> | SCMT 09T304-HMP |        |        |        |             |        | ●          | ●      |        |        |        |        |        |        |        |        | ●        |        |                    |        |        |        |     |     | 0.08~0.23                  | 0.30~3.00              |           |
|  | SCMT 09T308-HMP |        |        |        |             |        | ●          | ●      |        |        |        |        |        |        |        |        | ●        |        |                    |        |        |        |     |     |                            | 0.10~0.30              | 0.50~3.00 |
|  | SCMT 120404-HMP |        |        |        |             |        |            |        | ●      |        |        |        |        |        |        |        |          | ●      |                    |        |        |        |     |     |                            | 0.09~0.27              | 0.30~3.60 |
|  | SCMT 120408-HMP |        |        |        |             |        |            |        |        | ●      |        |        |        |        |        |        |          | ●      |                    |        |        |        |     |     |                            | 0.12~0.36              | 0.60~3.60 |
| Medio a Acabado<br> | SCMT 09T304-MP  |        |        |        |             |        | ●          | ●      |        |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | 0.05~0.25                  | 0.30~2.80              |           |
|  | SCMT 09T308-MP  |        |        |        |             |        | ●          | ●      |        | ●      |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | 0.10~0.30                  | 0.50~2.80              |           |
|  | SCMT 120404-MP  |        |        |        |             |        | ●          | ●      |        |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | 0.10~0.30                  | 0.50~2.80              |           |
|  | SCMT 120408-MP  |        |        |        |             |        | ●          | ●      |        |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | 0.15~0.35                  | 0.80~3.50              |           |
|  | SCMT 120412-MP  |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.25~0.40                  | 1.00~3.50              |           |
| Medio<br>           | SCMT 060204-C25 |        |        |        |             |        |            |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |     |     | 0.08~0.25                  | 0.40~2.50              |           |
|  | SCMT 09T304-C25 | ●      | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | 0.08~0.25                  | 0.60~3.00              |           |
|  | SCMT 09T308-C25 | ●      | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | 0.10~0.30                  | 1.00~3.00              |           |
|  | SCMT 120404-C25 | ●      | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | 0.10~0.30                  | 0.80~3.80              |           |
|  | SCMT 120408-C25 | ●      | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | 0.12~0.38                  | 1.20~3.80              |           |

🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

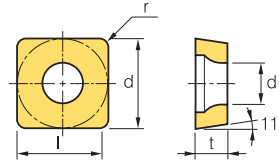
| Porta herramienta disponible |        |             |           |
|------------------------------|--------|-------------|-----------|
| Designación                  | Página | Designación | Página    |
| SSBCR/L                      | B180   | SSKCR/L     | B181, 208 |
| SSDCN                        | B180   | SSSCR/L     | B181, 234 |





## SP ○ ○

**Cuadrado 90° Positivo**  
**Angulo Incidencia: 11°**



| Dimensiones (mm) |        |      |                |
|------------------|--------|------|----------------|
| Tamaño           | d      | t    | d <sub>1</sub> |
| 09               | 9.525  | 3.18 | 3.4~4.4        |
| 12               | 12.7   | 3.18 | -              |
| 15               | 15.875 | 4.76 | -              |
| 19               | 19.05  | 4.76 | -              |
| 25               | 25.4   | 6.35 | -              |

| Pza. Trabajo                         | Compatibilidad de Materiales y Condiciones |                  |           |                     |                                      |                  |   |   |   |   |   |   |   |   | Tipo de Maquinado |   |   |   |   |
|--------------------------------------|--|------------------|-----------|---------------------|--------------------------------------|------------------|---|---|---|---|---|---|---|---|-------------------|---|---|---|---|
|                                      | Acero                                      | Acero Inoxidable | Fundición | Metales No-Ferrosos | Aleaciones Resist. calor, de Titanio | Acero Endurecido | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |
| Acero                                | P  | P                | P         | P                   | P                                    | P                | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |
| Acero Inoxidable                     | M  | M                | M         | M                   | M                                    | M                | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |
| Fundición                            | K  | K                | K         | K                   | K                                    | K                | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |
| Metales No-Ferrosos                  | N  | N                | N         | N                   | N                                    | N                | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |
| Aleaciones Resist. calor, de Titanio | S  | S                | S         | S                   | S                                    | S                | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |
| Acero Endurecido                     | H  | H                | H         | H                   | H                                    | H                | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● |

| Inserto         | Designación | Cermet |                  | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |                         |                     |           |           |
|-----------------|-------------|--------|------------------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|-------------------------|---------------------|-----------|-----------|
|                 |             | CN1500 | CN2000           | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |           |
| Medio           | M           | SPGR   | <b>090308-M</b>  |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.10~0.40           | 1.00~3.50 |           |
|                 |             |        | <b>120308-M</b>  |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.20~0.40           | 1.50~4.00 |           |
| Medio a Acabado | VL          | SPGT   | <b>090304R</b>   |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.08~0.23           | 0.30~3.00 |           |
|                 |             |        | <b>090308R</b>   |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.10~0.30           | 0.50~3.00 |           |
|                 |             |        | <b>090304L</b>   | ●           |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.08~0.23 | 0.30~3.00 |
|                 |             |        | <b>090308L</b>   |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.10~0.30 | 0.50~3.00 |
| Acabado         | F           | SPMR   | <b>090304-F</b>  |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.05~0.20           | 0.30~2.00 |           |
|                 |             |        | <b>120304-F</b>  |             |        |            |        |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.10~0.25           | 0.50~2.00 |           |
| Acabado         | VL          | SPMT   | <b>09T304-VL</b> |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.04~0.18           | 0.20~1.40 |           |
|                 |             |        | <b>09T308-VL</b> |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.08~0.22           | 0.20~1.40 |           |
| Acabado         | VF          | SPMT   | <b>090304-VF</b> |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.05~0.20           | 0.30~1.50 |           |
|                 |             |        | <b>090308-VF</b> |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.10~0.25           | 0.30~1.50 |           |
| Medio           | M           | SPMR   | <b>090308-M</b>  |             |        |            |        |        |        | ●      | ●      |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.10~0.40           | 1.00~3.50 |           |
|                 |             |        | <b>120308-M</b>  |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.10~0.40           | 1.50~4.00 |           |
|                 |             |        | <b>120312-M</b>  |             |        |            |        |        |        |        | ●      |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.20~0.40           | 1.50~4.00 |           |
| Medio a Acabado | VL          | SPUN   | <b>120304</b>    |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.10~0.30           | 1.00~5.00 |           |
|                 |             |        | <b>120308</b>    |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.15~0.40           | 1.00~5.00 |           |
|                 |             |        | <b>120308SN</b>  |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.15~0.40           | 1.00~5.00 |           |
|                 |             |        | <b>150412</b>    |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.20~0.50           | 1.00~5.00 |           |
|                 |             |        | <b>190412</b>    |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.20~0.50           | 1.50~7.00 |           |
|                 |             |        | <b>190416</b>    |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.25~0.60 | 2.00~7.00 |
|                 |             |        | <b>250620</b>    |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.30~0.80 | 3.00~10.0 |

Filo de Corte **A52~A61**   Rompeviruta Recomendada **B04~B11**   Sistema Codificación **B26~B27**   ● : En Almacén

| Porta herramienta disponible |        |                |        |
|------------------------------|--------|----------------|--------|
| Designación                  | Página | Designación    | Página |
| <b>CSDPN</b>                 | B169   | <b>SSKPR/L</b> | B208   |
| <b>CSKPR/L</b>               | B170   |                |        |

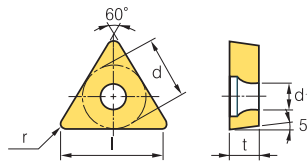


# B Insertos para Torneado (Positivo)

## TB ○○



Triangular **60° Positivo**  
Angulo Incidencia: 5°



| Dimensiones (mm) |      |      |                |
|------------------|------|------|----------------|
| Tamaño           | d    | t    | d <sub>1</sub> |
| 06               | 3.97 | 1.59 | 2.16           |

| Pza. Trabajo                         | Material |       | Corte |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Tipo de Maquinado |    |    |    |   |   |   |   |
|--------------------------------------|----------|-------|-------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------------|----|----|----|---|---|---|---|
|                                      | Color    | Letra | 1     | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17                | 18 | 19 | 20 |   |   |   |   |
| Acero                                | P        |       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Acero Inoxidable                     | M        |       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Fundicion                            | K        |       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Metales No-Ferrosos                  | N        |       |       |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |                   |    |    |    | ● | ● | ● | ● |
| Aleaciones Resist. calor, de Titanio | S        |       |       |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |                   |    |    |    | ● | ● | ● | ● |
| Acero Endurecido                     | H        |       |       |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |                   |    |    |    | ● | ● | ● | ● |

| Inserto | Designación | Cermet    |        | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |     |     |             |           |
|---------|-------------|-----------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|-----|-----|-------------|-----------|
|         |             | CN1500    | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125   | NC9135 | PC5300             | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | fn (mm/rev) | ap (mm)   |
| Acabado | TBGT        | 060102L   | ●      |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        | ●   | ●   | 0.05~0.20   | 0.10~1.30 |
|         |             | 060104L   | ●      |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |             | 0.08~0.20 |
| Acabado | TBMT        | 060102-VL |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.03~0.06   | 0.05~0.60 |

Filo de Corte **A52~A61**
 Rompeviruta Recomendada **B04~B11**
 Sistema Codificación **B26~B27**
● : En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| STUBR/L                      | B214   |             |        |

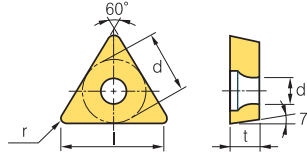




TC ○ ○



Triangular **60° Positivo**  
Angulo Incidencia: 7°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 08               | 4.76  | 2.38 | 2.3            |
| 09               | 5.56  | 2.38 | 2.5            |
| 11               | 6.35  | 2.38 | 2.8            |
| 16               | 9.523 | 3.97 | 4.4            |

| Pza. Trabajo | Material                             | Color | Disponibilidad |   |   |   |   |   |   |   |   |   |   |   |   |   | Tipo de Maquinado |   |   |   |   |   |   |
|--------------|--------------------------------------|-------|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|-------------------|---|---|---|---|---|---|
|              | Acero                                | P     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● | ● Corte Continuo<br>●● Corte en general<br>●●● Corte Interrumpido |
|              | Acero Inoxidable                     | M     |                |   |   |   |   |   |   |   |   |   |   |   |   |   |                   |   |   |   |   |   |   |
|              | Fundición                            | K     | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |   |
|              | Metales No-Ferrosos                  | N     |                |   |   |   |   |   |   |   |   |   |   |   |   |   |                   |   |   |   |   |   |   |
|              | Aleaciones Resist. calor, de Titanio | S     |                |   |   |   |   |   |   |   |   |   |   |   |   |   |                   |   |   |   |   |   |   |
|              | Acero Endurecido                     | H     |                |   |   |   |   |   |   |   |   |   |   |   |   |   |                   |   |   |   |   |   |   |

| Inserto                | Designación      | Cermet | Cermet Rec. | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |        |        |        |           |           |                            |                        |
|------------------------|------------------|--------|-------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|-----------|-----------|----------------------------|------------------------|
|                        |                  |        |             | CN1500     | CN2000 | CN2500 | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310   | NC6315 | NC9115             | NC9125 | NC9135 | PC5300 | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01       | H05       | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |
| Acabado<br>KF          | TCGT 0802003R-KF |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.01~0.06 | 0.04~1.30                  |                        |
|                        | 080201R-KF       |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           |           | 0.02~0.08                  | 0.05~1.50              |
|                        | 080202R-KF       |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           |           | 0.03~0.11                  | 0.06~1.70              |
|                        | 0802003L-KF      |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           |           | 0.01~0.06                  | 0.04~1.30              |
|                        | 080201L-KF       |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           |           | 0.02~0.08                  | 0.05~1.50              |
|                        | 080202L-KF       |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           |           | 0.03~0.11                  | 0.06~1.70              |
| Acabado<br>VP1         | TCGT 090204-VP1  |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.04~0.18 | 0.10~1.00                  |                        |
|                        | 16T304-VP1       |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.06~0.20 | 0.10~1.50                  |                        |
|                        | 16T308-VP1       |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.08~0.23 | 0.10~1.50                  |                        |
| Acabado<br>VF          | TCMT 110202-VF   |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.03~0.13 | 0.06~0.70                  |                        |
|                        | 110204-VF        | ●      |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        | ●      |        |        |        |        |        |        |           | 0.05~0.20 | 0.30~1.20                  |                        |
|                        | 110208-VF        |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        | ●      |        |        |        |        |        |           | 0.10~0.25 | 0.30~1.20                  |                        |
|                        | 16T302-VF        |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.05~0.15 | 0.10~1.30                  |                        |
|                        | 16T304-VF        |        |             |            |        |        |        |        | ●      | ●      |        |        |        |          |        |                    |        | ●      |        |        |        |        |        |        |           | 0.05~0.20 | 0.30~1.50                  |                        |
| Acabado<br>VL          | TCMT 090208-VL   |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.08~0.20 | 0.10~1.20                  |                        |
|                        | 110204-VL        |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.05~0.15 | 0.10~1.30                  |                        |
|                        | 110208-VL        |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.08~0.20 | 0.10~1.30                  |                        |
|                        | 16T304-VL        | ●      | ●           | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●         | 0.05~0.20 | 0.30~1.50                  |                        |
|                        | 16T308-VL        | ●      | ●           | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●         | 0.05~0.20 | 0.30~1.50                  |                        |
| [Acero Medio]          |                  |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           |           |                            |                        |
| Acabado<br>VP1         | TCMT 16T304-VP1  |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.06~0.20 | 0.10~1.50                  |                        |
|                        | 16T308-VP1       |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.08~0.23 | 0.10~1.50                  |                        |
| Medio a Acabado<br>HMP | TCMT 090204-HMP  |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        | ●      |        | 0.06~0.17 | 0.20~2.30 |                            |                        |
|                        | 090208-HMP       |        |             |            |        |        |        |        |        |        | ●      |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.08~0.23 | 0.40~2.30                  |                        |
|                        | 110202-HMP       |        |             |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |        |        |        |           | 0.03~0.15 | 0.10~1.50                  |                        |
|                        | 110204-HMP       |        |             |            |        |        |        |        |        | ●      | ●      | ●      | ●      |          |        |                    |        | ●      |        |        |        | ●      | ●      |        |           | 0.06~0.19 | 0.20~2.50                  |                        |
|                        | 110208-HMP       |        |             |            |        |        |        |        |        |        |        | ●      |        |          |        |                    |        |        | ●      |        |        |        | ●      | ●      |           |           | 0.09~0.26                  | 0.40~2.50              |
|                        | 16T304-HMP       |        |             |            |        |        |        |        |        |        | ●      | ●      |        |          |        |                    |        |        | ●      |        |        |        | ●      | ●      |           |           | 0.08~0.23                  | 0.30~3.00              |
| 16T308-HMP             |                  |        |             |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        |                    |        | ●      |        |        |        | ●      | ●      |        |           | 0.10~0.30 | 0.50~3.00                  |                        |

Filo de Corte A52~A61 Rompeviruta Recomendada B04~B11 Sistema Codificación B26~B27 ●: En Almacén

| Porta herramienta disponible |           |             |           |
|------------------------------|-----------|-------------|-----------|
| Designación                  | Página    | Designación | Página    |
| STACR/L                      | B114, 181 | STTCR/L     | B182, 235 |
| STFCR/L                      | B182, 234 | STWCR/L     | B235      |
| STGCR/L                      | B182      |             |           |

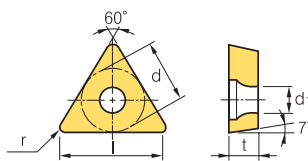


# B Insertos para Torneado (Positivo)

## TC ○○



Triangular **60° Positivo**  
Angulo Incidencia: 7°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 09               | 5.56  | 2.38 | 2.5            |
| 11               | 6.35  | 2.38 | 2.8            |
| 16               | 9.523 | 3.97 | 4.4            |

| Pza. Trabajo | Material |                  |           |                     |                                      |                  |   |   |   |   |   |   |   | Tipo de Maquinado |   |   |   |   |   |
|--------------|----------|------------------|-----------|---------------------|--------------------------------------|------------------|---|---|---|---|---|---|---|-------------------|---|---|---|---|---|
|              | Acero    | Acero Inoxidable | Fundición | Metales No-Ferrosos | Aleaciones Resist. calor, de Titanio | Acero Endurecido | P | M | K | N | S | H | ● | ●                 | ● | ● | ● | ● |   |
| ●            | ●        | ●                | ●         | ●                   | ●                                    | ●                | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |

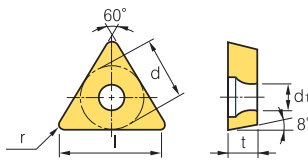
| Inserto         | Designación | Cermet |            | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |             |           |           |           |
|-----------------|-------------|--------|------------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|-------------|-----------|-----------|-----------|
|                 |             | CN1500 | CN2000     | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | fn (mm/rev) | ap (mm)   |           |           |
| Medio a Acabado | MP          | TCMT   | 090204-MP  |             |        |            |        |        |        |        |        |        | ●      | ●      | ●      |          |        |                    |        |        |        |        |     |     |             | 0.05~0.18 | 0.10~1.00 |           |
|                 |             | TCMT   | 090208-MP  |             |        |            |        |        |        |        |        |        | ●      | ●      | ●      |          |        |                    |        |        |        |        |     |     |             | 0.08~0.20 | 0.10~1.20 |           |
|                 |             | TCMT   | 110202-MP  |             |        |            |        | ●      | ●      | ●      |        |        |        | ●      | ●      | ●        |        |                    |        | ●      | ●      |        |     |     |             | 0.03~0.12 | 0.20~1.50 |           |
|                 |             | TCMT   | 110204-MP  |             |        |            |        | ●      | ●      | ●      |        |        |        | ●      | ●      | ●        |        |                    |        | ●      | ●      |        |     |     |             | 0.05~0.15 | 0.20~15.0 |           |
|                 |             | TCMT   | 110208-MP  |             |        |            |        | ●      | ●      | ●      |        |        |        | ●      | ●      | ●        | ●      |                    |        | ●      | ●      |        |     |     |             | 0.10~0.28 | 0.25~2.00 |           |
|                 |             | TCMT   | 16T302-MP  |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             |           | 0.08~0.25 | 0.20~1.50 |
|                 |             | TCMT   | 16T304-MP  | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   |             |           | 0.08~0.20 | 0.30~2.50 |
|                 |             | TCMT   | 16T308-MP  | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   |             |           | 0.10~0.30 | 0.50~2.50 |
|                 |             | TCMT   | 16T312-MP  |             |        |            |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      |                    |        |        | ●      | ●      |     |     |             |           | 0.20~0.40 | 0.50~2.50 |
| Medio           | C25         | TCMT   | 090204-C25 | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      |        |        |        |          | ●      | ●                  | ●      |        |        |        |     |     |             | 0.06~0.18 | 0.40~2.50 |           |
|                 |             | TCMT   | 090208-C25 | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      |        |        |        |          | ●      | ●                  | ●      |        |        |        |     |     |             | 0.08~0.25 | 0.80~2.50 |           |
|                 |             | TCMT   | 110202-C25 | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      |        |        |        |          | ●      | ●                  | ●      |        |        |        |     |     |             | 0.04~0.12 | 0.40~2.00 |           |
|                 |             | TCMT   | 110204-C25 | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      |        |        |        |          | ●      | ●                  | ●      |        |        |        |     |     |             | 0.06~0.20 | 0.60~2.50 |           |
|                 |             | TCMT   | 110208-C25 | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      |        |        |        |          | ●      | ●                  | ●      |        |        |        | ●   |     |             | 0.08~0.25 | 0.80~2.50 |           |
|                 |             | TCMT   | 16T304-C25 | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   |             |           | 0.08~0.28 | 0.80~3.00 |
|                 |             | TCMT   | 16T308-C25 | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●   | ●   |             |           | 0.10~0.30 | 1.00~3.00 |

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## TO ○○



Triangular **60° Positivo**  
Angulo Incidencia: 8°



| Dimensiones (mm) |      |      |                |
|------------------|------|------|----------------|
| Tamaño           | d    | t    | d <sub>1</sub> |
| 06               | 3.97 | 1.59 | 2.15           |
| 09               | 5.56 | 2.38 | 2.8            |
| 14               | 8.2  | 3.0  | 3.8            |

| Pza. Trabajo | Material |                  |           |                     |                                      |                  |   |   |   |   |   |   |   | Tipo de Maquinado |   |   |   |   |   |
|--------------|----------|------------------|-----------|---------------------|--------------------------------------|------------------|---|---|---|---|---|---|---|-------------------|---|---|---|---|---|
|              | Acero    | Acero Inoxidable | Fundición | Metales No-Ferrosos | Aleaciones Resist. calor, de Titanio | Acero Endurecido | P | M | K | N | S | H | ● | ●                 | ● | ● | ● | ● |   |
| ●            | ●        | ●                | ●         | ●                   | ●                                    | ●                | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |

| Inserto         | Designación | Cermet  |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |             |           |           |
|-----------------|-------------|---------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|-------------|-----------|-----------|
|                 |             | CN1500  | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | fn (mm/rev) | ap (mm)   |           |
| Medio a Acabado | TOEH        | 060102L |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.05~0.17 | 0.10~1.50 |
|                 |             | 090204L |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.05~0.20 | 0.30~2.50 |
|                 |             | 140304L | ●      |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |             | 0.05~0.25 | 0.30~2.50 |

🔄 Filo de Corte A52~A61 🔄 Rompeviruta Recomendada B04~B11 🔄 Sistema Codificación B26~B27 ● : En Almacen

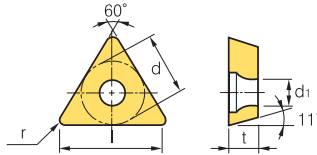


# Insertos para Torneado (Positivo) **B**

# TP



Triangular **60° Positivo**  
Angulo Incidencia: 11°



| Dimensiones (mm) |        |           |                |
|------------------|--------|-----------|----------------|
| Tamaño           | d      | t         | d <sub>1</sub> |
| 08               | 4.76   | 2.38      | 2.3            |
| 09               | 5.56   | 2.38      | -              |
| 11               | 6.35   | 2.38-3.18 | 3.4            |
| 16               | 9.525  | 3.18-4.76 | 4.4            |
| 22               | 12.7   | 4.76      | -              |
| 27               | 15.875 | 4.76-6.35 | -              |

| Pza. Trabajo                         | Compatibilidad de Materiales |   |   |   |   |   |   |   |   |   |   |   |   |   | Tipo de Maquinado |   |   |   |
|--------------------------------------|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|-------------------|---|---|---|
|                                      | P                            | M | K | N | S | H | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● |   |   |
| Acero                                | ●                            | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● |
| Acero Inoxidable                     | ●                            | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● |
| Fundicion                            | ●                            | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● |
| Metales No-Ferrosos                  | ●                            | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● |
| Aleaciones Resist. calor, de Titanio | ●                            | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● |
| Acero Endurecido                     | ●                            | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● |

| Inserto         | Designación | Cermet   |          |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |     |                         |                     |           |           |
|-----------------|-------------|----------|----------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|-----|-------------------------|---------------------|-----------|-----------|
|                 |             | CN1500   | CN2000   | CN2500 | CC1500      | CC2500 | NC3215     | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300 | PC5400 | PC8105 | PC8110 | PC8115   | PC9030 | H01                | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |           |
| Acabado         |             | TPGH     | 080202L  | ●      |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         | 0.01~0.12           | 0.06~1.70 |           |
|                 |             | 080204L  | ●        | ●      |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         | 0.01~0.15           | 0.08~1.70 |           |
|                 |             | 110202L  |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         |                     | 0.01~0.12 | 0.06~2.00 |
|                 |             | 110204L  |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         |                     | 0.01~0.15 | 0.08~2.00 |
| Medio a Acabado |             | TPGN     | 090204   |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         | 0.07~0.20           | 0.70~2.00 |           |
|                 |             | 110302   |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         | 0.05~0.15           | 0.50~2.00 |           |
|                 |             | 110304   |          |        |             |        |            |        |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |                    | ●   |                         | 0.07~0.20           | 0.70~3.00 |           |
|                 |             | 110308   |          |        |             |        |            |        |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |                    | ●   |                         | 0.10~0.25           | 1.00~3.00 |           |
|                 |             | 160302   |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         | 0.05~0.18           | 1.00~5.00 |           |
|                 |             | 160304   |          |        |             |        |            |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |          |        |                    | ●   |                         | 0.07~0.20           | 1.00~5.00 |           |
|                 |             | 160308   |          |        |             |        |            |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |          |        |                    | ●   |                         | 0.10~0.25           | 1.00~5.00 |           |
|                 |             | 160310   |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         |                     | 0.10~0.25 | 1.00~5.00 |
|                 |             | 160312   |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         |                     | 0.15~0.30 | 1.00~5.00 |
|                 |             | 160316   |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         |                     | 0.15~0.30 | 1.00~5.00 |
|                 |             | 160404   |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         |                     | 0.07~0.20 | 1.00~5.00 |
|                 |             | 220404   |          |        |             |        |            |        |        |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         |                     | 0.07~0.20 | 1.50~7.00 |
|                 |             | 220408   |          |        |             |        |            |        |        |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         |                     | 0.10~0.25 | 1.50~7.00 |
|                 |             | 220412   |          |        |             |        |            |        |        |        | ●      |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         |                     | 0.15~0.30 | 1.50~7.00 |
|                 |             | 220430   |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         |                     | 0.30~0.45 | 1.50~7.00 |
|                 |             | 220440   |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         |                     | 0.30~0.50 | 1.50~7.00 |
| 270408          |             |          |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     | 0.15~0.25               | 3.00~8.00           |           |           |
| 270608          |             |          |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     | 0.15~0.25               | 3.00~8.00           |           |           |
| Acabado         |             | TPGR     | 110302-F |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         | 0.05~0.15           | 0.10~1.50 |           |
|                 |             | 110304-F |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         | 0.05~0.20           | 0.30~1.50 |           |
|                 |             | 160304-F |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         | 0.08~0.25           | 0.50~2.00 |           |
| Medio           |             | TPGR     | 110308-M |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         | 0.13~0.30           | 1.00~3.00 |           |
|                 |             | 160308-M |          |        |             |        |            |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |                    |     |                         | 0.13~0.30           | 1.00~5.00 |           |

🔄 Filo de Corte A52~A61 🔧 Rompeviruta Recomendada B04~B11 ⚙️ Sistema Codificación B26~B27 ➔ : En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| STFPR/L                      | B210   | STUPR/L     | B215   |
| CTFPR/L                      | B170   | CTGPR/L     | B170   |

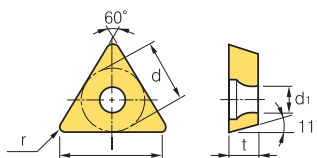


# B Insertos para Torneado (Positivo)

## TP ○○



**Triangular 60° Positivo**  
Angulo Incidencia: 11°



| Dimensiones (mm) |       |           |                |
|------------------|-------|-----------|----------------|
| Tamaño           | d     | t         | d <sub>1</sub> |
| 08               | 4.76  | 2.38      | 2.3            |
| 09               | 5.56  | 2.38      | 3.0            |
| 11               | 6.35  | 3.18      | 3.4            |
| 16               | 9.525 | 3.18~4.76 | 4.4            |
| 22               | 12.7  | 4.76      | -              |

| Pza. Trabajo                         | Material |         | Corte |   |   |   |   |   |   |   |   |    |    |    |    |    | Tipo de Maquinado |    |    |    |    |    |    |   |
|--------------------------------------|----------|---------|-------|---|---|---|---|---|---|---|---|----|----|----|----|----|-------------------|----|----|----|----|----|----|---|
|                                      | Color    | Simbolo | 1     | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |                   | 15 | 16 | 17 | 18 | 19 | 20 |   |
| Acero                                | P        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| Acero Inoxidable                     | M        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| Fundicion                            | K        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| Metales No-Ferrosos                  | N        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| Aleaciones Resist. calor, de Titanio | S        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ●  | ● |
| Acero Endurecido                     | H        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ●  | ● |

| Inserto         | Designación | Cermet   |        | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |           |           |                         |                     |           |           |
|-----------------|-------------|----------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|-----------|-----------|-------------------------|---------------------|-----------|-----------|
|                 |             | CN1500   | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125   | NC9135 | PC5300             | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01       | H05       | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |           |
| Medio a Acabado | TPGT        | 080202R  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           |                         | 0.05~0.20           | 0.30~1.50 |           |
|                 |             | 110302R  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           |                         | 0.05~0.20           | 0.30~1.50 |           |
|                 |             | 110304R  | ●      |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           |                         | 0.05~0.20           | 0.50~2.00 |           |
|                 |             | 110308R  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           |                         | 0.07~0.25           | 0.50~2.00 |           |
|                 |             | 160404R  | ●      |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           |                         | 0.05~0.20           | 0.70~3.00 |           |
|                 |             | 160408R  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           |                         | 0.05~0.20           | 0.70~3.00 |           |
|                 |             | 080202L  | ●      |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        | ●         | ●         | 0.05~0.20               | 0.30~1.50           |           |           |
|                 |             | 110302L  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           |                         |                     | 0.05~0.20 | 0.30~1.50 |
|                 |             | 110304L  | ●      | ●          |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           |                         |                     | 0.05~0.20 | 0.50~2.00 |
|                 |             | 110308L  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           |                         |                     | 0.07~0.25 | 0.50~2.00 |
|                 |             | 160404L  | ●      |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           |                         |                     | 0.05~0.20 | 0.70~3.00 |
|                 |             | 160408L  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           |                         |                     | 0.05~0.20 | 0.70~3.00 |
| Medio a Acabado | TPGX        | 090202L  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           | 0.10~0.20               | 0.30~1.00           |           |           |
|                 |             | 090204L  |        | ●          |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           | 0.10~0.25               | 0.50~1.00           |           |           |
|                 |             | 090208L  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           | 0.10~0.30               | 1.00~1.00           |           |           |
|                 |             | 110304L  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           | 0.10~0.25               | 0.50~1.20           |           |           |
| Acabado         | TPMR        | 090202-F |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           | 0.05~0.15               | 0.10~1.00           |           |           |
|                 |             | 090204-F |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           | 0.05~0.15               | 0.10~1.00           |           |           |
|                 |             | 110302-F |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           | 0.05~0.15               | 0.10~1.50           |           |           |
|                 |             | 110304-F |        |            |        |        |        | ●      | ●      | ●      |        |        |        |        |          |        |                    |        |        |        |        | ●      |           |           | 0.05~0.20               | 0.30~1.50           |           |           |
|                 |             | 110308-F |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           | 0.05~0.25               | 0.30~1.50           |           |           |
|                 |             | 160304-F |        |            |        |        |        | ●      | ●      | ●      | ●      |        |        |        |          |        |                    |        |        |        | ●      | ●      |           |           | 0.08~0.25               | 0.50~2.00           |           |           |
| 160308-F        |             |          |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        | 0.08~0.25 | 0.50~3.00 |                         |                     |           |           |
| Medio           | TPMR        | 110304-M |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           | 0.10~0.25               | 0.70~3.00           |           |           |
|                 |             | 110308-M |        |            |        |        |        |        |        | ●      |        | ●      |        |        |          |        |                    |        |        |        |        |        |           |           | 0.13~0.30               | 1.00~3.00           |           |           |
|                 |             | 160304-M |        |            |        |        |        |        |        | ●      |        | ●      |        |        |          |        |                    |        |        |        |        |        |           |           | 0.10~0.25               | 1.00~5.00           |           |           |
|                 |             | 160308-M |        |            |        |        |        | ●      | ●      | ●      |        | ●      |        |        |          |        |                    |        |        |        |        |        |           |           | 0.13~0.30               | 1.00~5.00           |           |           |
|                 |             | 160312-M |        |            |        |        |        |        |        | ●      |        |        |        |        |          |        |                    |        |        |        |        |        |           |           | 0.15~0.35               | 1.00~5.00           |           |           |
|                 |             | 220408-M |        |            |        |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |        |           |           | 0.13~0.30               | 1.50~7.00           |           |           |

🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

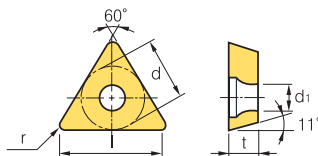
| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| STFPR/L                      | B210   | STUPR/L     | B215   |
| CTFPR/L                      | B170   | CTGPR/L     | B170   |



# TP ○○



Triangular **60° Positivo**  
Angulo Incidencia: 11°



| Dimensiones (mm) |       |           |                |
|------------------|-------|-----------|----------------|
| Tamaño           | d     | t         | d <sub>1</sub> |
| 09               | 5.56  | 3.18      | -              |
| 11               | 6.35  | 3.18      | 3.4            |
| 16               | 9.525 | 3.18~4.76 | 4.4            |
| 22               | 12.7  | 4.76      | -              |
| 33               | 19.05 | 6.35      | -              |

| Pza. Trabajo                        | Compatibilidad |   |   |   |   |   |   |   |   |   |   |   | Tipo de Maquinado |   |   |   |   |   |
|-------------------------------------|----------------|---|---|---|---|---|---|---|---|---|---|---|-------------------|---|---|---|---|---|
|                                     | Acero          | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
| Acero Inoxidable                    | M              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● |   |   |
| Fundicion                           | K              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● |   |   |
| Metales No-Ferrosos                 | N              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● |   |   |
| Aleaciones Resist. calor.de Titanio | S              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● |   |   |
| Acero Endurecido                    | H              | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● |   |   |

| Inserto                     | Designación    | Cermet |        | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |     |     |                            |                        |
|-----------------------------|----------------|--------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|-----|-----|----------------------------|------------------------|
|                             |                | CN1500 | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125   | NC9135 | PC5300             | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |
| Acabado<br>VF<br>           | TPMT 110304-VF | ●      |        |            |        |        |        | ●      | ●      |        |        |        |        |        |          |        | ●                  |        |        | ●      |        |        |     |     | 0.05~0.20                  | 0.30~1.50              |
|                             | 110308-VF      |        |        |            |        |        |        | ●      | ●      |        |        |        |        |        |          |        |                    |        |        | ●      |        |        |     |     | 0.10~0.25                  | 0.30~1.50              |
|                             | 160404-VF      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.05~0.20                  | 0.30~2.00              |
|                             | 160408-VF      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.10~0.25                  | 0.30~2.00              |
| Acabado<br>VL<br>           | TPMT 090204-VL |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.04~0.10                  | 0.10~0.90              |
|                             | 090208-VL      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.06~0.12                  | 0.10~1.00              |
|                             | 110304-VL      | ●      | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●   | ●   | 0.05~0.15                  | 0.10~1.30              |
|                             | 110308-VL      |        |        |            |        |        | ●      |        |        |        |        |        |        | ●      | ●        |        |                    |        |        |        |        |        |     |     | 0.08~0.20                  | 0.10~1.30              |
|                             | 160404-VL      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.05~0.20                  | 0.30~1.50              |
|                             | 160408-VL      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.05~0.20                  | 0.30~1.50              |
| Medio a Acabado<br>MP<br>   | TPMT 090202-MP |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.03~0.15                  | 0.10~1.00              |
|                             | 090204-MP      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.05~0.18                  | 0.10~1.00              |
|                             | 110302-MP      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.03~0.12                  | 0.20~1.50              |
|                             | 110304-MP      | ●      | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●   | ●   | 0.05~0.20                  | 0.20~1.50              |
|                             | 110308-MP      |        |        |            |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●   | ●   | 0.10~0.28                  | 0.30~2.00              |
|                             | 160402-MP      |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.06~0.20                  | 0.30~2.50              |
|                             | 160404-MP      |        |        |            |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●   | ●   | 0.08~0.20                  | 0.30~2.50              |
|                             | 160408-MP      |        |        |            |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●      | ●      | ●   | ●   | 0.10~0.30                  | 0.50~2.50              |
| Medio a Acabado<br>TPUN<br> | 090308         |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.10~0.30                  | 0.50~2.00              |
|                             | 110208         |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.15~0.40                  | 1.00~3.00              |
|                             | 110304         |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.10~0.30                  | 1.00~3.00              |
|                             | 110308         |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.15~0.40                  | 1.00~3.00              |
|                             | 160304         |        |        |            |        |        |        |        |        | ●      |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.10~0.30                  | 1.00~5.00              |
|                             | 160308         |        |        |            |        |        |        |        |        | ●      |        |        |        |        |          |        | ●                  |        |        |        |        |        |     |     | 0.15~0.40                  | 1.00~5.00              |
|                             | 160308TN       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.15~0.40                  | 1.00~5.00              |
|                             | 160312         |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.20~0.50                  | 1.50~5.00              |
|                             | 160312TN       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.20~0.50                  | 1.50~5.00              |
|                             | 220404         |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.10~0.30                  | 1.50~7.00              |
|                             | 220408         |        |        |            |        |        |        |        |        |        | ●      |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.15~0.40                  | 1.50~7.00              |
|                             | 220412         |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.20~0.50                  | 1.50~7.00              |
|                             | 220412TN       |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.20~0.50                  | 1.50~7.00              |
|                             | 330620         |        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     | 0.30~0.70                  | 3.00~10.00             |

➔ Filo de Corte A52~A61 ➔ Rompeviruta Recomendada B04~B11 ➔ Sistema Codificación B26~B27 ● : En Almacen

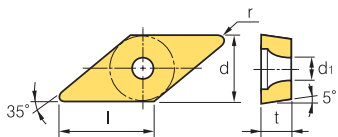
| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| STFPR/L                      | B210   | STUPR/L     | B215   |
| CTFPR/L                      | B170   | CTGPR/L     | B170   |



# B Insertos para Torneado (Positivo)

## VB ○ ○

 **Rómbico 35° Positivo**  
Angulo Incidencia: 5°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 11               | 6.35  | 3.18 | 2.8            |
| 16               | 9.525 | 4.76 | 4.4            |

| Pza. Trabajo | Compatibilidad |                  |           |                     |                                      |                  |   |   |   |   |   |   | Tipo de Maquinado |   |   |   |   |   |
|--------------|----------------|------------------|-----------|---------------------|--------------------------------------|------------------|---|---|---|---|---|---|-------------------|---|---|---|---|---|
|              | Acero          | Acero Inoxidable | Fundición | Metales No-Ferrosos | Aleaciones Resist. calor, de Titanio | Acero Endurecido | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |
|              | <b>P</b>       | <b>M</b>         | <b>K</b>  | <b>N</b>            | <b>S</b>                             | <b>H</b>         | ● | ● | ● | ● | ● | ● | ●                 | ● | ● | ● | ● | ● |

● Corte Continuo  
● Corte en general  
● Corte Interrumpido

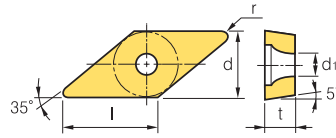
| Inserto         | Designación | Cermet           |        | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |     |     |                         |                     |           |           |
|-----------------|-------------|------------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|-----|-----|-------------------------|---------------------|-----------|-----------|
|                 |             | CN1500           | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125   | NC9135 | PC5300             | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |           |
| Acabado         | KF          | VBGT 1103003R-KF |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.01~0.06           | 0.04~1.30 |           |
|                 |             | 110301R-KF       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         |                     | 0.02~0.08 | 0.05~1.50 |
|                 |             | 110302R-KF       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         |                     | 0.03~0.13 | 0.06~1.70 |
|                 |             | 1103003L-KF      |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     | ●   |                         |                     | 0.01~0.06 | 0.04~1.30 |
|                 |             | 110301L-KF       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         |                     | 0.02~0.08 | 0.05~1.50 |
|                 |             | 110302L-KF       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         |                     | 0.03~0.13 | 0.06~1.70 |
| Acabado         | VP1         | VBGT 110302-VP1  |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.03~0.10           | 0.08~1.50 |           |
|                 |             | 160402-VP1       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.04~0.20           | 0.16~1.50 |           |
|                 |             | 160404-VP1       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.05~0.20           | 0.18~1.80 |           |
| Medio a Acabado |             | VBGT 160404      |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.07~0.20           | 0.50~1.50 |           |
|                 |             | 160408           |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.15~0.25           | 0.70~2.00 |           |
| Medio a Acabado | KM          | VBGT 1103003R-KM |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.01~0.06           | 0.04~1.30 |           |
|                 |             | 110301R-KM       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.02~0.08           | 0.05~1.50 |           |
|                 |             | 110302R-KM       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.03~0.13           | 0.06~1.70 |           |
|                 |             | 160404R-KM       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.05~0.15           | 0.50~2.00 |           |
|                 |             | 1103003L-KM      |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.01~0.06           | 0.04~1.30 |           |
|                 |             | 110301L-KM       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.02~0.08           | 0.05~1.50 |           |
|                 |             | 110302L-KM       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.03~0.13           | 0.06~1.70 |           |
|                 |             | 160404L-KM       |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.05~0.15           | 0.50~2.00 |           |
| Acabado         | VB          | VBMT 110302-VB   |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.05~0.15           | 0.20~1.20 |           |
|                 |             | 110304-VB        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.06~0.18           | 0.20~1.20 |           |
|                 |             | 110308-VB        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.08~0.20           | 0.60~1.20 |           |
|                 |             | 160402-VB        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.06~0.20           | 0.05~1.00 |           |
|                 |             | 160404-VB        | ●      | ●          |        |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.08~0.20           | 0.20~1.50 |           |
|                 |             | 160408-VB        | ●      | ●          |        |        |        |        | ●      |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.10~0.23           | 0.50~1.50 |           |
|                 |             | 160412-VB        |        |            |        |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |        |     |     |                         | 0.12~0.25           | 0.80~1.50 |           |
| Acabado         | VF          | 160404-VF        | ●      | ●          | ●      |        |        |        | ●      | ●      |        |        |        |        |          | ●      |                    |        |        | ●      |        |        |     |     | 0.05~0.20               | 0.30~1.00           |           |           |
|                 |             | 160408-VF        | ●      | ●          | ●      |        |        |        |        |        |        |        |        |        |          |        | ●                  |        |        |        |        |        |     |     | 0.10~0.25               | 0.30~1.00           |           |           |

🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

| Porta herramienta disponible |           |             |        |
|------------------------------|-----------|-------------|--------|
| Designación                  | Página    | Designación | Página |
| SVABR/L                      | B183      | SVVBN       | B184   |
| SVHBR/L                      | B183      | SVQBR/L     | B211   |
| SVJBR/L                      | B115, 183 | SVUBR/L     | B212   |



## VB



| Dimensiones (mm) |       |           |                |
|------------------|-------|-----------|----------------|
| Tamaño           | d     | t         | d <sub>1</sub> |
| 11               | 6.35  | 2.38~3.18 | 2.8~3.4        |
| 16               | 9.525 | 4.76      | 4.4            |

**Rómbico 35° Positivo**  
Angulo Incidencia: 5°

| Pza. Trabajo                        | Material | P | M | K | N | S | H | Tipo de Maquinado    |
|-------------------------------------|----------|---|---|---|---|---|---|----------------------|
| Acero                               |          | ● | ● | ● | ● | ● | ● | ● Corte Continuo     |
| Acero Inoxidable                    |          | ● | ● | ● | ● | ● | ● | ● Corte en general   |
| Fundición                           |          | ● | ● | ● | ● | ● | ● | ● Corte Interrompido |
| Metales No-Ferrosos                 |          |   |   |   |   |   |   |                      |
| Aleaciones Resist. calor de Titanio |          |   |   |   |   |   |   |                      |
| Acero Endurecido                    |          |   |   |   |   |   |   |                      |

| Inserto                                      | Designación | Cermet     |        |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |     |     |                            |                        |           |           |
|--|-------------|------------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|-----|-----|----------------------------|------------------------|-----------|-----------|
|  |             | CN1500     | CN2000 | CN2500 | CC1500      | CC2500 | NC3215     | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300   | PC5400 | PC8105             | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |           |           |
| Acabado<br>VL<br><br>[Acero Medio]           | VBMT        | 110302-VL  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            | 0.03~0.20              | 0.20~1.20 |           |
|  |             | 110304-VL  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.04~0.20 | 0.20~1.20 |
|  |             | 110308-VL  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.08~0.20 | 0.20~1.20 |
|  |             | 160402-VL  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.03~0.20 | 0.30~1.50 |
|  |             | 160404-VL  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | ●                          | ●                      | 0.05~0.20 | 0.30~1.50 |
|  |             | 160408-VL  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | ●                          | ●                      | 0.10~0.20 | 0.30~1.50 |
|  |             | 160412-VL  |        |        |             |        |            |        |        |        |        |        |        |        | ●      | ●      | ●        |        |                    | ●      | ●      | ●      |     |     |                            |                        | 0.10~0.25 | 0.30~1.50 |
| Acabado<br>VP1<br>                           | VBMT        | 160402-VP1 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.04~0.20 | 0.16~1.50 |
|  |             | 160404-VP1 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.05~0.20 | 0.18~1.80 |
|  |             | 160408-VP1 |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.06~0.20 | 0.20~1.80 |
| Medio a Acabado<br>                          | VBMT        | 160404     |        | ●      |             |        |            | ●      | ●      | ●      |        |        |        |        |        |        |          |        |                    |        |        |        | ●   |     |                            |                        | 0.07~0.20 | 0.50~1.50 |
|  |             | 160408     |        |        |             |        |            | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      |        |          |        |                    |        |        |        | ●   |     |                            |                        | 0.15~0.25 | 0.70~2.00 |
| Medio a Acabado<br>HMP<br>                   | VBMT        | 110304-HMP |        |        |             |        |            | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |        |        | ●   |     |                            |                        | 0.03~0.20 | 0.15~2.70 |
|  |             | 110308-HMP |        |        |             |        |            | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.05~0.25 | 0.40~2.70 |
|  |             | 160404-HMP |        |        |             |        |            | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      |        | ●        |        |                    | ●      | ●      |        |     |     |                            |                        | 0.07~0.20 | 0.20~2.70 |
|  |             | 160408-HMP |        |        |             |        |            | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      |        | ●        |        |                    | ●      | ●      |        | ●   |     |                            |                        | 0.09~0.27 | 0.50~2.70 |
|  |             | 160412-HMP |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.11~0.32 | 0.50~2.70 |
| Medio a Acabado<br>MP <small>new</small><br> | VBMT        | 110302-MP  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.04~0.14 | 0.20~1.50 |
|  |             | 110304-MP  |        |        |             |        |            | ●      | ●      |        |        |        |        | ●      | ●      |        |          |        |                    |        |        |        |     |     |                            |                        | 0.05~0.15 | 0.20~1.50 |
|  |             | 110308-MP  |        |        |             |        |            | ●      | ●      |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.10~0.28 | 0.30~2.00 |
|  |             | 160402-MP  |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |     |     |                            |                        | 0.06~0.16 | 0.25~2.00 |
|  |             | 160404-MP  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | ●                          | ●                      | 0.08~0.20 | 0.30~2.00 |
|  |             | 160408-MP  | ●      | ●      | ●           | ●      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | ●                          | ●                      | 0.10~0.25 | 0.50~2.30 |
|  |             | 160412-MP  | ●      | ●      |             |        | ●          | ●      |        |        | ●      |        |        |        | ●      | ●      | ●        | ●      | ●                  | ●      | ●      | ●      | ●   | ●   | ●                          | ●                      | 0.10~0.35 | 0.50~2.30 |

🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

| Porta herramienta disponible |           |             |        |
|------------------------------|-----------|-------------|--------|
| Designación                  | Página    | Designación | Página |
| SVABR/L                      | B183      | SVVBN       | B184   |
| SVHBR/L                      | B183      | SVQBR/L     | B211   |
| SVJBR/L                      | B115, 183 | SVUBR/L     | B212   |

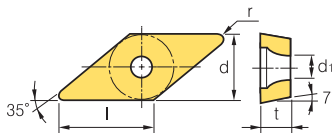






VC ○ ○ ○

**Rómbico 35° Positivo**  
Angulo Incidencia: 7°



| Dimensiones (mm) |       |      |         |
|------------------|-------|------|---------|
| Tamaño           | d     | t    | d1      |
| 08               | 4.76  | 2.38 | 2.3     |
| 11               | 6.35  | 3.18 | 2.8~3.4 |
| 12               | 7.5   | 3.18 | 2.8     |
| 16               | 9.525 | 4.76 | 4.4     |

| Pza. Trabajo                         | Material |         | Corte |   |   |   |   |   |   |   |   |    |    |    |    |    | Tipo de Maquinado |    |    |    |    |    |   |  |
|--------------------------------------|----------|---------|-------|---|---|---|---|---|---|---|---|----|----|----|----|----|-------------------|----|----|----|----|----|---|--|
|                                      | Color    | Simbolo | 1     | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15                | 16 | 17 | 18 | 19 | 20 |   |  |
| Acero                                | P        | ●       | ●     | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ●  | ●  | ● | ● Corte Continuo<br>● Corte en general<br>● Corte Interrumpido |
| Acero Inoxidable                     | M        | ●       |       |   |   |   |   |   |   |   |   |    |    |    |    |    |                   |    |    |    |    |    |   |  |
| Fundicion                            | K        | ●       | ●     | ● | ● |   |   |   |   |   |   |    |    |    |    |    |                   |    |    |    |    |    |   |  |
| Metalos No-Ferrosos                  | N        | ●       |       |   |   |   |   |   |   |   |   |    |    |    |    |    |                   |    |    |    |    |    |   |  |
| Aleaciones Resist. calor, de Titanio | S        | ●       |       |   |   |   |   |   |   |   |   |    |    |    |    |    |                   |    |    |    |    |    |   |  |
| Acero Endurecido                     | H        | ●       |       |   |   |   |   |   |   |   |   |    |    |    |    |    |                   |    |    |    |    |    |   |  |

| Inserto                            | Designación   | Cermet |        |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |           |           |     |     |                |            |           |           |
|------------------------------------|---------------|--------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|-----------|-----------|-----|-----|----------------|------------|-----------|-----------|
|                                    |               | CN1500 | CN2000 | CN2500 | CC1500      | CC2500 | NC3215     | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135 | PC5300   | PC5400 | PC8105             | PC8110 | PC8115    | PC9030    | H01 | H05 | fn<br>(mm/rev) | ap<br>(mm) |           |           |
| Acabado<br>VP1<br>[Alta precisión] | VCGX          |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        | 0.02~0.10 | 0.05~0.50 |     |     |                |            |           |           |
|                                    | 120300MFR-VP1 |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        | ●        |        |                    | ●      |           |           |     |     |                |            | 0.02~0.15 | 0.05~0.50 |
|                                    | 120301MFR-VP1 |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        | ●        |        |                    | ●      |           |           |     |     |                |            | 0.02~0.18 | 0.10~1.00 |
|                                    | 120302MFR-VP1 |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        | ●        |        |                    | ●      |           |           |     |     |                |            | 0.03~0.20 | 0.12~1.20 |
|                                    | 120304MFR-VP1 |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        | ●        |        |                    | ●      |           |           |     |     |                |            | 0.05~0.20 | 0.15~1.20 |
| Acabado<br>VF                      | VCMT          |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        | 0.05~0.20 | 0.30~1.00 |     |     |                |            |           |           |
|                                    | 080202-VF     |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |           |           |     |     |                |            | 0.10~0.25 | 0.30~1.00 |
|                                    | 080204-VF     |        |        |        |             |        |            |        |        | ●      |        |        |        |        |        |        |          |        |                    |        |           |           |     |     |                |            | 0.03~0.18 | 0.15~1.20 |
|                                    | 110304-VF     |        |        |        |             |        |            |        | ●      |        |        |        |        |        |        |        |          |        |                    |        |           |           |     |     |                |            | 0.04~0.20 | 0.15~1.50 |
| Acabado<br>VL<br>[Acero Mediol]    | VCMT          |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        | 0.03~0.08 | 0.10~0.80 |     |     |                |            |           |           |
|                                    | 080202-VL     |        |        |        |             |        | ●          | ●      |        | ●      |        |        |        |        |        |        | ●        |        |                    |        |           |           |     |     |                |            | 0.04~0.10 | 0.10~0.90 |
|                                    | 080204-VL     |        |        |        |             |        | ●          | ●      |        | ●      |        |        |        |        |        |        | ●        |        |                    |        |           |           |     |     |                |            | 0.05~0.20 | 0.30~1.50 |
|                                    | 160404-VL     |        |        |        |             |        | ●          | ●      |        | ●      |        |        | ●      | ●      | ●      |        |          |        | ●                  | ●      |           |           |     |     |                |            | 0.05~0.20 | 0.30~1.50 |
|                                    | 160408-VL     |        |        |        |             |        | ●          | ●      |        | ●      |        |        | ●      | ●      | ●      |        |          |        | ●                  | ●      |           |           |     |     |                |            | 0.05~0.20 | 0.30~1.50 |
| 160412-VL                          |               |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |           |           |     |     |                | 0.10~0.25  | 0.30~1.50 |           |
| Acabado<br>VP1                     | VCMT          |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        | 0.05~0.20 | 0.18~1.80 |     |     |                |            |           |           |
|                                    | 160404-VP1    |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |           |           |     |     |                |            | 0.06~0.20 | 0.20~1.80 |
| Medio a Acabado<br>HMP             | VCMT          |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        | 0.10~0.25 | 0.30~2.60 |     |     |                |            |           |           |
|                                    | 160404-HMP    |        |        |        |             |        |            |        | ●      | ●      |        |        |        |        |        |        | ●        |        |                    | ●      | ●         |           |     |     |                | 0.13~0.33  | 0.60~2.60 |           |
| Medio a Acabado<br>MP              | VCMT          |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        | 0.03~0.15 | 0.10~1.00 |     |     |                |            |           |           |
|                                    | 080202-MP     |        |        |        |             |        | ●          | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |           |           |     |     |                |            | 0.05~0.18 | 0.10~1.00 |
|                                    | 080204-MP     |        |        |        |             |        | ●          | ●      |        |        |        |        |        |        |        |        |          |        |                    |        |           |           |     |     |                |            | 0.06~0.18 | 0.20~1.80 |
|                                    | 110302-MP     |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |           |           |     |     |                |            | 0.06~0.18 | 0.20~1.80 |
|                                    | 110304-MP     |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |           |           |     |     |                |            | 0.06~0.18 | 0.20~1.80 |
|                                    | 160404-MP     |        |        |        |             |        | ●          | ●      |        | ●      |        |        | ●      | ●      | ●      | ●      |          |        |                    | ●      | ●         |           |     |     |                |            | 0.08~0.18 | 0.30~2.00 |
|                                    | 160408-MP     |        |        |        |             |        | ●          | ●      |        | ●      |        |        | ●      | ●      | ●      | ●      |          |        |                    | ●      | ●         |           |     |     |                |            | 0.10~0.23 | 0.50~2.30 |
| 160412-MP                          |               |        |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |           |           |     |     |                | 0.10~0.33  | 0.50~2.30 |           |

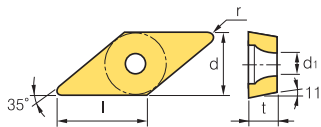
🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

| Porta herramienta disponible |                |             |        |
|------------------------------|----------------|-------------|--------|
| Designación                  | Página         | Designación | Página |
| SVJCR/L                      | B115, 184, 211 | SVQCR/L     | B212   |
| SVVCN                        | B184           | SVUCR/L     | B212   |



# B Insertos para Torneado (Positivo)

## VP ○○



| Dimensiones (mm) |      |      |                |
|------------------|------|------|----------------|
| Tamaño           | d    | t    | d <sub>1</sub> |
| 08               | 6.35 | 2.38 | 2.3            |
| 11               | 6.35 | 3.18 | 2.8            |

**Rómbico 60° Positivo**  
Angulo Incidencia: 11°

| Pza. Trabajo                         | Material |         | Compatibilidad |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    | Tipo de Maquinado |    |    |    |   |   |   |   |
|--------------------------------------|----------|---------|----------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|-------------------|----|----|----|---|---|---|---|
|                                      | Color    | Simbolo | 1              | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17                | 18 | 19 | 20 |   |   |   |   |
| Acero                                | P        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Acero Inoxidable                     | M        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Fundicion                            | K        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Metales No-Ferrosos                  | N        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Aleaciones Resist. calor, de Titanio | S        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |
| Acero Endurecido                     | H        | ●       | ●              | ● | ● | ● | ● | ● | ● | ● | ● | ●  | ●  | ●  | ●  | ●  | ●  | ●  | ●                 | ●  | ●  | ●  | ● | ● | ● | ● |

| Inserto                                 | Designación | Cermet        |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |        |        |     |     |                         |                     |           |
|---|-------------|---------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|--------|--------|-----|-----|-------------------------|---------------------|-----------|
|   |             | CN1500        | CN2000 | CN2500     | CC1500 | CC2500 | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115   | NC9125 | NC9135             | PC5300 | PC5400 | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |
| Acabado<br><br>[Alta precisión]         | VPET        | 0802005MFR-KF |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  |        |        |        | ●      |        |        |     |     | 0.01~0.12               | 0.05~0.50           |           |
|   |             | 080201MFR-KF  |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        |        |        | ●      |        |     |     |                         | 0.02~0.15           | 0.05~0.50 |
|   |             | 080202MFR-KF  |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        |        |        | ●      |        |     |     |                         | 0.02~0.18           | 0.10~1.00 |
|   |             | 0802005MFL-KF |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        |        |        | ●      |        |     |     |                         | 0.01~0.12           | 0.05~0.50 |
|   |             | 080201MFL-KF  |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        |        |        | ●      |        |     |     |                         | 0.02~0.15           | 0.05~0.50 |
|   |             | 080202MFL-KF  |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        |        |        | ●      |        |     |     |                         | 0.02~0.18           | 0.10~1.00 |
| Medio a Acabado<br><br>[Alta precisión] | VPET        | 0802005MFR-KM |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  |        |        |        | ●      |        |        |     |     | 0.01~0.12               | 0.05~0.50           |           |
|   |             | 080201MFR-KM  |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        |        |        | ●      |        |     |     |                         | 0.02~0.15           | 0.05~0.50 |
|   |             | 080202MFR-KM  |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        |        |        | ●      |        |     |     |                         | 0.02~0.18           | 0.10~1.00 |
|   |             | 0802005MFL-KM |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        |        |        | ●      |        |     |     |                         | 0.01~0.12           | 0.05~0.50 |
|   |             | 080201MFL-KM  |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        |        |        | ●      |        |     |     |                         | 0.02~0.15           | 0.05~0.50 |
|   |             | 080202MFL-KM  |        |            |        |        |        |        |        |        |        |        |        |          |        |                    | ●      |        |        |        | ●      |        |     |     |                         | 0.02~0.18           | 0.10~1.00 |
| Acabado<br>                             | VPGT        | 110301-VP1    |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  |        | ●      | ●      | ●      |        |        | ●   |     | 0.02~0.15               | 0.05~0.50           |           |
|   |             | 110302-VP1    |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  |        | ●      | ●      | ●      |        |        | ●   |     | 0.02~0.18               | 0.10~1.00           |           |
|   |             | 110304-VP1    |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  |        | ●      | ●      | ●      |        |        | ●   |     | 0.03~0.18               | 0.15~1.20           |           |
| Acabado<br><br>[Alta precisión]         | VPGT        | 110301MFN-VP1 |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  |        |        |        | ●      |        |        |     |     | 0.02~0.15               | 0.05~0.50           |           |
|   |             | 110302MFN-VP1 |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  |        |        |        | ●      |        |        |     |     | 0.02~0.18               | 0.10~1.00           |           |
|   |             | 110304MFN-VP1 |        |            |        |        |        |        |        |        |        |        |        |          |        | ●                  |        |        |        | ●      |        |        |     |     | 0.03~0.18               | 0.15~1.20           |           |

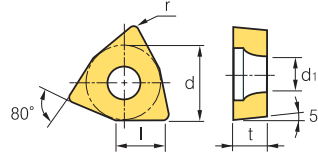
🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27    ● : En Almacen

| Porta herramienta disponible |           |             |        |
|------------------------------|-----------|-------------|--------|
| Designación                  | Página    | Designación | Página |
| SVABR/L                      | B183      | SVVBN       | B184   |
| SVJBR/L                      | B115, 183 |             |        |



# WB

| Dimensiones (mm) |      |      |                |
|------------------|------|------|----------------|
| Tamaño           | d    | t    | d <sub>1</sub> |
| 02               | 3.97 | 1.59 | 2.2            |
| S3               | 4.76 | 2.38 | 2.4            |



**Trigon 80° Positivo**  
 Angulo Incidencia: 5°

| Pza. Trabajo | Acero                                | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tpo de Maquinado |  |                      |
|--------------|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|------------------|--|----------------------|
|              | Acero Inoxidable                     | M |   |   |   |   |   |   |   |   |   |   |   |   |                  |  |                      |
|              | Fundición                            | K | ● | ● | ● |   |   |   |   |   |   |   |   |   |                  |  | ● Corte Continuo     |
|              | Metales No-Ferrosos                  | N |   |   |   |   |   |   |   |   |   |   |   |   |                  |  | ● Corte en general   |
|              | Aleaciones Resist. calor, de Titanio | S |   |   |   |   |   |   |   | ● | ● | ● | ● | ● | ●                |  | ● Corte Interrumpido |
|              | Acero Endurecido                     | H |   |   |   |   |   |   |   |   |   |   |   |   |                  |  |                      |

| Inserto                    | Designación  | Cermet |        | Cermet Rec. |        | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Condición de Corte |        |        |        |        |     |     |                         |                     |           |           |
|----------------------------|--------------|--------|--------|-------------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------------------|--------|--------|--------|--------|-----|-----|-------------------------|---------------------|-----------|-----------|
|                            |              | CN1500 | CN2000 | CN2500      | CC1500 | CC2500     | NC3215 | NC3120 | NC3225 | NC3030 | NC5330 | NC6310 | NC6315 | NC9115 | NC9125 | NC9135   | PC5300 | PC5400             | PC8105 | PC8110 | PC8115 | PC9030 | H01 | H05 | f <sub>n</sub> (mm/rev) | a <sub>p</sub> (mm) |           |           |
| <b>Mecio a Acabado</b><br> | WBGT 020102R |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         | 0.01~0.05           | 0.10~0.30 |           |
|                            | S30204R      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.01~0.10 | 0.10~0.50 |
|                            | 020102L      |        | ●      |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        | ●   | ●   |                         | 0.01~0.08           | 0.10~0.40 |           |
|                            | S30202L      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.01~0.08 | 0.10~0.40 |
|                            | S30204L      |        |        |             |        |            |        |        |        |        |        |        |        |        |        |          |        |                    |        |        |        |        |     |     |                         |                     | 0.01~0.10 | 0.10~0.50 |

➤ Filo de Corte A52~A61 ➤ Rompeviruta Recomendada B04~B11 ➤ Sistema Codificación B26~B27 ●: En Almacen

| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| SWUBR/L                      | B216   |             |        |



## Información Técnica de Insertos para Aluminio

### ➤ Rompeviruta AK especial para Aluminio

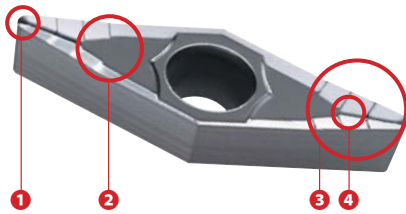
- El diseño único de la superficie del Inserto proporciona un excelente flujo de la viruta y rompiendo el excedente al mismo tiempo dándole al Inserto un mayor tiempo de vida debido a su baja carga de corte
- El alto ángulo de corte principal reduce la carga y prolonga la vida de la herramienta
- Su forma brinda un mejor desahogo de la viruta en el maquinado



- 1 Baja carga de corte debido al ángulo de alta incidencia y al novedoso diseño de rompeviruta.
- 2 Ángulo de incidencia único - Rompeviruta que brinda un excelente flujo de virutas
- 3 Cara superior 3dimensional unica - Excelente para superficies rugosas & mejor rendimiento de vida
- 4 Novedoso patron de Rompeviruta & forma del filo - Distribuye la carga de corte brindando mayor vida al Inserto
- 5 Cara superior pulida - Excelente maquinado, Evita la adherencia de material al filo y excelente control de virutas.

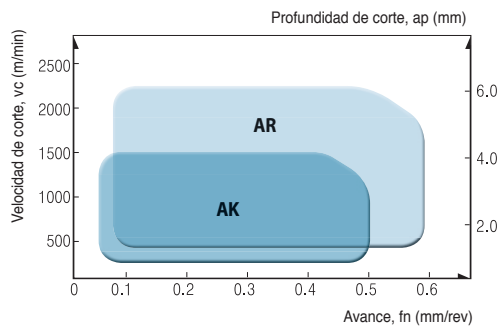
### ➤ Rompeviruta AR especial para aluminio

- La rompeviruta AR brinda confiabilidad y buen desempeño de corte con gran avance y alta velocidad en maquinado intermitente

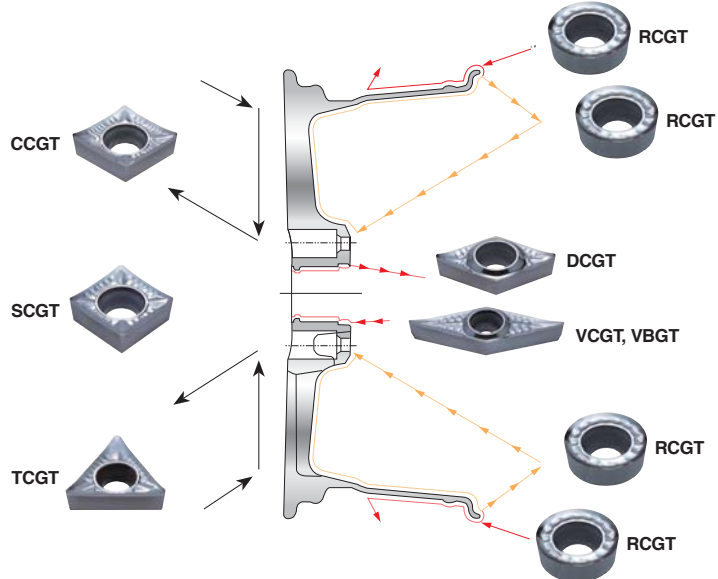


- 1 El filo plano puede soportar grandes cargas de corte originadas por la alta velocidad de maquinado y alimentación para un maquinado eficiente.
- 2 El pulido en la cara superior del Inserto garantiza la no adherencia del material al Inserto así como un buen flujo de la viruta.
- 3 Tecnología propia de KORLOY aplicada para filo de corte en forma de esquina para tener mejor control de viruta y alargar la vida de la herramienta.
- 4 Rompeviruta de diseño especial de KORLOY proporciona un mejor flujo de virutas a alta velocidad de maquinado.

### ➤ Rompevirutas AK y AR desarrolladas especialmente para aluminio



|    | Rango recomendado                                       | Grados  |
|----|---|---|
| AK | $a_p = 0.1 \sim 5.0$ mm<br>$f_n = 0.03 \sim 0.5$ mm/dev | H01 (Carburo sin recubrimiento K10~K20)<br>ND1000 (Recubrimiento de Diamante)<br>PD1000 (Recubrimiento DLC) |
| AR | $a_p = 0.5 \sim 6.0$ mm<br>$f_n = 0.05 \sim 0.6$ mm/dev | H01 (Carburo sin recubrimiento K10~K20)<br>ND1000 (Recubrimiento de Diamante)<br>PD1000 (Recubrimiento DLC) |



### ➤ Características del grado H01 y condiciones de corte

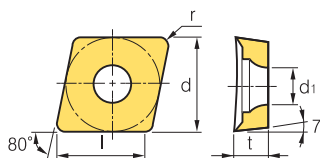
- Adecuado para aluminio y mecanizado de aleaciones de acero. Superficie tratada para reducir el filo de aportación
- Geometría tridimensional diseñada para reducir la resistencia de corte y asegurar una buena maquinabilidad a altas velocidades de corte y de avance

| Pieza de Trabajo                 |                                  | Dureza (HB) | kc (MPa) | vc (m/min) | $f_n$ (mm/rev) |
|----------------------------------|----------------------------------|-------------|----------|------------|----------------|
| Aleación de Aluminio (forjado)   | Antes del tratamiento de calor   | 50~70       | 500~600  | 1000~2500  | 0.1~0.6        |
|                                  | Después del tratamiento de calor | 90~110      | 700~900  | 300~1000   | 0.1~0.5        |
| Aleación de Aluminio (fundición) | Antes del tratamiento de calor   | 70~80       | 700~800  | 300~1000   | 0.1~0.6        |
|                                  | Después del tratamiento de calor | 80~100      | 800~950  | 200~600    | 0.1~0.4        |
| Aleación de Cobre                | —                                | 90~110      | 700      | 250~600    | 0.1~0.5        |
| Metales No-Ferrosos, Etc.        | —                                | 100         | 1700     | 150~300    | 0.1~0.6        |




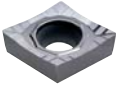
CC ○ ○

**Rómbico 80° Positivo**  
Angulo Incidencia: 7°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 06               | 6.35  | 2.38 | 2.8            |
| 09               | 9.525 | 3.97 | 4.4            |
| 12               | 12.7  | 4.76 | 5.5            |

| Pza. Trabajo     | Acero                               | P |   |   |   |   |   | Tipo de Maquinado  |  |
|------------------|-------------------------------------|---|---|---|---|---|---|--|--|
|                  | Acero Inoxidable                    | M |   |   |   |   |   | ● Corte Continuo<br>● Corte en general<br>✱ Corte Interrumpido |  |
|                  | Fundición                           | K |   |   |   |   |   |  |  |
|                  | Metales No-Ferrosos                 | N | ✱ | ● | ✱ | ✱ | ✱ |  |  |
|                  | Aleaciones Resist. calor.de Titanio | S |   |   |   |   |   |  |  |
| Acero Endurecido | H                                   |   |   |   |   |   |   |  |  |

| Inserto   | Designación   | Recubierto |           |        | Sin Recubrimiento |     | Condición de Corte |           |           |
|---|---|------------|-----------|--------|-------------------|-----|--------------------|-----------|-----------|
|   |   | PC5040     | PD1000    | PD1010 | H01               | H05 | fn (mm/rev)        | ap (mm)   |           |
| AK<br> | CCGT  | 060202-AK  | ●         |        |                   | ●   | ●                  | 0.01~0.12 | 0.05~3.00 |
|   |   | 060204-AK  | ●         |        | ●                 | ●   | ●                  | 0.02~0.15 | 0.10~3.00 |
|   |   | 060208-AK  |           |        |                   | ●   | ●                  | 0.02~0.20 | 0.10~4.00 |
|   |   | 09T302-AK  | ●         |        | ●                 | ●   | ●                  | 0.02~0.20 | 0.05~3.00 |
|   |   | 09T304-AK  | ●         |        | ●                 | ●   | ●                  | 0.02~0.30 | 0.10~5.00 |
|   |   | 09T308-AK  | ●         |        |                   | ●   | ●                  | 0.03~0.50 | 0.10~5.00 |
|   |   | 120402-AK  |           |        |                   | ●   | ●                  | 0.02~0.30 | 0.05~4.00 |
|   |   | 120404-AK  | ●         |        | ●                 | ●   | ●                  | 0.03~0.50 | 0.10~5.00 |
|   |   | 120408-AK  |           |        |                   | ●   | ●                  | 0.04~0.80 | 0.10~5.50 |
|   | AR<br> | CCGT       | 060202-AR |        |                   |     | ●                  | ●         | 0.02~0.30 |
|   |   | 060204-AR  |           |        |                   |     |                    | 0.03~0.35 | 0.50~4.50 |
|   |   | 060208-AR  |           |        |                   |     |                    | 0.04~0.50 | 0.50~4.50 |
|   |   | 09T302-AR  |           |        |                   | ●   | ●                  | 0.03~0.45 | 0.30~4.00 |
|   |   | 09T304-AR  |           |        |                   | ●   | ●                  | 0.04~0.50 | 0.50~4.50 |
|   |   | 09T308-AR  |           |        |                   | ●   | ●                  | 0.05~0.60 | 0.50~6.00 |
|   |   | 120402-AR  |           |        |                   |     |                    | 0.04~0.50 | 0.30~5.00 |
|   |   | 120404-AR  |           |        |                   | ●   | ●                  | 0.05~0.60 | 0.50~6.00 |
|   |   | 120408-AR  |           |        |                   | ●   | ●                  | 0.06~0.65 | 0.50~6.00 |
|   |   | 120412-AR  |           |        |                   |     |                    | 0.08~0.70 | 0.50~6.50 |

Filo de Corte **A52~A61**
 Rompeviruta Recomendada **B04~B11**
 Sistema Codificación **B26~B27**


●: En Almacen

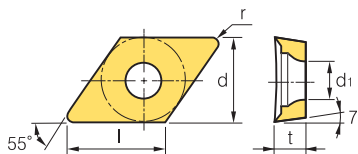
| Porta herramienta disponible |           |             |                |
|------------------------------|-----------|-------------|----------------|
| Designación                  | Página    | Designación | Página         |
| SCACR/L                      | B113, 178 | SCLCR/L     | B113, 178, 204 |



# B Insertos para Aluminio (Positivo)



DC ○ ○

 **Rombico 55° Positivo**  
Angulo Incidencia: 7°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 07               | 6.35  | 2.38 | 2.8            |
| 11               | 9.525 | 3.97 | 4.4            |

| Pza. Trabajo                         | Material |          |   |   |   |   | Tipo de Maquinado |  |  |                      |
|--------------------------------------|----------|----------|---|---|---|---|-------------------|--|--|----------------------|
|                                      | Acero    | <b>P</b> |   |   |   |   |                   |  |  |                      |
| Acero Inoxidable                     | <b>M</b> |          |   |   |   |   |                   |  |  |                      |
| Fundicion                            | <b>K</b> |          |   |   |   |   |                   |  |  |                      |
| Metales No-Ferrosos                  | <b>N</b> | ✱        | ● | ✱ | ● | ✱ |                   |  |  | ● Corte Continuo     |
| Aleaciones Resist. calor, de Titanio | <b>S</b> |          |   |   |   |   |                   |  |  | ● Corte en general   |
| Acero Endurecido                     | <b>H</b> |          |   |   |   |   |                   |  |  | ✱ Corte Interrumpido |

| Inserto  | Designación           | Recubierto |        |        | Sin Recubrimiento |     | Condición de Corte |           |
|--|-----------------------|------------|--------|--------|-------------------|-----|--------------------|-----------|
|  |                       | PC5040     | PD1000 | PD1010 | H01               | H05 | fn (mm/rev)        | ap (mm)   |
| <b>AK</b><br>   | DCGT <b>070202-AK</b> | ●          |        |        | ●                 | ●   | 0.01~0.20          | 0.05~3.00 |
|  | <b>070204-AK</b>      | ●          |        | ●      | ●                 | ●   | 0.02~0.30          | 0.10~4.00 |
|  | <b>070208-AK</b>      | ●          |        |        | ●                 | ●   | 0.03~0.40          | 0.10~4.00 |
|  | <b>11T302-AK</b>      | ●          |        | ●      | ●                 | ●   | 0.02~0.30          | 0.05~4.00 |
|  | <b>11T304-AK</b>      | ●          | ●      | ●      | ●                 | ●   | 0.03~0.50          | 0.10~5.00 |
|  | <b>11T308-AK</b>      | ●          |        | ●      | ●                 | ●   | 0.03~0.50          | 0.10~5.00 |
|  | <b>11T312-AK</b>      |            |        |        | ●                 | ●   | 0.04~0.60          | 0.15~5.00 |
| <b>AR</b><br> | DCGT <b>070202-AR</b> |            |        |        | ●                 | ●   | 0.02~0.30          | 0.30~4.00 |
|  | <b>070204-AR</b>      |            |        |        | ●                 | ●   | 0.03~0.40          | 0.50~5.00 |
|  | <b>070208-AR</b>      |            |        |        | ●                 | ●   | 0.04~0.50          | 0.50~5.00 |
|  | <b>11T302-AR</b>      |            |        |        |                   |     | 0.03~0.45          | 0.30~6.00 |
|  | <b>11T304-AR</b>      |            |        |        | ●                 | ●   | 0.04~0.50          | 0.50~6.00 |
|  | <b>11T308-AR</b>      |            |        |        | ●                 | ●   | 0.05~0.60          | 0.50~6.00 |
|  | <b>11T312-AR</b>      |            |        |        | ●                 | ●   | 0.08~0.65          | 0.50~6.50 |

🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27

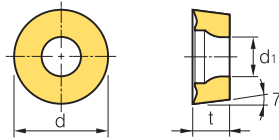
● : En Almacen

| Porta herramienta disponible |           |             |        |
|------------------------------|-----------|-------------|--------|
| Designación                  | Página    | Designación | Página |
| SDACR/L                      | B178      | SDQCR/L     | B206   |
| SDJCR/L                      | B113, 179 | SDUCR/L     | B207   |
| SDNCN                        | B114, 179 | SDZCR/L     | B208   |



## RC

Redondo **Positivo**  
Angulo Incidencia: 7°



| Dimensiones (mm) |      |           |                |
|------------------|------|-----------|----------------|
| Tamaño           | d    | t         | d <sub>1</sub> |
| 06               | 6.0  | 2.38      | 2.8            |
| 08               | 8.0  | 3.18      | 3.35           |
| 10               | 10.0 | 3.18~3.97 | 4.4            |
| 12               | 12.0 | 4.76      | 4.4            |

| Pza. Trabajo     | Acero                                | P |  |  |  |  |   | Tipo de Maquinado |
|------------------|--------------------------------------|---|--|--|--|--|---|-------------------|
|                  | Acero Inoxidable                     | M |  |  |  |  |   |                   |
|                  | Fundición                            | K |  |  |  |  |   |                   |
|                  | Metales No-Ferrosos                  | N |  |  |  |  |   |                   |
|                  | Aleaciones Resist. calor, de Titanio | S |  |  |  |  |   |                   |
| Acero Endurecido | H                                    |   |  |  |  |  | <ul style="list-style-type: none"> <li> Corte Continuo</li> <li> Corte en general</li> <li> Corte Interrumpido</li> </ul> |                   |

| Inserto | Designación | Recubierto       |        |        | Sin Recubrimiento |     | Condición de Corte         |                        |           |
|---------|-------------|------------------|--------|--------|-------------------|-----|----------------------------|------------------------|-----------|
|         |             | PC5040           | PD1000 | PD1010 | H01               | H05 | f <sub>n</sub><br>(mm/rev) | a <sub>p</sub><br>(mm) |           |
| <br>AK  | RCGT        | <b>0602M0-AK</b> |        |        |                   |     | 0.05~0.20                  | 0.50~2.00              |           |
|         |             | <b>0803M0-AK</b> |        |        |                   |     | 0.05~0.25                  | 0.50~2.50              |           |
|         |             | <b>1003M0-AK</b> |        |        |                   |     | 0.10~0.30                  | 1.00~3.00              |           |
|         |             | <b>10T3M0-AK</b> |        |        |                   |     | 0.10~0.30                  | 1.00~3.00              |           |
|         |             | <b>1204M0-AK</b> |        |        |                   |     |                            | 0.10~0.35              | 1.00~3.50 |
| <br>AR  | RCGT        | <b>0602M0-AR</b> |        |        |                   |     | 0.05~0.20                  | 0.50~2.00              |           |
|         |             | <b>0803M0-AR</b> |        |        |                   |     | 0.05~0.25                  | 0.50~2.50              |           |
|         |             | <b>1003M0-AR</b> |        |        |                   |     |                            | 0.10~0.30              | 1.00~3.00 |
|         |             | <b>10T3M0-AR</b> |        |        |                   |     |                            | 0.10~0.30              | 1.00~3.00 |
|         |             | <b>1204M0-AR</b> |        |        |                   |     |                            | 0.10~0.35              | 1.00~3.50 |

Filo de Corte **A52~A61** Rompeviruta Recomendada **B04~B11** Sistema Codificación **B26~B27**

En Almacen

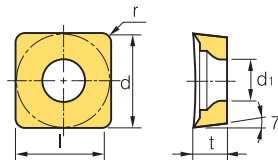
| Porta herramienta disponible |        |             |        |
|------------------------------|--------|-------------|--------|
| Designación                  | Página | Designación | Página |
| SRDCN                        | B179   | SRGCR/L     | B180   |



# B Insertos para Aluminio (Positivo)


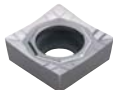
## SC ○○

 Cuadrado **90° Positivo**  
Angulo Incidencia: 7°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 09               | 9.525 | 3.97 | 4.4            |
| 12               | 12.7  | 4.76 | 5.5            |

| Pza. Trabajo                         |  |          |   |   |   |   | Tipo de Maquinado    |
|--------------------------------------|--|----------|---|---|---|---|----------------------|
| Acero                                |  | <b>P</b> |   |   |   |   |                      |
| Acero Inoxidable                     |  | <b>M</b> |   |   |   |   |                      |
| Fundición                            |  | <b>K</b> |   |   |   |   |                      |
| Metales No-Ferrosos                  |  | <b>N</b> | ✱ | ● | ✱ | ● | ● Corte Continuo     |
| Aleaciones Resist. calor, de Titanio |  | <b>S</b> |   |   |   |   | ● Corte en general   |
| Acero Endurecido                     |  | <b>H</b> |   |   |   |   | ✱ Corte Interrumpido |

| Inserto   | Designación           | Recubierto |        |        | Sin Recubrimiento |     | Condición de Corte |           |
|---|-----------------------|------------|--------|--------|-------------------|-----|--------------------|-----------|
|   |                       | PC5040     | PD1000 | PD1010 | H01               | H05 | fn (mm/rev)        | ap (mm)   |
| <br>AK   | SCGT <b>09T302-AK</b> | ●          |        |        |                   | ●   | 0.02~0.30          | 0.10~4.00 |
|   | <b>09T304-AK</b>      | ●          |        |        | ●                 | ●   | 0.04~0.40          | 0.10~5.00 |
|   | <b>09T308-AK</b>      |            |        |        | ●                 | ●   | 0.03~0.40          | 0.10~5.00 |
|   | <b>120404-AK</b>      |            |        |        | ●                 | ●   | 0.03~0.50          | 0.10~5.00 |
|   | <b>120408-AK</b>      |            |        |        | ●                 | ●   | 0.04~0.60          | 0.15~5.50 |
|   | <b>120416-AK</b>      |            |        |        |                   |     | 0.04~0.60          | 0.15~5.50 |
| <br>AR | SCGT <b>09T302-AR</b> |            |        |        |                   |     | 0.03~0.40          | 0.50~5.00 |
|   | <b>09T304-AR</b>      |            |        |        | ●                 | ●   | 0.04~0.50          | 0.50~6.00 |
|   | <b>09T308-AR</b>      |            |        |        |                   |     | 0.04~0.50          | 0.50~6.50 |
|   | <b>120404-AR</b>      |            |        |        | ●                 | ●   | 0.05~0.60          | 0.50~6.50 |
|   | <b>120408-AR</b>      |            |        |        |                   |     | 0.05~0.60          | 0.50~7.00 |
|   | <b>120416-AR</b>      |            |        |        |                   |     | 0.05~0.60          | 0.50~7.00 |

 Filo de Corte **A52~A61**
 Rompeviruta Recomendada **B04~B11**
 Sistema Codificación **B26~B27**

● : En Almacen

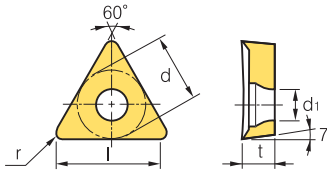
| Porta herramienta disponible |        |                |        |
|------------------------------|--------|----------------|--------|
| Designación                  | Página | Designación    | Página |
| <b>SSBCR/L</b>               | B180   | <b>SSKCR/L</b> | B181   |
| <b>SSDCN</b>                 | B180   | <b>SSSCR/L</b> | B181   |





# TC ○○

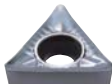
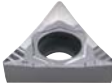
**Triangular 60° Positivo**  
Angulo Incidencia: 7°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 09               | 5.56  | 2.38 | 2.5            |
| 11               | 6.35  | 2.38 | 2.8            |
| 16               | 9.525 | 3.97 | 4.4            |

| Pza. Trabajo     | Acero                               | <b>P</b> |   |   |   |   | Tipo de Maquinado |
|------------------|-------------------------------------|----------|---|---|---|---|-------------------|
|                  | Acero Inoxidable                    | <b>M</b> |   |   |   |   |                   |
|                  | Fundición                           | <b>K</b> |   |   |   |   |                   |
|                  | Metales No-Ferrosos                 | <b>N</b> | ✱ | ● | ✱ | ✱ |                   |
|                  | Aleaciones Resist. calor.de Titanio | <b>S</b> |   |   |   |   |                   |
| Acero Endurecido | <b>H</b>                            |          |   |   |   |   |                   |

● Corte Continuo  
 ● Corte en general  
 ✱ Corte Interrumpido

| Inserto  | Designación | Recubierto |        | Sin Recubrimiento |     | Condición de Corte |           |
|--|-------------|------------|--------|-------------------|-----|--------------------|-----------|
|  |             | PC5040     | PD1000 | H01               | H05 | fn (mm/rev)        | ap (mm)   |
| <b>AK</b><br>  | TCGT        |            |        | ●                 | ●   | 0.01~0.12          | 0.05~3.00 |
|  | 090202-AK   |            |        | ●                 | ●   | 0.02~0.15          | 0.10~4.00 |
|  | 090204-AK   | ●          |        | ●                 | ●   | 0.02~0.20          | 0.05~4.00 |
|  | 110202-AK   | ●          |        | ●                 | ●   | 0.03~0.30          | 0.10~4.00 |
|  | 110204-AK   |            |        | ●                 | ●   | 0.03~0.40          | 0.10~5.00 |
|  | 110208-AK   |            |        | ●                 | ●   | 0.02~0.30          | 0.05~5.00 |
|  | 16T302-AK   |            |        | ●                 | ●   | 0.03~0.40          | 0.10~5.50 |
|  | 16T304-AK   |            |        | ●                 | ●   | 0.03~0.50          | 0.10~5.50 |
|  | 16T308-AK   |            |        | ●                 | ●   | 0.04~0.60          | 0.15~5.50 |
|  | 16T312-AK   |            |        | ●                 | ●   | 0.05~0.80          | 0.15~5.50 |
|  | 16T316-AK   |            |        |                   |     | 0.06~0.90          | 0.20~7.00 |
|  | 16T325-AK   |            |        |                   |     |                    |           |
| <b>AR</b><br> | TCGT        |            |        | ●                 | ●   | 0.02~0.18          | 0.30~3.00 |
|  | 090202-AR   |            |        | ●                 | ●   | 0.02~0.25          | 0.30~5.00 |
|  | 090204-AR   |            |        |                   |     | 0.02~0.30          | 0.30~4.00 |
|  | 110202-AR   |            |        | ●                 | ●   | 0.03~0.40          | 0.30~5.00 |
|  | 110204-AR   |            |        |                   |     | 0.04~0.45          | 0.50~6.00 |
|  | 110208-AR   |            |        | ●                 | ●   | 0.03~0.45          | 0.30~5.00 |
|  | 16T302-AR   |            |        | ●                 | ●   | 0.04~0.50          | 0.50~6.00 |
|  | 16T304-AR   |            |        | ●                 | ●   | 0.05~0.60          | 0.50~6.00 |
|  | 16T308-AR   |            |        |                   |     | 0.06~0.65          | 0.50~6.00 |
|  | 16T312-AR   |            |        |                   |     | 0.08~0.70          | 0.50~6.50 |
|  | 16T316-AR   |            |        |                   |     | 0.10~0.10          | 0.80~7.00 |
|  | 16T325-AR   |            |        |                   |     |                    |           |

 Filo de Corte **A52~A61**
 Rompeviruta Recomendada **B04~B11**
 Sistema Codificación **B26~B27**
●: En Almacen

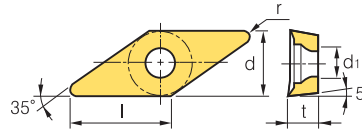
| Porta herramienta disponible |           |             |           |
|------------------------------|-----------|-------------|-----------|
| Designación                  | Página    | Designación | Página    |
| STACR/L                      | B114,181  | STTCR/L     | B182, 235 |
| STFCR/L                      | B182, 234 | STWCR/L     | B235      |
| STGCR/L                      | B182      |             |           |



# B Insertos para Aluminio (Positivo)



## VB ○○

 **Rómbico 35° Positivo**  
Angulo Incidencia: 5°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 11               | 6.35  | 3.18 | 2.8            |
| 16               | 9.525 | 4.76 | 4.4            |

| Pza. Trabajo                         |          |          |   |   |   | Tipo de Maquinado |                        |
|--------------------------------------|----------|----------|---|---|---|-------------------|------------------------|
|                                      | Acero    | <b>P</b> |   |   |   |                   |                        |
| Acero Inoxidable                     | <b>M</b> |          |   |   |   |                   | ●● Corte en general    |
| Fundicion                            | <b>K</b> |          |   |   |   |                   | ●●● Corte Interrumpido |
| Metales No-Ferrosos                  | <b>N</b> | ●        | ● | ● | ● | ●                 |                        |
| Aleaciones Resist. calor, de Titanio | <b>S</b> |          |   |   |   |                   |                        |
| Acero Endurecido                     | <b>H</b> |          |   |   |   |                   |                        |

| Inserto   | Designación    | Recubierto |        |        | Sin Recubrimiento |     | Condición de Corte |           |
|---|----------------|------------|--------|--------|-------------------|-----|--------------------|-----------|
|   |                | PC5040     | PD1000 | PD1010 | H01               | H05 | fn (mm/rev)        | ap (mm)   |
| <br>AK   | VBGT 110302-AK |            |        |        | ●                 | ●   | 0.02~0.15          | 0.05~3.00 |
|   | 110304-AK      |            |        |        | ●                 | ●   | 0.02~0.15          | 0.10~4.00 |
|   | 110308-AK      |            |        |        |                   | ●   | 0.03~0.18          | 0.10~5.00 |
|   | 160402-AK      |            |        |        |                   | ●   | 0.03~0.30          | 0.05~4.00 |
|   | 160404-AK      |            |        |        | ●                 | ●   | 0.03~0.40          | 0.10~5.00 |
|   | 160408-AK      |            |        |        | ●                 | ●   | 0.03~0.50          | 0.10~5.00 |
|   | 160412-AK      |            |        |        |                   | ●   | 0.05~0.60          | 0.10~5.50 |
| <br>AR | VBGT 110302-AR |            |        |        |                   |     | 0.02~0.35          | 0.30~3.00 |
|   | 110304-AR      |            |        |        |                   |     | 0.03~0.45          | 0.30~4.00 |
|   | 110308-AR      |            |        |        |                   |     | 0.03~0.50          | 0.50~6.00 |
|   | 160402-AR      |            |        |        |                   |     | 0.04~0.45          | 0.30~5.00 |
|   | 160404-AR      |            |        |        | ●                 | ●   | 0.04~0.50          | 0.50~6.00 |
|   | 160408-AR      |            |        |        | ●                 | ●   | 0.05~0.60          | 0.50~6.00 |
|   | 160412-AR      |            |        |        |                   |     | 0.05~0.70          | 0.50~6.50 |

🔄 Filo de Corte A52~A61    🔄 Rompeviruta Recomendada B04~B11    🔄 Sistema Codificación B26~B27

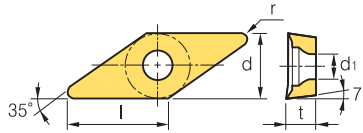
● : En Almacen

| Porta herramienta disponible |           |             |        |
|------------------------------|-----------|-------------|--------|
| Designación                  | Página    | Designación | Página |
| SVABR/L                      | B183      | SVVBN       | B184   |
| SVHBR/L                      | B183      | SVQBR/L     | B211   |
| SVJBR/L                      | B115, 183 | SVUBR/L     | B212   |



## VC ○○

**Rómbico 35° Positivo**  
Angulo Incidencia: 7°



| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 11               | 6.35  | 3.18 | 2.8            |
| 13               | 7.94  | 3.18 | 3.4            |
| 16               | 9.525 | 4.76 | 4.4            |
| 22               | 12.7  | 5.56 | 5.6            |

| Pza. Trabajo     | Acero                               | P |   |   |   |   |   | Tipo de Maquinado    |  |
|------------------|-------------------------------------|---|---|---|---|---|---|----------------------|--|
|                  | Acero Inoxidable                    | M |   |   |   |   |   | ● Corte Continuo     |  |
|                  | Fundición                           | K |   |   |   |   |   | ● Corte en general   |  |
|                  | Metales No-Ferrosos                 | N | * | ● | * | ● | * | * Corte Interrumpido |  |
|                  | Aleaciones Resist. calor.de Titanio | S |   |   |   |   |   |                      |  |
| Acero Endurecido | H                                   |   |   |   |   |   |   |                      |  |

| Inserto | Designación | Recubierto |        |        | Sin Recubrimiento |     | Condición de Corte |           |
|---------|-------------|------------|--------|--------|-------------------|-----|--------------------|-----------|
|         |             | PC5040     | PD1000 | PD1010 | H01               | H05 | fn (mm/rev)        | ap (mm)   |
|         | VC GT       | 110301-AK  |        |        | ●                 |     | 0.02~0.15          | 0.05~3.00 |
|         | 110302-AK   | ●          |        |        | ●                 | ●   | 0.02~0.20          | 0.05~3.00 |
|         | 110304-AK   | ●          |        | ●      | ●                 | ●   | 0.02~0.25          | 0.10~4.00 |
|         | 110308-AK   |            |        |        | ●                 | ●   | 0.03~0.30          | 0.10~5.00 |
|         | 130302-AK   | ●          |        |        | ●                 | ●   | 0.02~0.35          | 0.10~5.00 |
|         | 130304-AK   | ●          |        |        | ●                 | ●   | 0.03~0.35          | 0.10~5.00 |
|         | 130308-AK   |            |        |        |                   |     | 0.04~0.40          | 0.10~5.00 |
|         | 160402-AK   |            |        |        | ●                 | ●   | 0.02~0.30          | 0.05~5.00 |
|         | 160404-AK   |            | ●      | ●      | ●                 | ●   | 0.03~0.40          | 0.10~5.00 |
|         | 160408-AK   |            |        | ●      | ●                 | ●   | 0.03~0.50          | 0.10~5.00 |
|         | 160412-AK   |            |        |        | ●                 | ●   | 0.03~0.50          | 0.10~5.00 |
|         | 220516-AK   |            |        |        | ●                 | ●   | 0.03~0.60          | 0.10~7.00 |
|         | 220525-AK   |            |        |        |                   | ●   | 0.05~0.70          | 0.10~7.00 |
|         | 220530-AK   |            |        |        | ●                 | ●   | 0.08~1.00          | 0.10~7.00 |
|         | VC GT       | 110301-AR  |        |        | ●                 | ●   | 0.02~0.20          | 0.10~3.00 |
|         | 110302-AR   |            |        |        | ●                 | ●   | 0.02~0.25          | 0.30~3.00 |
|         | 110304-AR   |            |        |        | ●                 | ●   | 0.03~0.35          | 0.30~4.00 |
|         | 110308-AR   |            |        |        |                   |     | 0.04~0.45          | 0.50~6.00 |
|         | 130302-AR   |            |        |        |                   | ●   | 0.02~0.40          | 0.50~3.00 |
|         | 130304-AR   |            |        |        | ●                 | ●   | 0.03~0.45          | 0.50~4.00 |
|         | 130308-AR   |            |        |        |                   |     | 0.04~0.50          | 0.50~5.00 |
|         | 160402-AR   |            |        |        | ●                 | ●   | 0.03~0.40          | 0.30~5.00 |
|         | 160404-AR   |            |        |        | ●                 | ●   | 0.04~0.50          | 0.50~6.00 |
|         | 160408-AR   |            |        |        | ●                 | ●   | 0.05~0.60          | 0.50~6.00 |
|         | 160412-AR   |            |        |        |                   |     | 0.06~0.65          | 0.50~6.50 |
|         | 220516-AR   |            |        |        |                   |     | 0.10~0.65          | 0.80~6.50 |
|         | 220525-AR   |            |        |        |                   |     | 0.10~0.70          | 0.80~7.00 |
|         | 220530-AR   |            |        |        | ●                 | ●   | 0.12~0.75          | 1.00~7.00 |

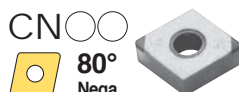

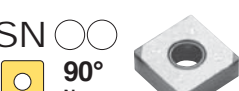


Filo de Corte A52~A61  
 Rompeviruta Recomendada B04~B11  
 Sistema Codificación B26~B27  
 ● : En Almacen

| Porta herramienta disponible |                |             |        |
|------------------------------|----------------|-------------|--------|
| Designación                  | Página         | Designación | Página |
| SVJCR/L                      | B115, 184, 211 | SVQCR/L     | B212   |
| SVVCN                        | B184           | SVUCR/L     | B212   |

## cBN

### Multiples Esquinas (Negativo)

| Dimensiones (mm) |       |            |                |
|------------------|-------|------------|----------------|
| Tamaño           | d     | t          | d <sub>i</sub> |
| 12               | 12.7  | 4.76       | 5.16           |
| 15               | 12.7  | 4.76~6.358 | 3.4            |
| 16               | 9.525 | 4.76       | 3.81           |

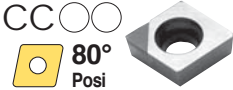
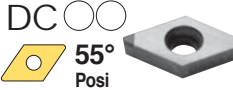

| Inserto   | Designación   | Recubierto |            |        | Sin Recubrimiento |        |        |        |        |         | Porta herramienta disponible |             |         |         |           |           |  |
|---|---|------------|------------|--------|-------------------|--------|--------|--------|--------|---------|------------------------------|-------------|---------|---------|-----------|-----------|--|
|   |   | DNC250     | DNC350     | DNC400 | DB1000            | DB2000 | DBN400 | DBN250 | DBN300 | DBN700A | DBNX20                       | Designación |         | Pag.    |           |           |  |
| <br>CN○○○<br>80°<br>Nega   | 2NU-CNGA  | 120404     | ●          | ●      |                   | ●      | ●      |        |        |         | ●                            | DCBNR/L     | DCLNR/L | B154    | B154/B195 |           |  |
|   |   | 120404F    | ●          |        |                   |        | ●      |        |        |         |                              |             | MCKNR/L | MCLNR/L | B171      | B171/B202 |  |
|   |   | 120404T    | ●          |        |                   |        | ●      | ●      |        |         |                              |             | MCMNN   | PCBNR/L | B171      | B159      |  |
|   |   | 120404W    | ●          |        |                   |        |        |        |        |         |                              |             | PCLNR/L |         | B160/B197 |           |  |
|   |   | 120404WF   | ●          |        |                   |        |        |        |        |         |                              |             |         |         |           |           |  |
|   |   | 120408     | ●          | ●      |                   | ●      | ●      |        |        |         |                              | ●           |         |         |           |           |  |
|   |   | 120408F    | ●          |        |                   |        | ●      |        |        |         |                              |             |         |         |           |           |  |
|   |   | 120408T    | ●          |        |                   |        | ●      | ●      |        |         |                              |             |         |         |           |           |  |
|   |   | 120408W    | ●          | ●      |                   | ●      | ●      |        |        |         |                              | ●           |         |         |           |           |  |
|   |   | 120408WF   | ●          |        |                   |        | ●      |        |        |         |                              |             |         |         |           |           |  |
|   |   | 120408WT   |            |        |                   |        | ●      | ●      |        |         |                              |             |         |         |           |           |  |
|   |   | 120412     | ●          | ●      |                   |        |        |        |        |         |                              |             |         |         |           |           |  |
|   |   | 120412F    | ●          |        |                   |        |        |        |        |         |                              |             |         |         |           |           |  |
|   |   | 120412T    | ●          |        |                   |        |        |        |        |         |                              |             |         |         |           |           |  |
|   | 120412W   | ●          |            |        | ●                 | ●      |        |        |        |         | ●                            |             |         |         |           |           |  |
|   | 120412WF  | ●          |            |        |                   | ●      |        |        |        |         |                              |             |         |         |           |           |  |
| 120412WT  |   |            |            |        | ●                 | ●      |        |        |        |         |                              |             |         |         |           |           |  |
|   | T-2NU-CNGA  | 120408     | ●          |        |                   |        |        |        |        |         |                              |             |         |         |           |           |  |
|   | 2NU-CNMA  | 120404     |            |        |                   |        |        |        |        | ●       |                              |             |         |         |           |           |  |
|   |   | 120408     |            |        |                   |        |        |        |        | ●       |                              |             |         |         |           |           |  |
|   | 2NS-CNGA  | 120408     |            |        | ●                 |        |        |        | ●      |         |                              |             |         |         |           |           |  |
| <br>DN○○○<br>55°<br>Nega | 2NU-DNGA  | 150404     | ●          | ●      |                   | ●      | ●      |        | ●      | ●       |                              | DDJNR/L     | MDJNR/L | B155    | B172      |           |  |
|   |   | 150404F    | ●          |        |                   |        | ●      |        |        |         |                              |             | MDNNN   | MDQNR/L | B172      | B173      |  |
|   |   | 150404T    | ●          |        |                   |        | ●      | ●      |        |         |                              |             | MDUNR/L | PDJNR/L | B202      | B160      |  |
|   |   | 150408     | ●          | ●      |                   | ●      | ●      |        | ●      | ●       |                              |             | PDNNR/L | PDSNR/L | B161      | B197      |  |
|   |   | 150408F    | ●          |        |                   |        | ●      |        |        |         |                              |             | PDUNR/L |         | B198      |           |  |
|   |   | 150408T    | ●          |        |                   |        | ●      | ●      |        |         |                              |             |         |         |           |           |  |
|   |   | 150412     | ●          | ●      |                   |        |        |        |        |         |                              |             |         |         |           |           |  |
|   |   | 150412F    | ●          |        |                   |        |        |        |        |         |                              |             |         |         |           |           |  |
|   |   | 150412T    | ●          |        |                   |        |        |        |        |         |                              |             |         |         |           |           |  |
|   |   | 150608     |            |        |                   |        |        |        |        |         |                              | ●           |         |         |           |           |  |
|   |   |            | T-2NU-DNGA | 150412 | ●                 |        |        |        |        |         |                              |             |         |         |           |           |  |
|   |   |            | 2NS-DNGA   | 150408 |                   |        | ●      |        |        |         | ●                            |             |         |         |           |           |  |
|   | <br>SN○○○<br>90°<br>Nega | 4NU-SNGA   | 120404     | ●      |                   |        | ●      | ●      |        |         |                              | ●           | DSBNR/L | MSBNR/L | B155      | B173      |  |
| 120404F   |   |            |            |        |                   |        | ●      |        |        |         |                              |             | MSDNN   | MSKNR/L | B173      | B174/B202 |  |
| 120404T   |   |            |            |        |                   |        | ●      | ●      |        |         |                              |             | MSRNR/L | MSSNR/L | B174      | B175      |  |
| 120408  |   |            | ●          |        |                   | ●      | ●      |        |        |         | ●                            |             | PSBNR/L | PSDNN   | B163      | B163      |  |
| 120408F   |   |            |            |        |                   |        | ●      |        |        |         |                              |             | PSKNR/L |         | B164/B199 |           |  |
| 120408T   |   |            |            |        |                   |        | ●      | ●      |        |         |                              |             |         |         |           |           |  |
| 120412  |   |            |            |        |                   |        |        |        |        |         | ●                            |             |         |         |           |           |  |
|   |   | 2NS-SNGA   | 120408     |        |                   | ●      |        |        |        | ●       |                              |             |         |         |           |           |  |
| <br>TN○○○<br>60°<br>Nega | 3NU-TNGA  | 160404     | ●          | ●      |                   | ●      | ●      |        | ●      | ●       |                              | MTENN       | MTFNR/L | B175    | B175/B203 |           |  |
|   |   | 160404F    | ●          |        |                   |        | ●      |        |        |         |                              |             | MTGNR/L | MTJNR/L | B176      | B176      |  |
|   |   | 160404T    | ●          |        |                   |        | ●      | ●      |        |         |                              |             | PTFNR/L | PTGNR/L | B165/B199 | B165      |  |
|   |   | 160408     | ●          | ●      |                   | ●      | ●      |        |        |         | ●                            |             | PTTNR/L | WTENN   | B166      | B167      |  |
|   |   | 160408F    | ●          |        |                   |        | ●      |        |        |         |                              |             | WTJNR/L | WTXNR/L | B167      | B167      |  |
|   |   | 160408T    | ●          |        |                   |        | ●      | ●      |        |         |                              |             |         |         |           |           |  |
|   |   | 160412     |            | ●      |                   |        |        |        |        |         |                              |             |         |         |           |           |  |
|   |   |            | 2NS-TNGA   | 160408 |                   |        | ●      |        |        |         | ●                            |             |         |         |           |           |  |
| <br>VN○○○<br>35°<br>Nega | 2NU-VNGA  | 160404     | ●          | ●      |                   | ●      | ●      |        | ●      | ●       |                              | MVJNR/L     | MVQNR/L | B176    | B177      |           |  |
|   |   | 160404F    | ●          |        |                   |        | ●      |        |        |         |                              |             | MVUNR/L | MVVNN   | B203      | B177      |  |
|   |   | 160404T    | ●          |        |                   |        | ●      | ●      |        |         |                              |             |         |         |           |           |  |
|   |   | 160408     | ●          | ●      |                   | ●      | ●      |        | ●      | ●       |                              |             |         |         |           |           |  |
|   |   | 160408F    | ●          |        |                   |        | ●      |        |        |         |                              |             |         |         |           |           |  |
|   |   | 160408T    | ●          |        |                   |        | ●      | ●      |        |         |                              |             |         |         |           |           |  |
|   |   | 2NS-VNGA   | 160408     |        |                   | ●      |        |        |        | ●       |                              |             |         |         |           |           |  |

● : En Almacen

# cBN

## Multiples Esquinas (Positivo)

| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 06               | 6.35  | 2.38 | 2.8            |
| 07               | 6.35  | 2.38 | 2.8            |
| 09               | 9.525 | 3.97 | 4.4            |
| 11               | 9.525 | 3.97 | 4.4            |

| Inserto   | Designación | Recubierto |        |        | Sin Recubrimiento |        |        |        |        |         |        | Porta herramienta disponible |         |                |           |      |
|---|-------------|------------|--------|--------|-------------------|--------|--------|--------|--------|---------|--------|------------------------------|---------|----------------|-----------|------|
|   |             | DNC250     | DNC350 | DNC400 | DB1000            | DB2000 | DBN400 | DBN250 | DBN300 | DBN700A | DBNX20 | Designación                  | Pag.    |                |           |      |
|    | 2NU-CCGW    | 060202     | ●      |        |                   |        |        |        |        |         |        | SCACR/L                      | B178    |                |           |      |
|   |             | 060202F    | ●      |        |                   |        |        |        |        |         |        |                              | SCLCR/L | B178/B204/B214 |           |      |
|   |             | 060202T    | ●      |        |                   |        |        |        |        |         |        |                              |         |                |           |      |
|   |             | 060204     | ●      |        |                   |        | ●      | ●      |        |         |        |                              |         |                |           |      |
|   |             | 060204F    | ●      |        |                   |        | ●      | ●      |        |         |        |                              |         |                |           |      |
|   |             | 060204T    | ●      |        |                   |        | ●      | ●      |        |         |        |                              |         |                |           |      |
|   |             | 060208     |        |        |                   |        | ●      | ●      |        |         |        |                              |         |                |           |      |
|   |             | 060208F    |        |        |                   |        |        | ●      |        |         |        |                              |         |                |           |      |
|   |             | 060208T    |        |        |                   |        | ●      | ●      |        |         |        |                              |         |                |           |      |
|   |             | 09T304     | ●      | ●      |                   |        | ●      | ●      |        | ●       |        | ●                            |         |                |           |      |
|   |             | 09T304F    | ●      |        |                   |        |        | ●      |        |         |        |                              |         |                |           |      |
|   |             | 09T304T    | ●      |        |                   |        | ●      | ●      |        |         |        |                              |         |                |           |      |
|   |             | 09T308     | ●      | ●      |                   |        | ●      | ●      |        | ●       |        | ●                            |         |                |           |      |
|   |             | 09T308F    | ●      |        |                   |        |        | ●      |        |         |        |                              |         |                |           |      |
|   |             | 09T308T    | ●      |        |                   |        | ●      | ●      |        |         |        |                              |         |                |           |      |
|   |             | 09T308W    | ●      |        |                   |        |        |        |        |         |        |                              |         |                |           |      |
| 09T308WF  | ●           |            |        |        |                   |        |        |        |        |         |        |                              |         |                |           |      |
|  | 2NU-DCGW    | 070204     |        |        |                   | ●      | ●      |        |        |         |        | SDACR/L                      | SDJCR/L | B178           | B179      |      |
|   |             | 070204F    |        |        |                   |        | ●      |        |        |         |        |                              | SDNCN   | SDQCR/L        | B179      | B206 |
|   |             | 070204T    |        |        |                   |        | ●      | ●      |        |         |        |                              | SDUCR/L | SDZCR/L        | B207      | B208 |
|   |             | 070208     |        |        |                   |        | ●      | ●      |        |         |        |                              |         |                |           |      |
|   |             | 070208F    |        |        |                   |        |        | ●      |        |         |        |                              |         |                |           |      |
|   |             | 070208T    |        |        |                   |        | ●      | ●      |        |         |        |                              |         |                |           |      |
|   |             | 11T304     | ●      | ●      |                   |        | ●      | ●      |        | ●       |        | ●                            |         |                |           |      |
|   |             | 11T304F    | ●      |        |                   |        |        | ●      |        |         |        |                              |         |                |           |      |
|   |             | 11T304T    | ●      |        |                   |        | ●      | ●      |        |         |        |                              |         |                |           |      |
|   |             | 11T308     | ●      | ●      |                   |        | ●      | ●      |        | ●       |        | ●                            |         |                |           |      |
|   |             | 11T308F    | ●      |        |                   |        |        | ●      |        |         |        |                              |         |                |           |      |
|   |             | 11T308T    | ●      |        |                   |        | ●      | ●      |        |         |        |                              |         |                |           |      |
|   |             | T-2NU-DCGW | 11T304 | ●      |                   |        |        |        |        |         |        |                              |         |                |           |      |
|  | 3NU-TCGW    | 090204     | ●      |        |                   |        |        |        |        |         |        | STACR/L                      | STFCR/L | B181           | B182/B209 |      |
|   |             | 090204F    | ●      |        |                   |        |        |        |        |         |        |                              | STGCR/L | STTCR/L        | B182      | B182 |
|   |             | 090204T    | ●      |        |                   |        |        |        |        |         |        |                              |         |                |           |      |

●: En Almacen




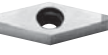



# B Insertos para cBN

## cBN

### Multiples Esquinas (Positivo)

| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>r</sub> |
| 11               | 6.35  | 3.18 | 2.4            |
| 16               | 9.525 | 4.76 | 3.81           |

| Inserto  | Designación | Recubierto |        |        | Sin Recubrimiento |        |        |        |        |         | Porta herramienta disponible |             |         |           |      |      |
|--|-------------|------------|--------|--------|-------------------|--------|--------|--------|--------|---------|------------------------------|-------------|---------|-----------|------|------|
|  |             | DNC250     | DNC350 | DNC400 | DB1000            | DB2000 | DBN400 | DBN250 | DBN300 | DBN700A | DBNX20                       | Designación |         | Pag.      |      |      |
|                       | 3NU-TPGB    | 110304     | ●      |        |                   |        |        | ●      |        |         |                              | CTFPR/L     | CTGPR/L | B170/B201 | B170 |      |
|  |             | 110304F    | ●      |        |                   |        |        |        |        |         |                              |             |         |           |      |      |
|  |             | 110304T    | ●      |        |                   |        |        |        |        |         |                              |             |         |           |      |      |
|  |             | 110308     | ●      |        |                   |        |        |        |        | ●       |                              |             |         |           |      |      |
|  |             | 110308F    | ●      |        |                   |        |        |        |        |         |                              |             |         |           |      |      |
|  |             | 110308T    | ●      |        |                   |        |        |        |        |         |                              |             |         |           |      |      |
|  <p>TP 60° Posi</p>   | 3NU-TPGN    | 110304     |        |        |                   | ●      | ●      |        |        |         |                              | CTFPR/L     | CTGPR/L | B170/B201 | B170 |      |
|  |             | 110304F    |        |        |                   |        |        | ●      |        |         |                              |             |         |           |      |      |
|  |             | 110304T    |        |        |                   |        | ●      | ●      |        |         |                              |             |         |           |      |      |
|  |             | 110308     |        |        |                   |        | ●      | ●      |        |         |                              |             |         |           |      |      |
|  |             | 110308F    |        |        |                   |        |        | ●      |        |         |                              |             |         |           |      |      |
|  |             | 110308T    |        |        |                   |        | ●      | ●      |        |         |                              |             |         |           |      |      |
|  |             | 160304     | ●      | ●      |                   |        |        |        |        |         |                              |             |         |           |      |      |
|  |             | 160308     | ●      | ●      |                   |        |        |        |        |         |                              |             |         |           |      |      |
|                      | 3NU-TPGW    | 110304     | ●      | ●      |                   | ●      | ●      |        |        |         | ●                            |             |         |           |      |      |
|  |             | 110304F    | ●      |        |                   |        |        | ●      |        |         |                              |             |         |           |      |      |
|  |             | 110304T    | ●      |        |                   |        | ●      | ●      |        |         |                              |             |         |           |      |      |
|  |             | 110308     | ●      | ●      |                   | ●      | ●      |        |        |         |                              | ●           |         |           |      |      |
|  |             | 110308F    | ●      |        |                   |        |        | ●      |        |         |                              |             |         |           |      |      |
|  |             | 110308T    | ●      |        |                   |        | ●      | ●      |        |         |                              |             |         |           |      |      |
|  <p>VB 35° Posi</p> | 2NU-VBGW    | 160404     | ●      | ●      |                   | ●      | ●      |        |        | ●       | ●                            | SVABR/L     | SVHBR/L | B183      | B183 |      |
|  |             | 160404F    | ●      |        |                   |        |        | ●      |        |         |                              |             | SVJBR/L | SVQBR/L   | B183 | B211 |
|  |             | 160404T    | ●      |        |                   |        | ●      | ●      |        |         |                              |             | SVUBR/L |           | B212 |      |
|  |             | 160408     | ●      | ●      |                   | ●      | ●      |        |        | ●       |                              | ●           |         |           |      |      |
|  |             | 160408F    | ●      |        |                   |        |        | ●      |        |         |                              |             |         |           |      |      |
|  |             | 160408T    | ●      |        |                   |        | ●      | ●      |        |         |                              |             |         |           |      |      |
|  <p>VC 35° Posi</p> | 2NU-VCGW    | 160404     | ●      | ●      |                   | ●      | ●      |        |        |         | ●                            |             |         |           |      |      |
|  |             | 160404F    | ●      |        |                   |        |        | ●      |        |         |                              |             |         |           |      |      |
|  |             | 160404T    | ●      |        |                   |        | ●      | ●      |        |         |                              |             |         |           |      |      |
|  |             | 160408     | ●      | ●      |                   | ●      | ●      |        |        |         |                              | ●           |         |           |      |      |
|  |             | 160408F    | ●      |        |                   |        |        | ●      |        |         |                              |             |         |           |      |      |
|  |             | 160408T    | ●      |        |                   |        | ●      | ●      |        |         |                              |             |         |           |      |      |

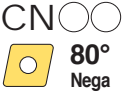


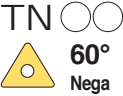

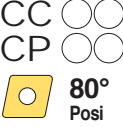

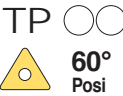



# cBN

## Reaflables (Negativo/Positivo)

| Dimensiones (mm) |            |          |                |
|------------------|------------|----------|----------------|
| Tamaño           | d          | t        | d <sub>1</sub> |
| 09               | 9.525      | 3.97     | 4.4            |
| 11               | 6.35~9.525 | 3.8~3.97 | 3.4~4.4        |
| 12               | 12.7       | 4.76     | 5.16           |

| Dimensiones (mm) |       |      |                |
|------------------|-------|------|----------------|
| Tamaño           | d     | t    | d <sub>1</sub> |
| 15               | 12.7  | 4.76 | 5.16           |
| 16               | 9.525 | 4.76 | 3.81~4.4       |

| Inserto  | Designación | Recubrimiento |        |        |        |        |        |        |        |         |       | Porta herramienta disponible |         |                |           |
|--|-------------|---------------|--------|--------|--------|--------|--------|--------|--------|---------|-------|------------------------------|---------|----------------|-----------|
|  |             | DNC250        | DNC350 | DNC400 | DB1000 | DB2000 | DBN400 | DBN250 | DBN300 | DBN700A | DBN20 | Designación                  |         | Pag.           |           |
| <br><b>CN</b> ○○○<br>80°<br>Nega                              | CNMA        | <b>120404</b> |        |        |        |        |        | ●      |        |         |       | DCBNR/L                      | MCKNR/L | B154           | B171      |
|  |             | <b>120408</b> |        |        |        |        |        | ●      |        |         | ●     | DCLNR/L                      | MCLNR/L | B154/B195      | B171/B202 |
|  | T-CNMA      | <b>120408</b> |        |        |        |        |        | ●      |        |         |       | PCBNR/L                      | MCMNN   | B159           | B171      |
|  |             |               |        |        |        |        |        |        |        |         |       | PCLNR/L                      |         | B160/B197      |           |
| <br><b>DN</b> ○○○<br>55°<br>Nega                              | DNMA        | <b>150404</b> |        |        |        |        |        | ●      |        |         |       | DDJNR/L                      | MDJNR/L | B155           | B172      |
|  |             | <b>150408</b> |        |        |        |        |        | ●      | ●      |         |       | MDNNN                        | MDQNR/L | B172           | B173      |
|  |             |               |        |        |        |        |        |        |        |         |       | MDUNR/L                      | PDJNR/L | B202           | B160      |
|  |             |               |        |        |        |        |        |        |        |         |       | PDNNR/L                      | PDSNR/L | B161           | B197      |
|  |             |               |        |        |        |        |        |        |        |         |       | PDUNR/L                      |         | B198           |           |
| <br><b>SN</b> ○○○<br>90°<br>Nega                              | SNMA        | <b>120404</b> |        |        |        |        |        | ●      |        |         |       | DSBNR/L                      | MSBNR/L | B155           | B173      |
|  |             | <b>120408</b> |        |        |        |        |        | ●      |        |         |       | MSDNN                        | MSKNR/L | B173           | B174/B202 |
|  |             |               |        |        |        |        |        |        |        |         |       | MSRNR/L                      | MSSNR/L | B174           | B175      |
|  |             |               |        |        |        |        |        |        |        |         |       | PSBNR/L                      | PSDNN   | B163           | B163      |
|  |             |               |        |        |        |        |        |        |        |         |       | PSKNR/L                      |         | B164/B199      |           |
| <br><b>TN</b> ○○○<br>60°<br>Nega                             | TNMA        | <b>160404</b> |        |        |        |        |        | ●      |        |         |       | MTENNS                       | MTFNR/L | B175           | B175/B203 |
|  |             | <b>160408</b> |        |        |        |        |        | ●      |        |         |       | MTGNR/L                      | MTJNR/L | B176           | B176      |
|  |             |               |        |        |        |        |        |        |        |         |       | PTFNR/L                      | PTGNR/L | B165/B199      | B165      |
|  |             |               |        |        |        |        |        |        |        |         |       | PTTNR/L                      | WTENN   | B166           | B167      |
|  |             |               |        |        |        |        |        |        |        |         |       | WTJNR/L                      | WTXNR/L | B167           | B167      |
| <br><b>VN</b> ○○○<br>35°<br>Nega                            | VNMA        | <b>160404</b> |        |        |        |        |        | ●      |        |         |       | MVJNR/L                      | MVQNR/L | B176           | B177      |
|  |             | <b>160408</b> |        |        |        |        |        | ●      |        |         |       | MVUNR/L                      | MVVNN   | B203           | B177      |
|  | T-VNMA      | <b>160404</b> |        |        |        |        |        | ●      |        |         |       |                              |         |                |           |
| <br><b>CC</b> ○○○<br><b>CP</b> ○○○<br>80°<br>Posi<br>(CCMW) | CCMW        | <b>09T304</b> |        |        |        |        |        | ●      |        |         |       | SCACR/L                      |         | B178           |           |
|  |             |               |        |        |        |        |        |        |        |         |       | SCLCR/L                      |         | B178/B204/B214 |           |
| <br><b>DC</b> ○○○<br>50°<br>Posi                            | DCGW        | <b>11T308</b> |        |        |        |        |        | ●      |        |         |       | SDACR/L                      | SDJCR/L | B178           | B179      |
|  | T-DCGW      | <b>11T308</b> |        |        |        |        |        | ●      |        |         |       | SDNCN                        |         | B179           |           |
| <br><b>TP</b> ○○○<br>60°<br>Posi                            | TPGB        | <b>110304</b> |        |        |        |        |        | ●      | ●      |         |       | CTFPR/L                      | CTGPR/L | B170/B201      | B170      |
|  |             | <b>110308</b> |        |        |        |        |        | ●      |        |         |       |                              |         |                |           |
| <br><b>VB</b> ○○○<br>35°<br>Posi                            | VBMA        | <b>160404</b> |        |        |        |        |        | ●      |        |         |       | SVABR/L                      | SVHBR/L | B183           | B183      |
|  |             | <b>160408</b> |        |        |        |        |        | ●      |        |         |       | SVJBR/L                      | SVQBR/L | B183           | B211      |
|  |             |               |        |        |        |        |        |        |        |         |       | SVUBR/L                      |         | B212           |           |

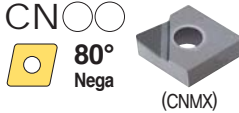
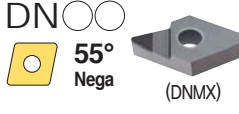
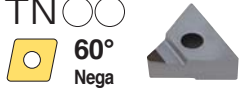

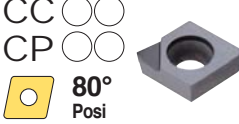
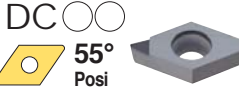
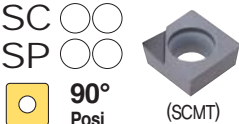
●: En Almacen



## PCD

### Insertos (Negativo/Positivo)

| Tamaño | Dimensiones (mm) |      |                | Tamaño | Dimensiones (mm) |      |                |
|--------|------------------|------|----------------|--------|------------------|------|----------------|
|        | d                | t    | d <sub>1</sub> |        | d                | t    | d <sub>1</sub> |
| 06     | 6.35             | 2.38 | 2.8            | 11     | 9.525            | 3.97 | 4.4            |
| 07     | 6.35             | 2.38 | 2.8            | 12     | 12.7             | 4.76 | 5.16           |
| 08     | 7.94             | 2.38 | 3.4            | 15     | 12.7             | 4.76 | 5.16           |
| 09     | 9.525            | 3.18 | 4.4            | 16     | 9.525            | 4.76 | 3.81           |

| Inserto   | Designación | PCD    |       |       | Porta herramienta disponible |         |              |          |
|---|-------------|--------|-------|-------|------------------------------|---------|--------------|----------|
|   |             | DP90   | DP150 | DP200 | Designación                  |         | Pag.         |          |
|    | CNMM        | 120404 | ●     |       | DCBNR/L                      | DCLNR/L | B154         | B154/195 |
|   |             | 120408 | ●     |       | MCKNR/L                      | MCLNR/L | B171         | B171/202 |
|   |             | 120412 |       |       | MCMNN                        | PCBNR/L | B171         | B159     |
|   | CNMX        | 120404 |       |       | PCLNR/L                      |         | B160/197     |          |
|   |             | 120408 |       |       |                              |         |              |          |
|   |             | 120412 |       |       |                              |         |              |          |
|    | DNMM        | 150404 | ●     |       | DDJNR/L                      | MDJNR/L | B155         | B172     |
|   |             | 150408 | ●     |       | MDNNN                        | MDQNR/L | B172         | B173     |
|   |             | 150412 |       |       | MDUNR/L                      | PDJNR/L | B202         | B160     |
|   | DNMX        | 150404 |       |       | PDNNR/L                      | PDSNR/L | B161         | B197     |
|   |             | 150408 |       |       | PDUNR/L                      |         | B198         |          |
|   |             | 150412 |       |       |                              |         |              |          |
|    | TNMX        | 160404 |       |       | MTENN                        | MTFNR/L | B175         | B175/203 |
|   |             | 160408 |       |       | MTGNR/L                      | MTJNR/L | B176         | B176     |
|   |             | 160412 |       |       | PTFNR/L                      | PTGNR/L | B165/199     | B165     |
|   |             |        |       |       | PTTNR/L                      | WTENN   | B166         | B167     |
|  | VNMX        | 160404 |       |       | MVJNR/L                      |         | B176         |          |
|   |             | 160408 |       |       | MVQNR/L                      |         | B177         |          |
|   |             | 160412 |       |       | MVUNR/L                      |         | B203         |          |
|   |             |        |       |       | MVVNN                        |         | B177         |          |
|  | CCMT        | 060202 |       | ●     | SCACR/L                      |         | B178         |          |
|   |             | 060204 |       | ●     | SCLCR/L                      |         | B178/204/214 |          |
|   |             | 060208 |       |       |                              |         |              |          |
|   |             | 09T304 |       | ●     |                              |         |              |          |
|   |             | 09T308 |       | ●     |                              |         |              |          |
|   | CPMT        | 09T312 |       |       |                              |         |              |          |
|   |             | 080204 |       |       |                              |         |              |          |
|   |             | 080208 |       |       |                              |         |              |          |
|   |             | 080212 |       |       |                              |         |              |          |
|   |             | 090304 |       |       |                              |         |              |          |
|  | DCMT        | 070202 |       | ●     | SDACR/L                      |         | B178         |          |
|   |             | 070204 |       | ●     | SDJCR/L                      |         | B179         |          |
|   |             | 070208 |       |       | SDNCN                        |         | B179         |          |
|   |             | 11T302 |       |       | SDQCR/L                      |         | B206         |          |
|   |             | 11T304 |       | ●     | SDUCR/L                      |         | B207         |          |
|   |             | 11T308 |       | ●     | SDZCR/L                      |         | B208         |          |
|  | SCMT        | 09T304 |       |       | SSBCR/L                      |         | B180         |          |
|   |             | 09T308 |       |       | SSDCN                        |         | B180         |          |
|   |             | 09T312 |       |       | SSKCR/L                      |         | B181/208     |          |
|   | SPGW        | 090302 |       |       | SSSCR/L                      |         | B181         |          |
|   |             | 090304 |       |       |                              |         |              |          |
|   |             | 090308 |       |       |                              |         |              |          |

● : En Almacen



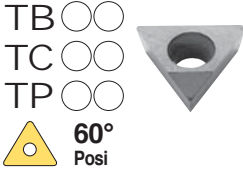


# PCD

## Insertos (Positivo)

| Dimensiones (mm) |            |           |                |
|------------------|------------|-----------|----------------|
| Tamaño           | d          | t         | d <sub>1</sub> |
| 06               | 3.97       | 1.59      | 2.8            |
| 08               | 4.76       | 2.38      | 2.4            |
| 09               | 5.56~9.525 | 2.38~3.18 | 2.55           |

| Dimensiones (mm) |       |           |                |
|------------------|-------|-----------|----------------|
| Tamaño           | d     | t         | d <sub>1</sub> |
| 11               | 9.525 | 3.97      | 4.4            |
| 12               | 6.35  | 2.38~3.18 | 2.8~3.4        |
| 16               | 12.7  | 3.18      | 4.4            |

| Inserto   | Designación | PCD  |  |                  | Porta herramienta disponible                                       |  |                            |                   |   |                      |              |           |
|---|-------------|--|--|------------------|--|--|----------------------------|-------------------|---|----------------------|--------------|-----------|
|   |             | DP90   | DP150  | DP200            | Designación  |  | Pag.                       |                   |   |                      |              |           |
|  <p>TB ○○<br/>TC ○○<br/>TP ○○<br/>60° Posi</p> | TBGW        | 060102<br>060104   |  |                  |  | STUBR/L  | B214                       |                   |   |                      |              |           |
|   | TCMT        | 090201<br>090202<br>090204<br>110201<br>110202<br>110204 |  |                  |  | STACR/L STFCR/L<br>STFPR/L STGCR/L<br>STTCR/L                                | B181<br>B210<br>B182       | B182/B209<br>B182 |   |                      |              |           |
|   | TPGB        | 080204<br>080208<br>090204<br>090208<br>110304<br>110308 |  | ●<br>●           |  |  |                            |                   |   |                      |              |           |
|   |             | TPGW   | 080202<br>080204<br>090204<br>090208<br>110302<br>110304<br>110308<br>160404<br>160408 |                  | ●<br>●   |  |                            |                   |   |                      |              |           |
|   |             |  | TPGT   | 110302<br>110304 |  |  |                            | STFPR/L STUPR/L   | B210  | B215                 |              |           |
|   |             |  |  | VBMT             | 110302<br>110304<br>110308<br>160402<br>160404<br>160408<br>160412 |  | ●<br>●<br>●<br>●<br>●<br>● |                   | SVABR/L SVHBR/L<br>SVJBR/L SVQBR/L<br>SVUBR/L | B183<br>B183<br>B212 | B183<br>B211 |           |
|   |             |  | VCMT   |                  | 110302<br>110304<br>110308<br>160404<br>160408<br>160412           |  | ●<br>●<br>●<br>●           |                   | SVJCR SVVCN                                   | B184                 | B184         |           |
|   |             |  |  |                  | TPGN   | 090204<br>090208<br>110302<br>110304<br>110308<br>160302<br>160304<br>160308 |                            | ●<br>●            |   | CTFPR/L CTGPR/L      | B170/B201    | B170      |
|   | SPGN        |  |  |                  |  | 090304<br>090308<br>120304<br>120308   |                            | ●                 |   | CSDPN CSKPR/L        | B169         | B170/B201 |

●: En Almacen



# B Información técnica SAVE TURN

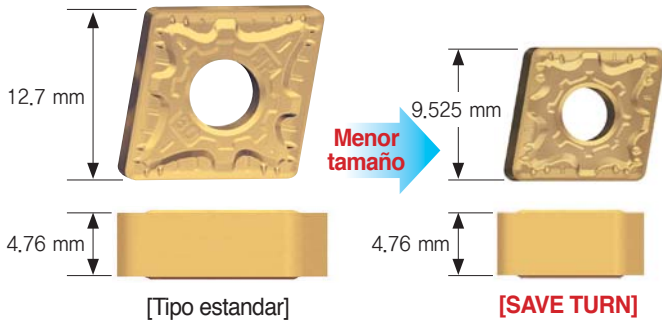
Inserto pequeño y económico con un potente rendimiento de corte

## SAVE TURN

- Inserto de torneado muy recomendado para mecanizar diámetros más pequeños que Ø100
- Inserto pequeño pero poderoso y económico que funciona igual que el tamaño estándar  
Inserciones bajo la profundidad de corte de 3,0 mm

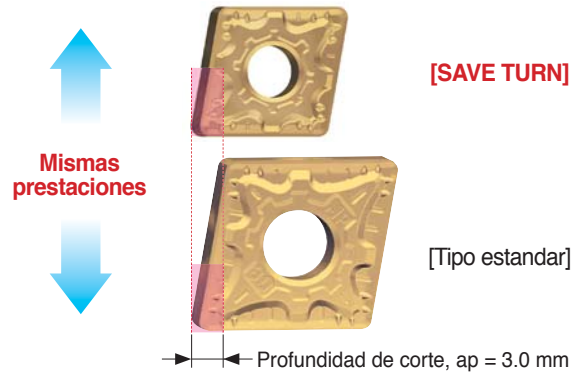
### Características

#### Comparación de tamaños de Insertos








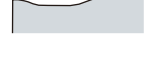
- Tamaño optimizado del mismo rendimiento que el tipo estándar

#### Comparación de rendimiento de corte

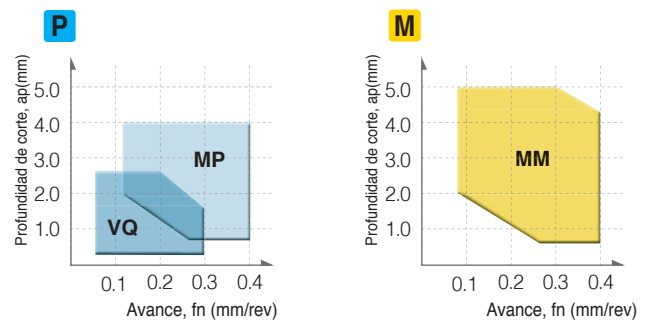


- Realiza las mismas inserciones de tipo estándar  
Bajo la profundidad de corte de 3.0 mm

### Características del rompevirutas

| Forma del Inserto   | Filo de corte   | Características   |
|---|---|---|
|  |  | <ul style="list-style-type: none"> <li>• Para el acabado de acero</li> <li>• Rotura eficiente de viruta y bajo corte. resistencia</li> <li>• Varias aplicaciones disponibles en baja profundidad de corte</li> <li>• Profundidad de corte recomendada: 0.5~2.5 mm</li> </ul>  |
|  |  | <ul style="list-style-type: none"> <li>• Para corte medio de acero</li> <li>• 4 puntos para mejorar el control de chip en el medio corte a acabado</li> <li>• Evacuación estable de viruta a alta profundidad de corte</li> <li>• Vida de la herramienta estable debido a menores cargas de corte en alta alimentación</li> <li>• Profundidad de corte recomendada: 0.5~4.0 mm</li> </ul> |
|  |  | <ul style="list-style-type: none"> <li>• Para corte medio de acero inoxidable</li> <li>• Limita la deformación plástica causada por el calor</li> <li>• Vida de herramienta estable gracias al equilibrado Rendimiento de corte y tenacidad</li> <li>• Flujo estable de virutas a altas velocidades y avances</li> <li>• Profundidad de corte recomendada: 0.5~5.0 mm</li> </ul>          |

### Área de aplicación del rompevirutas



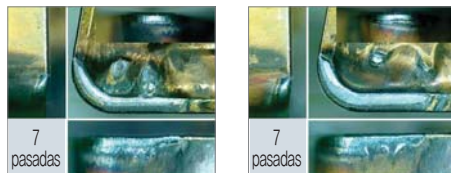
- VQ** : Profundidad de corte, ap = 0.5~2.5 mm / Avance, fn = 0.05~0.30 mm/rev
- MP** : Profundidad de corte, ap = 0.5~4.0 mm / Avance, fn = 0.15~0.40 mm/rev
- MM** : Profundidad de corte, ap = 0.5~5.0 mm / Avance, fn = 0.10~0.40 mm/rev

### Ejemplo de aplicación

#### Acero aleado (SCM440)

- **Condiciones de corte** vc (m/min) = 250, fn (mm/rev) = 0.25  
ap (mm) = 2.0~3.0, Corte continuo, con refrigerante

- **Resultados**



CNMG090408-HM  
SAVE TURN

CNMG120408-HM  
Tipo estándar

#### Acero aleado (SCM440)

- **Condiciones de corte** vc (m/min) = 250, fn (mm/rev) = 0.25  
ap (mm) = 2.0~3.0, Corte interrumpido, con refrigerante

- **Resultados**


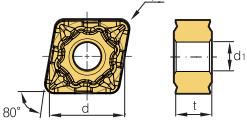

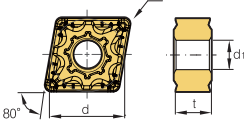

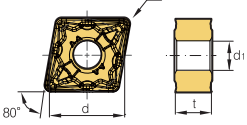
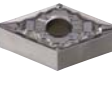
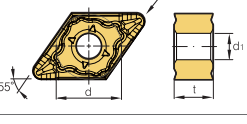
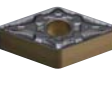
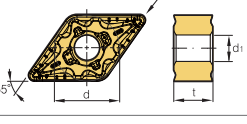

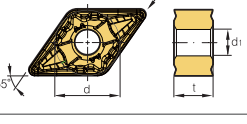
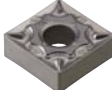
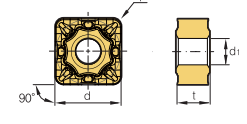
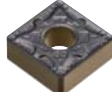
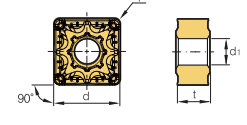

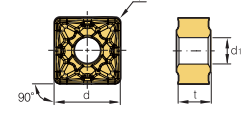

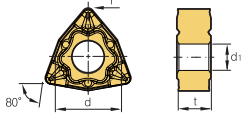

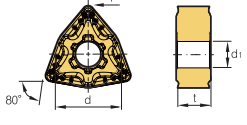

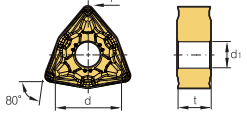


CNMG090408-HM  
SAVE TURN

CNMG120408-HM  
Tipo estándar



**Inserto**

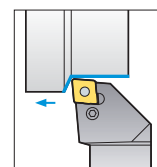
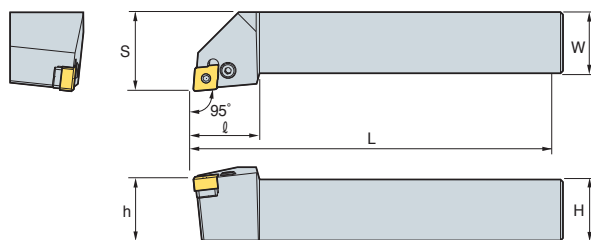
| Tipo  | Forma   | Designación    | Recubierto |        |        |        |        | Dimensiones (mm) |      |      |           | Condiciones de corte |   | Configuración   | Porta herramientas disponibles página |             |
|---|---|----------------|------------|--------|--------|--------|--------|------------------|------|------|-----------|----------------------|---|---|---------------------------------------|-------------|
|   |   |                | NC9215     | NC9225 | NC5330 | NC9125 | NC9135 | PC9030           | d    | t    | r         | d <sub>1</sub>       | ap (mm)   |   |                                       | fn (mm/rev) |
|   |   |                |            |        |        |        |        |                  |      |      |           |                      |   |   |                                       |             |
| Tipo C  |    | CNMG 090408-VQ |            | ●      |        |        |        | 9.525            | 4.76 | 0.8  | 3.81      | 0.50~2.50            | 0.08~0.30   |    | B106<br>B109                          |             |
|   |   | CNMG 090412-VQ |            | ●      |        |        |        | 9.525            | 4.76 | 1.2  | 3.81      | 0.50~2.50            | 0.10~0.30   |   |                                       |             |
|   |    | CNMG 090404-MP |            |        |        |        |        | 9.525            | 4.76 | 0.4  | 3.81      | 0.50~4.00            | 0.10~0.40   |    | B106<br>B109                          |             |
|   |   | CNMG 090408-MP |            |        |        |        |        | 9.525            | 4.76 | 0.8  | 3.81      | 0.50~4.00            | 0.15~0.40   |   |                                       |             |
|   |   | CNMG 090412-MP |            |        |        |        |        | 9.525            | 4.76 | 1.2  | 3.81      | 0.50~4.00            | 0.15~0.45   |   |                                       |             |
|   |    | CNMG 090404-MM |            |        |        |        |        | 9.525            | 4.76 | 0.4  | 3.81      | 0.50~5.00            | 0.08~0.35   |    | B106<br>B109                          |             |
| CNMG 090408-MM  |   |                |            |        |        |        | 9.525  | 4.76             | 0.8  | 3.81 | 0.50~5.00 | 0.10~0.40            |   |   |                                       |             |
| CNMG 090412-MM  |   |                |            |        |        |        | 9.525  | 4.76             | 1.2  | 3.81 | 0.50~5.00 | 0.12~0.45            |   |   |                                       |             |
| Tipo D  |    | DNMG 110508-VQ |            | ●      |        |        | 9.525  | 5.56             | 0.4  | 3.81 | 0.50~2.50 | 0.08~0.30            |    | B106<br>B107<br>B109<br>B110  |                                       |             |
|   |   | DNMG 110512-VQ |            | ●      |        |        |        | 9.525            | 5.56 | 0.8  | 3.81      | 0.50~2.50            |   |   | 0.10~0.30                             |             |
|   |  | DNMG 110504-MP |            |        |        |        |        | 9.525            | 5.56 | 0.4  | 3.81      | 0.50~4.00            | 0.10~0.40   |   | B106<br>B107<br>B109<br>B110          |             |
|   |   | DNMG 110508-MP |            |        |        |        |        | 9.525            | 5.56 | 0.8  | 3.81      | 0.50~4.00            | 0.15~0.40   |   |                                       |             |
|   |   | DNMG 110512-MP |            |        |        |        |        | 9.525            | 5.56 | 1.2  | 3.81      | 0.50~4.00            | 0.15~0.45   |   |                                       |             |
|   |  | DNMG 110504-MM |            |        |        |        |        | 9.525            | 5.56 | 0.4  | 3.81      | 0.50~5.00            | 0.08~0.35   |  | B106<br>B107<br>B109<br>B110          |             |
| DNMG 110508-MM  |   |                |            |        |        |        | 9.525  | 5.56             | 0.8  | 3.81 | 0.50~5.00 | 0.10~0.40            |   |   |                                       |             |
| DNMG 110512-MM  |   |                |            |        |        |        | 9.525  | 5.56             | 1.2  | 3.81 | 0.50~5.00 | 0.12~0.45            |   |   |                                       |             |
| Tipo S  |  | SNMG 090408-VQ |            | ●      |        |        | 9.525  | 4.76             | 0.4  | 3.81 | 0.50~2.50 | 0.08~0.30            |  | B107<br>B108<br>B110  |                                       |             |
|   |   | SNMG 090412-VQ |            | ●      |        |        |        | 9.525            | 4.76 | 0.8  | 3.81      | 0.50~2.50            |   |   | 0.10~0.30                             |             |
|   |  | SNMG 090404-MP |            |        |        |        |        | 9.525            | 4.76 | 0.4  | 3.81      | 0.50~4.00            | 0.10~0.40   |  | B107<br>B108<br>B110                  |             |
|   |   | SNMG 090408-MP |            |        |        |        |        | 9.525            | 4.76 | 0.8  | 3.81      | 0.50~4.00            | 0.15~0.40   |   |                                       |             |
|   |   | SNMG 090412-MP |            |        |        |        |        | 9.525            | 4.76 | 1.2  | 3.81      | 0.50~4.00            | 0.15~0.45   |   |                                       |             |
|   |  | SNMG 090404-MM |            |        |        |        |        | 9.525            | 4.76 | 0.4  | 3.81      | 0.50~5.00            | 0.08~0.35   |  | B107<br>B108<br>B110                  |             |
| SNMG 090408-MM  |   |                |            |        |        |        | 9.525  | 4.76             | 0.8  | 3.81 | 0.50~5.00 | 0.10~0.40            |   |   |                                       |             |
| SNMG 090412-MM  |   |                |            |        |        |        | 9.525  | 4.76             | 1.2  | 3.81 | 0.50~5.00 | 0.12~0.45            |   |   |                                       |             |
| Tipo W  |  | WNMG 060404-VQ |            |        |        |        | 9.525  | 4.76             | 0.4  | 3.81 | 0.30~2.00 | 0.06~0.30            |  | B109<br>B110  |                                       |             |
|   |   | WNMG 060408-VQ |            |        |        |        |        | 9.525            | 4.76 | 0.8  | 3.81      | 0.50~2.00            |   |   | 0.08~0.30                             |             |
|   |   | WNMG 060412-VQ |            |        |        |        |        | 9.525            | 4.76 | 1.2  | 3.81      | 0.50~2.00            |   |   | 0.10~0.30                             |             |
|   |  | WNMG 060404-MP | ●          | ●      | ●      | ●      |        | 9.525            | 4.76 | 0.4  | 3.81      | 0.50~3.50            | 0.10~0.40   |  | B109<br>B110                          |             |
|   |   | WNMG 060408-MP | ●          | ●      | ●      | ●      |        | 9.525            | 4.76 | 0.8  | 3.81      | 0.50~3.50            | 0.15~0.40   |   |                                       |             |
|   |   | WNMG 060412-MP |            |        |        |        |        | 9.525            | 4.76 | 1.2  | 3.81      | 0.50~3.50            | 0.15~0.45   |   |                                       |             |
|  | WNMG 060404-MM  |                |            |        |        |        | 9.525  | 4.76             | 0.4  | 3.81 | 0.50~4.00 | 0.08~0.35            |  | B109<br>B110  |                                       |             |
|   | WNMG 060408-MM  |                |            | ●      | ●      | ●      | 9.525  | 4.76             | 0.8  | 3.81 | 0.50~4.00 | 0.10~0.40            |   |   |                                       |             |
|   | WNMG 060412-MM  |                |            | ●      | ●      | ●      | 9.525  | 4.76             | 1.2  | 3.81 | 0.50~4.00 | 0.12~0.45            |   |   |                                       |             |

# B Porta herramientas SAVE TURN

## PCLNR/L



CN□□



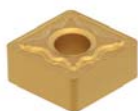
95°

• Inserto tipo R (mm)

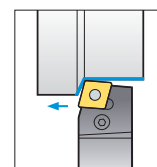
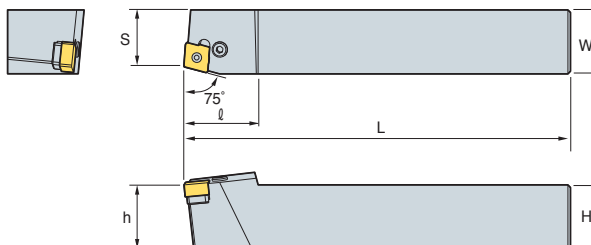
| Designación         | H  | W  | L   | S  | h  | ℓ  | Inserto     | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |
|---------------------|----|----|-----|----|----|----|-------------|---------|----------|-------|---------------|-------|-----------|
| PCLNR/L 1616-H09-4N | 16 | 16 | 100 | 20 | 16 | 20 | CN□□ 0904□□ |         |          |       |               |       |           |
| 2020-K09-4N         | 20 | 20 | 125 | 25 | 20 | 25 |             |         |          |       |               |       |           |
| 2525-M09-4N         | 25 | 25 | 150 | 32 | 25 | 27 |             |         |          |       |               |       |           |

➔ Insertos Aplicables B105

## PCBNR/L



CN□□



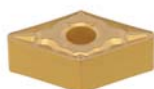
75°

• Inserto tipo R (mm)

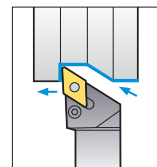
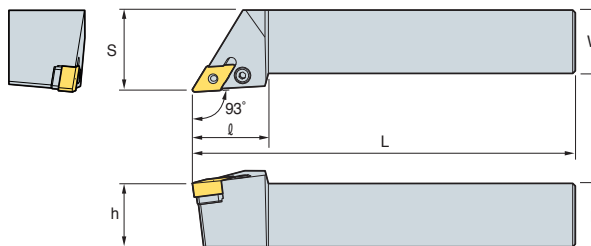
| Designación         | H  | W  | L   | S  | h  | ℓ  | Inserto     | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |
|---------------------|----|----|-----|----|----|----|-------------|---------|----------|-------|---------------|-------|-----------|
| PCBNR/L 2020-K09-4N | 20 | 20 | 125 | 17 | 20 | 27 | CN□□ 0904□□ |         |          |       |               |       |           |
| 2525-M09-4N         | 25 | 25 | 150 | 22 | 25 | 29 |             |         |          |       |               |       |           |

➔ Insertos Aplicables B105

## PDJNR/L



DN□□



93°

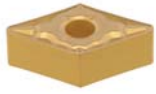
• Inserto tipo R (mm)

| Designación         | H  | W  | L   | S  | h  | ℓ  | Inserto     | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |
|---------------------|----|----|-----|----|----|----|-------------|---------|----------|-------|---------------|-------|-----------|
| PDJNR/L 2020-K11-5N | 20 | 20 | 125 | 25 | 20 | 25 | DN□□ 1105□□ |         |          |       |               |       |           |
| 2525-M11-5N         | 25 | 25 | 150 | 32 | 25 | 30 |             |         |          |       |               |       |           |

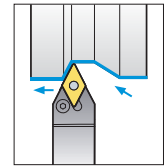
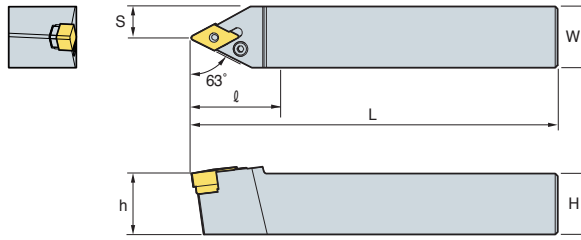
➔ Insertos Aplicables B105



# PDNNR/L



DN□□



63°

• Inserto tipo R (mm)

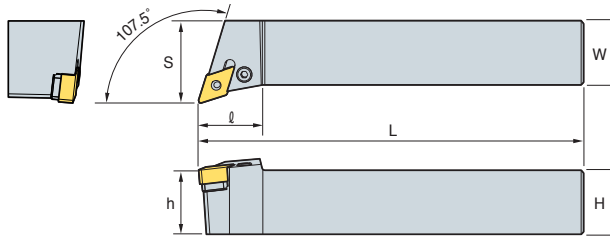
| Designación         | H  | W  | L   | S  | h  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |
|---------------------|----|----|-----|----|----|----|------------|---------|----------|-------|---------------|-------|-----------|
| PDNNR/L 2020-K11-5N | 20 | 20 | 125 | 25 | 20 | 30 | DN□□1105□□ | LV3AN   | VHX0617N | SD32N | SP3           | HW25L | LSPS3     |
| 2525-M11-5N         | 25 | 25 | 150 | 32 | 25 | 30 |            |         |          |       |               |       |           |

➔ Insertos Aplicables B105

# PDQNR/L



DN□□



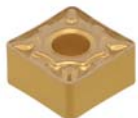
107.5°

• Inserto tipo R (mm)

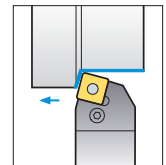
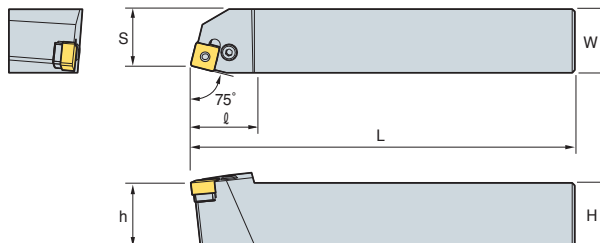
| Designación         | H  | W  | L   | S  | h  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |
|---------------------|----|----|-----|----|----|----|------------|---------|----------|-------|---------------|-------|-----------|
| PDQNR/L 2020-K11-5N | 20 | 20 | 125 | 25 | 20 | 30 | DN□□1105□□ | LV3AN   | VHX0617N | SD32N | SP3           | HW25L | LSPS3     |
| 2525-M11-5N         | 25 | 25 | 150 | 32 | 25 | 30 |            |         |          |       |               |       |           |

➔ Insertos Aplicables B105

# PSBNR/L



SN□□



75°

• Inserto tipo R (mm)

| Designación         | H  | W  | L   | S  | h  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |
|---------------------|----|----|-----|----|----|----|------------|---------|----------|-------|---------------|-------|-----------|
| PSBNR/L 2020-K09-4N | 20 | 20 | 125 | 17 | 20 | 25 | SN□□0904□□ | LV3AN   | VHX0617N | SS32N | SP3           | HW25L | LSP3      |
| 2525-M09-4N         | 25 | 25 | 150 | 22 | 25 | 25 |            |         |          |       |               |       |           |

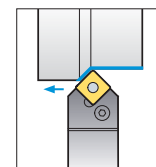
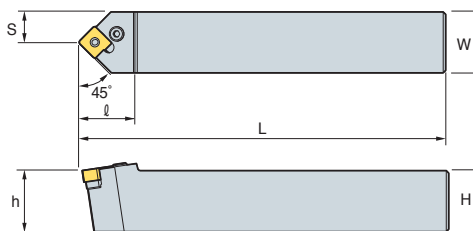
➔ Insertos Aplicables B105

# B Porta herramientas SAVE TURN

## PSDNN



SN□□



45°

• Inserto tipo R (mm)

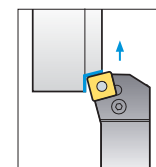
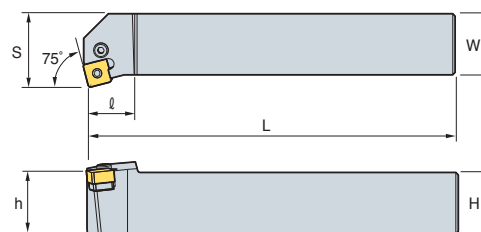
| Designación       | H  | W  | L   | S  | h  | l     | Inserto    | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |
|-------------------|----|----|-----|----|----|-------|------------|---------|----------|-------|---------------|-------|-----------|
| PSDNN 2020-K09-4N | 20 | 20 | 125 | 17 | 20 | 25    | SN□□0904□□ |         |          |       |               |       |           |
| 2525-M09-4N       | 25 | 25 | 150 | 22 | 25 | LV3AN |            |         |          |       |               |       |           |

↻ Insertos Aplicables B105

## PSKNR/L



SN□□



75°

• Inserto tipo R (mm)

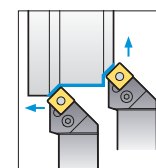
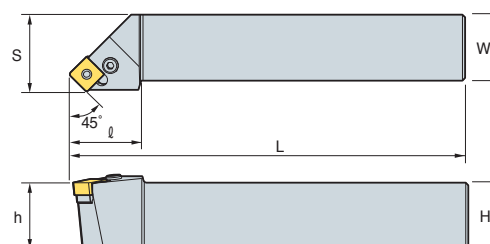
| Designación         | H  | W  | L   | S  | h  | l     | Inserto    | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |
|---------------------|----|----|-----|----|----|-------|------------|---------|----------|-------|---------------|-------|-----------|
| PSKNR/L 2020-K09-4N | 20 | 20 | 125 | 17 | 20 | 25    | SN□□0904□□ |         |          |       |               |       |           |
| 2525-M09-4N         | 25 | 25 | 150 | 22 | 25 | LV3AN |            |         |          |       |               |       |           |

↻ Insertos Aplicables B105

## PSSNR/L



SN□□



45°

• Inserto tipo R (mm)

| Designación         | H  | W  | L   | S  | h  | l     | Inserto    | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |
|---------------------|----|----|-----|----|----|-------|------------|---------|----------|-------|---------------|-------|-----------|
| PSSNR/L 2020-K09-4N | 20 | 20 | 125 | 17 | 20 | 25    | SN□□0904□□ |         |          |       |               |       |           |
| 2525-M09-4N         | 25 | 25 | 150 | 22 | 25 | LV3AN |            |         |          |       |               |       |           |

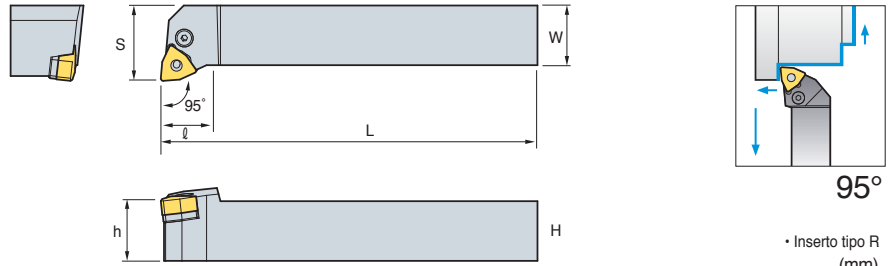
↻ Insertos Aplicables B105



## PWLNRL



WN□□

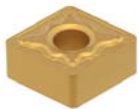


• Inserto tipo R (mm)

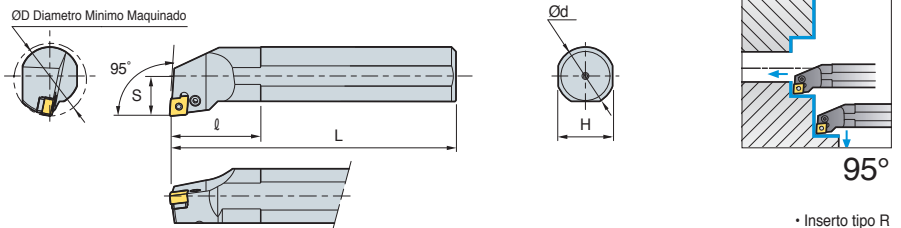
| Designación     | H  | W  | L   | S  | h  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado lana | Llave | Pin Punch |
|-----------------|----|----|-----|----|----|----|------------|---------|----------|-------|--------------|-------|-----------|
| PWLNRL 1616-H06 | 16 | 16 | 100 | 20 | 16 | 20 | WN□□0604□□ |         |          |       |              |       |           |
| 2020-K06        | 20 | 20 | 125 | 25 | 20 | 20 |            |         |          |       |              |       |           |
| 2525-M06        | 25 | 25 | 150 | 32 | 25 | 20 |            |         |          |       |              |       |           |

↻ Insertos Aplicables B105

## PCLNR/L



CN□□



• Inserto tipo R (mm)

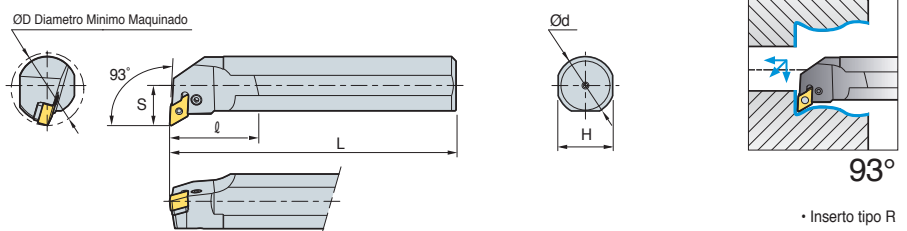
| Designación        | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado lana | Llave | Pin Punch |
|--------------------|----|----|----|-----|----|----|------------|---------|----------|-------|--------------|-------|-----------|
| S20Q-PCLNR/L-09-4N | 25 | 20 | 18 | 180 | 13 | 50 | CN□□0904□□ |         |          |       |              |       |           |
| S25R-PCLNR/L-09-4N | 32 | 25 | 23 | 200 | 17 | 50 |            |         |          |       |              |       |           |
| S32S-PCLNR/L-09-4N | 40 | 32 | 30 | 250 | 22 | 50 |            |         |          |       |              |       |           |

↻ Insertos Aplicables B105

## PDUNR/L



DN□□



• Inserto tipo R (mm)

| Designación        | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado lana | Llave | Pin Punch |
|--------------------|----|----|----|-----|----|----|------------|---------|----------|-------|--------------|-------|-----------|
| S32S-PDUNR/L-11-5N | 40 | 32 | 30 | 250 | 22 | 30 | DN□□1105□□ |         |          |       |              |       |           |
| S40T-PDUNR/L-11-5N | 50 | 40 | 38 | 300 | 27 | 50 |            |         |          |       |              |       |           |

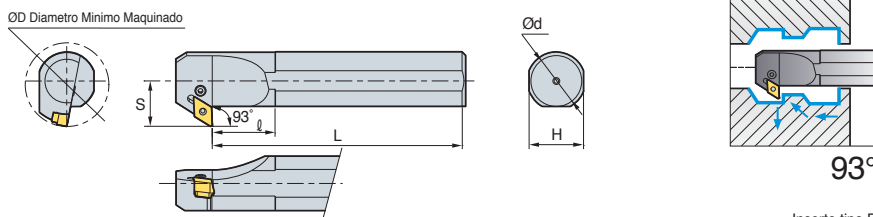
↻ Insertos Aplicables B105

# B Barras torneado interior SAVE TURN

## PDZNR/L



DN□□

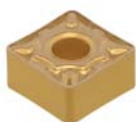


• Inserto tipo R (mm)

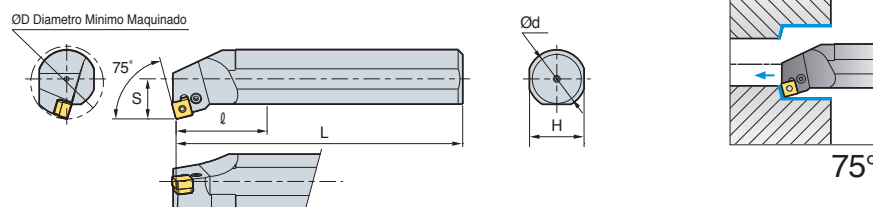
| Designación        | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado lana | Llave | Pin Punch |
|--------------------|----|----|----|-----|----|----|------------|---------|----------|-------|--------------|-------|-----------|
| S32S-PDZNR/L-11-5N | 40 | 32 | 30 | 250 | 22 | 30 | DN□□1105□□ |         |          |       |              |       |           |
| S40T-PDZNR/L-11-5N | 50 | 40 | 38 | 300 | 27 | 50 |            |         |          |       |              |       |           |

↻ Insertos Aplicables B105

## PSKNR/L



SN□□

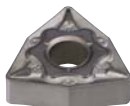


• Inserto tipo R (mm)

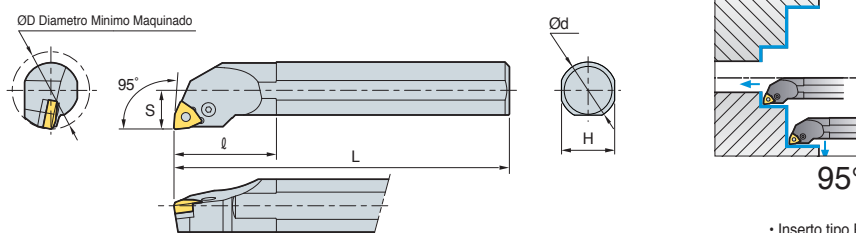
| Designación        | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado lana | Llave | Pin Punch |
|--------------------|----|----|----|-----|----|----|------------|---------|----------|-------|--------------|-------|-----------|
| S25R-PSKNR/L-09-4N | 32 | 25 | 23 | 200 | 17 | 32 | SN□□0904□□ |         |          |       |              |       |           |
| S32S-PSKNR/L-09-4N | 40 | 32 | 30 | 250 | 22 | 32 |            |         |          |       |              |       |           |

↻ Insertos Aplicables B105

## PWLNRL



WN□□



• Inserto tipo R (mm)

| Designación    | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado lana | Llave | Pin Punch |      |          |       |       |       |       |
|----------------|----|----|----|-----|----|----|------------|---------|----------|-------|--------------|-------|-----------|------|----------|-------|-------|-------|-------|
| S20S-PWLNRL-06 | 25 | 20 | 18 | 250 | 13 | 40 | WN□□0604□□ |         |          |       |              |       |           |      |          |       |       |       |       |
| S25R-PWLNRL-06 | 32 | 25 | 23 | 200 | 17 | 40 |            |         |          |       |              |       |           | LV3B | VHX0512B | -     | -     | -     | -     |
| S32S-PWLNRL-06 | 44 | 32 | 30 | 250 | 22 | 45 |            |         |          |       |              |       |           | LV3B | VHX0617B | SW317 | SW317 | HW25L | LSPS3 |

↻ Insertos Aplicables B105





Excelente para maquinados de Precisión

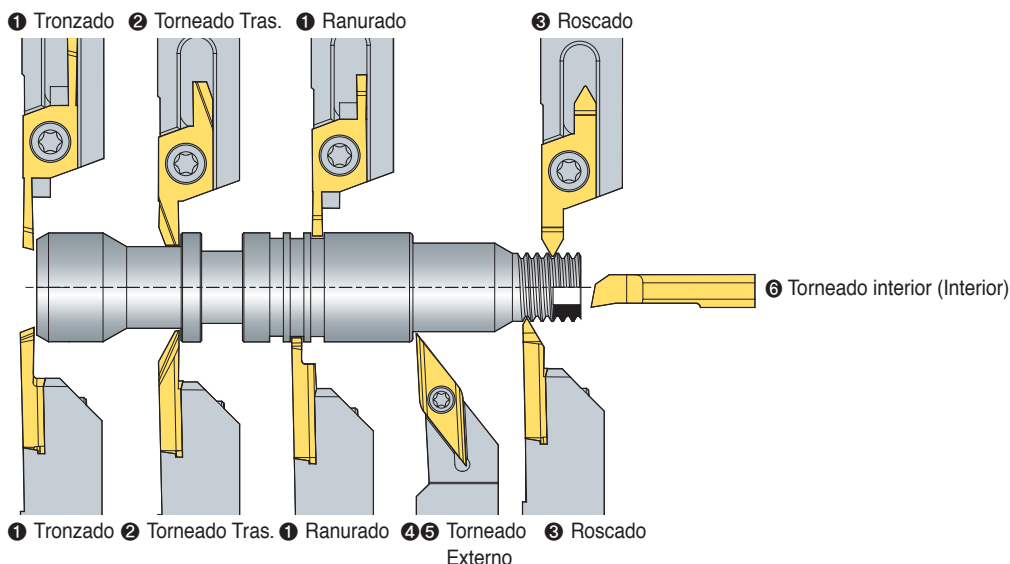
# Auto Tools

- Mecanizado de alta precisión de piezas pequeñas y formas complejas, etc.
- Productos de alta calidad mediante mecanizado estable
- Inserto exclusivo para tornos automáticos

## Tipo



## Ejemplo Aplicación



## Indice

| Especificaciones | 1 Tronzado y Ranurado |         |           |           |           |           | 2 Torneado tras |          |          |
|------------------|-----------------------|---------|-----------|-----------|-----------|-----------|-----------------|----------|----------|
| Portalinserto    | SXGNR/L               | SXGNR/L | SBHR/L    | SBHR/L    | MGEHR/L   | KGEHR/L   | SXGNR/L         | SXGNR/L  | SBHR/L   |
| Inserto          | SG                    | SC      | SBG       | SBC       | MGMN      | KGMM      | SB              | SGB      | SBB      |
| Tam. Porta       | 10~20mm               | 10~20mm | 10~16mm   | 10~16mm   | 10~16mm   | 10~16mm   | 10~20mm         | 10~20mm  | 10~16mm  |
| Forma Inserto    |                       |         |           |           |           |           |                 |          |          |
| Altura Corter    | 1~3mm                 | 1~3mm   | 0.7~2.0mm | 0.7~2.0mm | 1.5~2.5mm | 1.5~2.5mm | 2~4mm           | 2~3mm    | 3.18mm   |
| ØDmax            | Ø18                   | Ø18     | Ø16       | Ø16       | Ø32       | Ø32       | Tmax 8.0        | Tmax 8.5 | Tmax 8.0 |
| Página           | B125                  | B125    | B122      | B122      | B129      | B129      | B125            | B125     | B122     |

| Especificaciones  | 3 Roscado                       |                                 |
|-------------------|---------------------------------|---------------------------------|
| Portalinserto     | SXGNR/L                         | SBHR/L                          |
| Inserto           | ST                              | SBT                             |
| Tam. Porta        | 10~20mm                         | 10~16mm                         |
| Forma Inserto     |                                 |                                 |
| Rango de tornillo | Rango de paso 0.5~1.5 / 1.5~3.0 | Rango de paso 0.2~1.5 / 1.0~2.0 |
| Inserto           | B125                            | B122                            |

| Especificaciones | 4 Torneado Externo y Copiado |        |         |         | 5 Torneado Externo y Careado |         |         |
|------------------|------------------------------|--------|---------|---------|------------------------------|---------|---------|
| Portalinserto    | SDJCR/L                      | SDNCN  | SVJBR/L | SVJCR/L | SCACR/L                      | SCLCR/L | STACR/L |
| Inserto          | DC□T                         | DC□T   | VB□T    | VC□T    | CC□T                         | CC□T    | TC□T    |
| Tam. Porta       | 8~16mm                       | 8~16mm | 10~16mm | 10~16mm | 8~16mm                       | 8~16mm  | 8~10mm  |
| Forma Inserto    |                              |        |         |         |                              |         |         |
| Característica   | Offset "0"                   |        |         |         | Offset "0"                   |         |         |
| Página           | B113                         | B114   | B115    | B115    | B113                         | B113    | B114    |

| Especificaciones     | 6 Torneado interior (Interior) |         |         |         |           |
|----------------------|--------------------------------|---------|---------|---------|-----------|
| Portalinserto        | SCLCR/L                        | STUBR/L | STUPR/L | SWUBR/L | MSB       |
| Inserto              | CC□T                           | TB□T    | TP□T    | WB□T    | -         |
| Diámetro de la barra | Ø4~Ø10                         | Ø8      | Ø8      | Ø5~Ø8   | Ø4~Ø6     |
| Forma Inserto        |                                |         |         |         |           |
| ØDmin                | Ø5                             | Ø8      | Ø10     | Ø5.5    | Ø3.2      |
| Página               | B214                           | B214    | B215    | B216    | B132~B136 |

## Auto Tools (Tipo ISO)

- Insertos ISO para tornos automáticos.
- Forma R precisa con el uso de tolerancia inferior de la nariz R
- Clase de tolerancia lo suficientemente precisa como para no tener que ajustar herramientas con el uso de la altura del filo de precisión
- Hoja afilada para un excelente control de viruta y rugosidad de la superficie con baja fuerza de corte
- Herramientas de alta precisión para instrumentos eléctricos / electrónicos y instrumentos médicos



### 🔄 Codificación de Insertos (Tipo ISO)




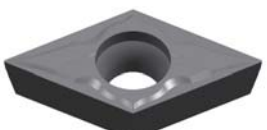
### 🔄 Rompeviruta KF / KM, rectificado para ranurado

- Rompevirutas con filo afilado
- Insertos de alta precisión de tolerancia clase E con radio de punta preciso

| KF  | KM   |
|---|--|
|  <ul style="list-style-type: none"> <li>• Para el acabado</li> <li>• Baja carga de corte con afilado los bordes de corte</li> <li>• Mayor vida útil de la herramienta debido a una menor Resistencia a la evacuación de viruta en alta velocidad</li> <li>• Excelente rugosidad superficial</li> </ul> |  <ul style="list-style-type: none"> <li>• Para corte mediano a refinamiento</li> <li>• Mejor flujo de viruta debido al ancho bolsillos de chip</li> <li>• Mayor vida útil de la herramienta y mejor acción de corte debido a evacuación de viruta mejorada</li> <li>• Excelente rugosidad superficial</li> </ul> |

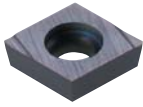
### 🔄 Rompe virutas VP1/MS

- Rompevirutas exclusivo para materiales difíciles de cortar, como aleación de titanio, Inconel, acero inoxidable, etc.
- Reducción al mínimo del calor de corte al reducir el área de contacto entre las virutas y la superficie del rastrillo con el uso de una cuchilla positiva alta

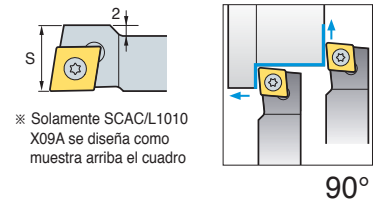
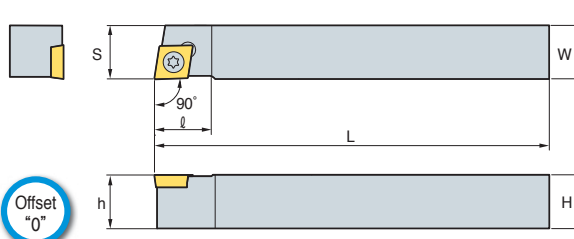
| VP1  | MS   |
|--|--|
|  <ul style="list-style-type: none"> <li>• Filo de corte resistente para operaciones intermedias</li> <li>• El rompevirutas presenta unos canales con un ancho óptimo garantizando un buen mecanizado en distintas profundidades de corte</li> </ul> |  <ul style="list-style-type: none"> <li>• Buen acabado superficial en operaciones intermedias</li> <li>• Previene la soldadura de material o filo de aportación en mecanizado de titanio</li> <li>• Aumento de la evacuación de virutas en mecanizado a velocidades elevadas de avance</li> <li>• Protección del filo debido a la geometría diseñada para una buena evacuación de virutas</li> </ul> |



# SCACR/L



CC□T

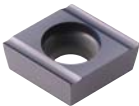


• Inserto tipo R (mm)

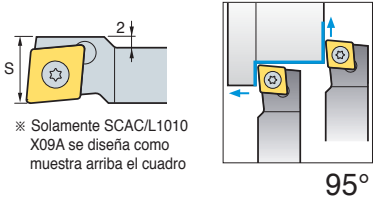
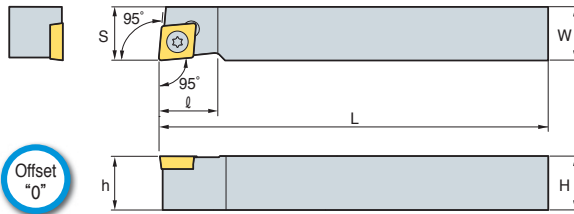
| Designación       | H  | W  | L   | S  | h  | l  | Inserto    | Tornillo  | Llave |
|-------------------|----|----|-----|----|----|----|------------|-----------|-------|
| SCACR/L 0808-X06A | 8  | 8  | 120 | 8  | 8  | 10 | CC□T0602□□ | FTKA02565 | TW07P |
| 1010-X06A         | 10 | 10 | 120 | 10 | 10 | 10 |            |           |       |
| 1010-X09A         | 10 | 10 | 120 | 12 | 10 | 13 |            |           |       |
| 1212-X09A         | 12 | 12 | 120 | 12 | 12 | 16 | CC□T09T3□□ | FTKA0410  | TW15P |
| 1616-X09A         | 16 | 16 | 120 | 16 | 16 | 16 |            |           |       |

➔ Insertos Aplicables B66~B69, B91

# SCLCR/L



CC□T

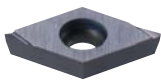


• Inserto tipo R (mm)

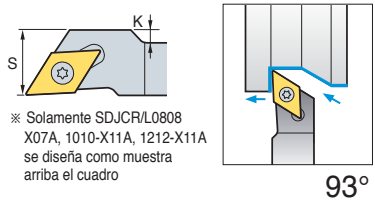
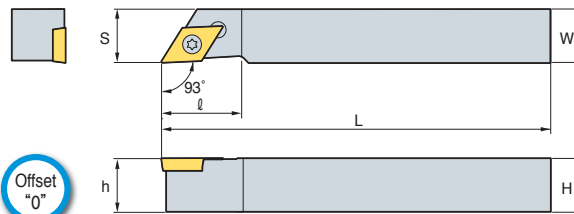
| Designación       | H  | W  | L   | S  | h  | l  | Inserto    | Tornillo  | Llave |
|-------------------|----|----|-----|----|----|----|------------|-----------|-------|
| SCLCR/L 0808-X06A | 8  | 8  | 120 | 8  | 8  | 10 | CC□T0602□□ | FTKA02565 | TW07P |
| 1010-X06A         | 10 | 10 | 120 | 10 | 10 | 10 |            |           |       |
| 1010-X09A         | 10 | 10 | 120 | 12 | 10 | 13 |            |           |       |
| 1212-X09A         | 12 | 12 | 120 | 12 | 12 | 16 | CC□T09T3□□ | FTKA0410  | TW15P |
| 1616-X09A         | 16 | 16 | 120 | 16 | 16 | 16 |            |           |       |

➔ Insertos Aplicables B66~B69, B91

# SDJCR/L



DC□T



• Inserto tipo R (mm)

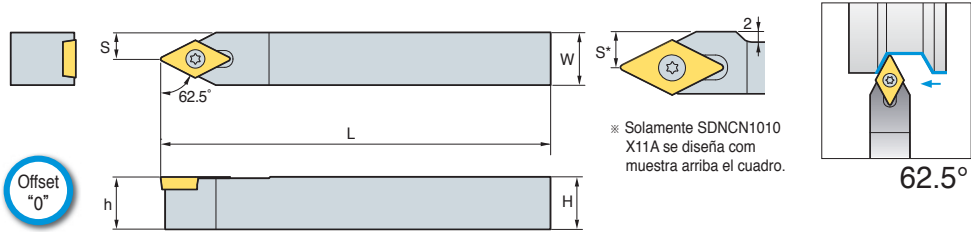
| Designación       | H  | W  | L   | S  | h  | K | l  | Inserto    | Tornillo  | Llave |
|-------------------|----|----|-----|----|----|---|----|------------|-----------|-------|
| SDJCR/L 0808-X07A | 8  | 8  | 120 | 10 | 8  | 2 | 18 | DC□T0702□□ | FTKA02565 | TW07P |
| 1010-X07A         | 10 | 10 | 120 | 10 | 10 | - | 15 |            |           |       |
| 1010-X11A         | 10 | 10 | 120 | 14 | 10 | 4 | 18 |            |           |       |
| 1212-X11A         | 12 | 12 | 120 | 14 | 12 | 2 | 18 | DC□T11T3□□ | FTKA0410  | TW15P |
| 1616-X11A         | 16 | 16 | 120 | 16 | 16 | - | 22 |            |           |       |

➔ Insertos Aplicables B71~B73, B92

## SDNCN



DC□T

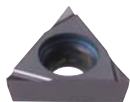


• Inserto tipo R (mm)

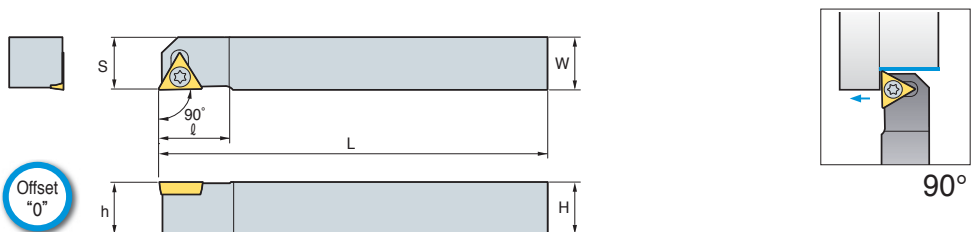
| Designación | H         | W  | L   | S   | h  | Inserto    | Tornillo   | Llave     |        |
|-------------|-----------|----|-----|-----|----|------------|------------|-----------|--------|
| SDNCN       | 0808-X07A | 8  | 8   | 120 | 4  | 8          | DC□T0702□□ | FTKA02565 | TW 07P |
|             | 1010-X07A | 10 | 10  | 120 | 5  | 10         |            |           |        |
|             | 1010-X11A | 10 | 10  | 120 | 7  | 10         |            |           |        |
|             | 1212-X11A | 12 | 12  | 120 | 6  | 12         |            |           |        |
| 1616-X11A   | 16        | 16 | 120 | 8   | 16 | DC□T11T3□□ | FTKA0410   | TW 15P    |        |

➔ Insertos Aplicables B71~B73, B92

## STACR/L



TC□T



• Inserto tipo R (mm)

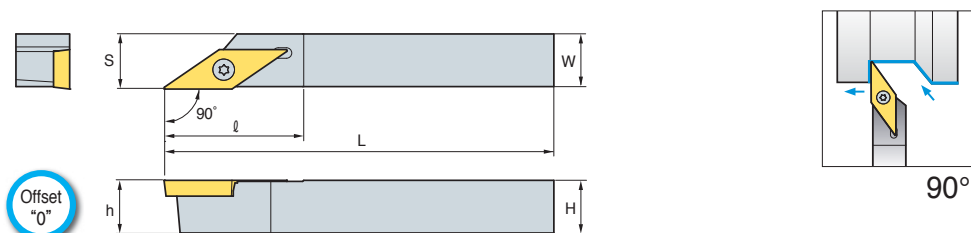
| Designación | H         | W  | L  | S   | h  | K  | ℓ | Inserto    | Tornillo  | Llave  |
|-------------|-----------|----|----|-----|----|----|---|------------|-----------|--------|
| STACR/L     | 0808-X08A | 8  | 8  | 120 | 8  | 8  | 1 | TC□T0802□□ | FTNA 0206 | TW 06P |
|             | 1010-X08A | 10 | 10 | 120 | 10 | 10 | 3 |            |           |        |

➔ Insertos Aplicables B79~B80

## SVACR/L



VC□□



• Inserto tipo R (mm)

| Designación | H         | W  | L  | S   | h    | ℓ  | Inserto       | Tornillo   | Llave  |
|-------------|-----------|----|----|-----|------|----|---------------|------------|--------|
| SVACR/L     | 0808-X12A | 8  | 8  | 120 | 8.5  | 8  | VP□T1203□□    | FTKA 02565 | TW 07P |
|             | 1010-X12A | 10 | 10 | 120 | 10.5 | 10 |               |            |        |
|             | 1212-X12A | 12 | 12 | 120 | 12.5 | 12 |               |            |        |
|             | 1616-X12A | 16 | 16 | 120 | 16.5 | 16 |               |            |        |
| SVACR/L     | 0808-X12C | 8  | 8  | 120 | 8.5  | 8  | VC□X1203□□R/L | FTKA 02565 | TW 07P |
|             | 1010-X12C | 10 | 10 | 120 | 10.5 | 10 |               |            |        |
|             | 1212-X12C | 12 | 12 | 120 | 12.5 | 12 |               |            |        |
|             | 1616-X12C | 16 | 16 | 120 | 16.5 | 16 |               |            |        |

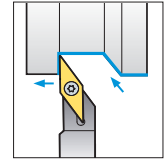
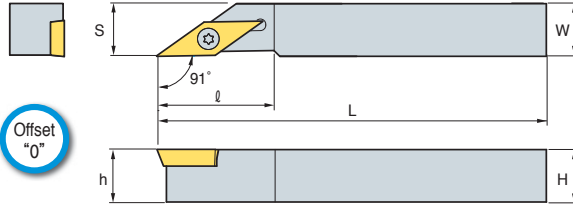
➔ Insertos Aplicables B86~B87, B97



# SVAPR/L



VP□T



91°

• Inserto tipo R  
(mm)

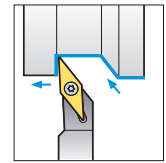
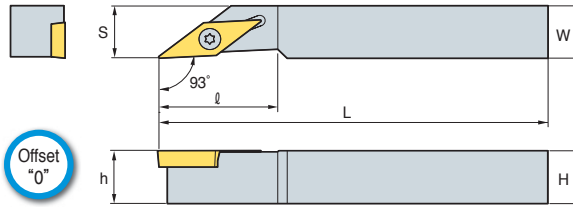
| Designación       | H  | W  | L   | S  | h  | ℓ  | Inserto    | Tornillo   | Llave  |
|-------------------|----|----|-----|----|----|----|------------|------------|--------|
| SVAPR/L 0808-X11A | 8  | 8  | 120 | 8  | 8  | 22 | VP□T1103□□ | FTKA 02565 | TW 07P |
| 1010-X11A         | 10 | 10 | 120 | 10 | 10 | 22 |            |            |        |
| 1212-X11A         | 12 | 12 | 120 | 12 | 12 | 22 |            |            |        |
| 1616-X11A         | 16 | 16 | 120 | 16 | 16 | 24 |            |            |        |

➔ Insertos Aplicables B88

# SVJBR/L



VB□T



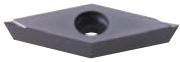
93°

• Inserto tipo R  
(mm)

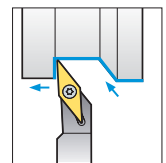
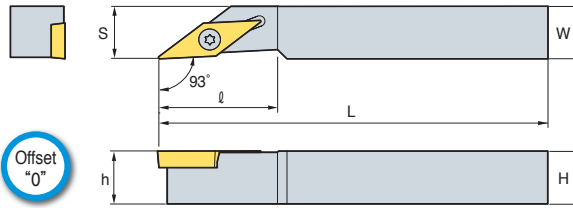
| Designación       | H  | W  | L   | S  | h  | ℓ  | Inserto    | Tornillo   | Llave  |
|-------------------|----|----|-----|----|----|----|------------|------------|--------|
| SVJBR/L 1010-X11A | 10 | 10 | 120 | 10 | 10 | 22 | VB□T1103□□ | FTKA 02565 | TW 07P |
| 1212-X11A         | 12 | 12 | 120 | 12 | 12 | 22 |            |            |        |
| 1616-X11A         | 16 | 16 | 120 | 16 | 16 | 24 |            |            |        |

➔ Insertos Aplicables B84~B85, B96

# SVJCR/L



VC□T



93°

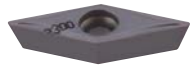
• Inserto tipo R  
(mm)

| Designación       | H  | W  | L   | S  | h  | ℓ  | Inserto    | Tornillo   | Llave  |
|-------------------|----|----|-----|----|----|----|------------|------------|--------|
| SVJCR/L 1010-X11A | 10 | 10 | 120 | 10 | 10 | 22 | VC□T1103□□ | FTKA 02565 | TW 07P |
| 1212-X11A         | 12 | 12 | 120 | 12 | 12 | 22 |            |            |        |
| 1616-X11A         | 16 | 16 | 120 | 16 | 16 | 24 |            |            |        |
| 0810-X12A         | 8  | 10 | 120 | 10 | 8  | 26 |            |            |        |
| SVJCR/L 1010-X12A | 10 | 10 | 120 | 10 | 10 | 26 | VP□T1203□□ | FTKA 02565 | TW 07P |
| 1212-X12A         | 12 | 12 | 120 | 12 | 12 | 26 |            |            |        |
| 1616-X12A         | 16 | 16 | 120 | 16 | 16 | 26 |            |            |        |
| SVJCR/L 0810-X12C | 8  | 10 | 120 | 10 | 8  | 26 |            |            |        |
| 1010-X12C         | 10 | 10 | 120 | 10 | 10 | 26 |            |            |        |
| 1212-X12C         | 12 | 12 | 120 | 12 | 12 | 26 |            |            |        |
| 1616-X12C         | 16 | 16 | 120 | 16 | 16 | 26 |            |            |        |

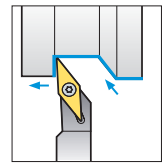
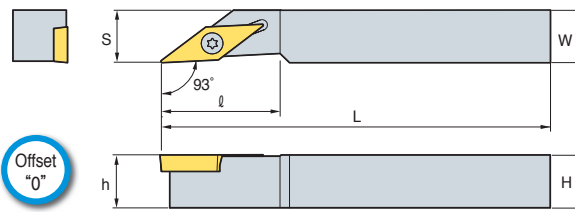
➔ Insertos Aplicables B86~B87, B97

# B Auto Tools (Tipo ISO)

## SVJPR/L



VP□T



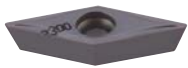
93°

• Inserto tipo R  
(mm)

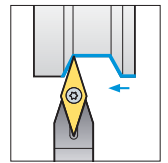
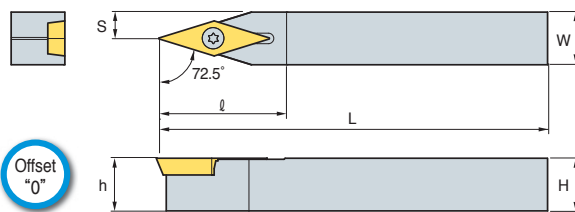
| Designación       | H  | W  | L   | S  | h  | ℓ  | Inserto    | Tornillo   | Llave  |
|-------------------|----|----|-----|----|----|----|------------|------------|--------|
| SVJPR/L 0810-X11A | 8  | 10 | 120 | 8  | 10 | 22 | VP□T1103□□ | FTKA 02565 | TW 07P |
| 1010-X11A         | 10 | 10 | 120 | 10 | 10 | 22 |            |            |        |
| 1212-X11A         | 12 | 12 | 120 | 12 | 12 | 22 |            |            |        |
| 1616-X11A         | 16 | 16 | 120 | 16 | 16 | 24 |            |            |        |

➔ Insertos Aplicables B88

## SVVPN



VP□T



72.5°

• Inserto tipo R  
(mm)

| Designación     | H  | W  | L   | S | h  | ℓ  | Inserto    | Tornillo   | Llave  |
|-----------------|----|----|-----|---|----|----|------------|------------|--------|
| SVVPN 0808-X11A | 8  | 8  | 120 | 4 | 8  | 24 | VP□T1103□□ | FTKA 02565 | TW 07P |
| 1010-X11A       | 10 | 10 | 120 | 5 | 10 | 24 |            |            |        |
| 1212-X11A       | 12 | 12 | 120 | 6 | 12 | 24 |            |            |        |
| 1616-X11A       | 16 | 16 | 120 | 8 | 16 | 28 |            |            |        |

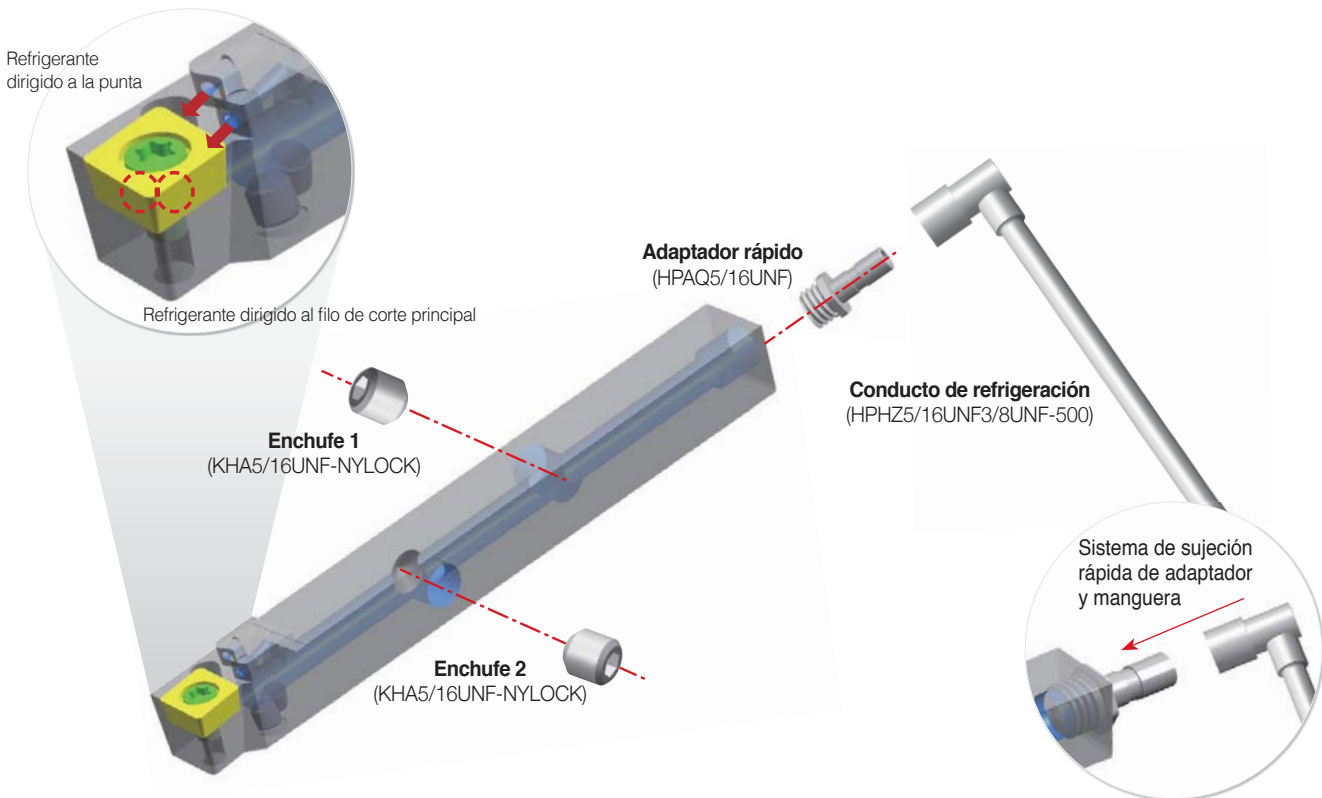
➔ Insertos Aplicables B88



# Auto Tools (KHP Coolant)




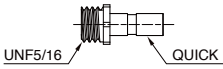
- Refrigerante de alta presión KORLOY para una alta productividad del torno automático
- Soporte de refrigerante de alta presión para una alta productividad del mecanizado preciso de piezas en torno automático
- Refrigeración mejorada y control de viruta debido a la inyección de refrigerante a través de dos orificios hasta el borde de corte principal y la punta R concéntricamente
- Dos orificios con diferentes ángulos de inyección entre sí aumentan el control de viruta
- El sistema de sujeción fácil de adaptador de manguera rápida y manguera rápida proporciona un uso conveniente

## Structure of holder

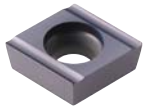


※ El adaptador rápido y la manguera rápida no está incluido en la compra del porta (Compra por separado)

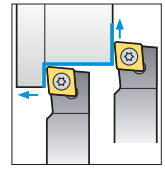
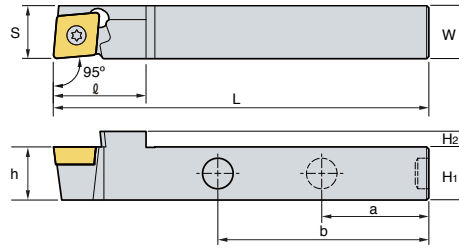
## Partes

|                 | Forma  | Configuración   | Longitud | Q Clamp Allen (dimensiones) | S clamp (dimensiones sujeción) |
|-----------------|--|---|----------|-----------------------------|--------------------------------|
| Rápido y recto  | HPHZ5/16UNF3/8UNF-500<br> | <br>UNF3/8<br>QUICK | 500 mm   | UNF5/16                     | -                              |
| Adaptadr rápido | HPAQ5/16UNF<br>           | <br>UNF5/16<br>QUICK | 18.5 mm  | UNF5/16                     |                                |

## SCLCR/L



CC□T



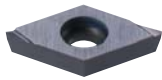
95°

• Inserto tipo R (mm)

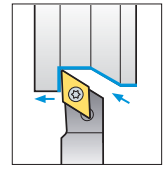
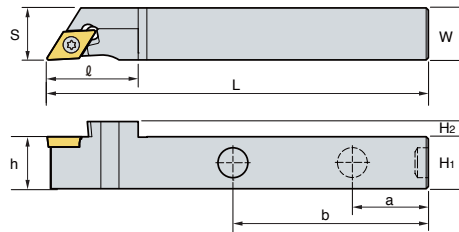
| Designación           | H <sub>1</sub> | H <sub>2</sub> | W  | L   | S  | h  | ℓ  | a  | b  | Inserto    | Tornillo | Enchufe        | Llave |
|-----------------------|----------------|----------------|----|-----|----|----|----|----|----|------------|----------|----------------|-------|
| SCLCR/L 1212-X09A-KHP | 12             | 3.5            | 12 | 120 | 12 | 12 | 21 | 40 | 70 | CC□T09T3□□ | FTKA0410 | KHA0404-NYLOCK | TW15P |

➔ Insertos Aplicables B66~69, B91

## SDJCR/L



DC□T



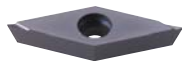
93°

• Inserto tipo R (mm)

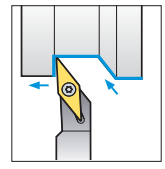
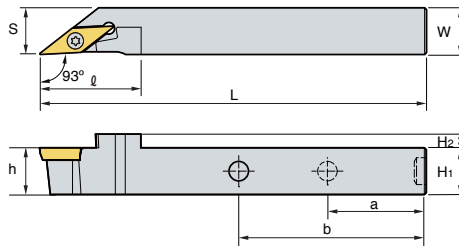
| Designación           | H <sub>1</sub> | H <sub>2</sub> | W  | L   | S  | h  | ℓ    | a  | b  | Inserto    | Tornillo  | Enchufe        | Llave |
|-----------------------|----------------|----------------|----|-----|----|----|------|----|----|------------|-----------|----------------|-------|
| SDJCR/L 1212-X07A-KHP | 12             | 3.5            | 12 | 120 | 12 | 12 | 21   | 40 | 70 | DC□T0702□□ | FTKA02565 | KHA0404-NYLOCK | TW07P |
| 1212-X11A-KHP         | 12             | 3.5            | 12 | 120 | 14 | 12 | 29.8 | 40 | 70 | DC□T11T3□□ | FTKA0408  | KHA0404-NYLOCK | TW15P |

➔ Insertos Aplicables B71~73, B92

## SVJCR/L



VC□□



93°

• Inserto tipo R (mm)

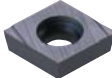
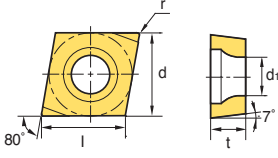
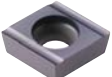
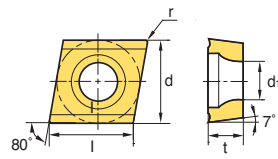
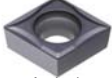
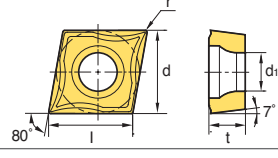

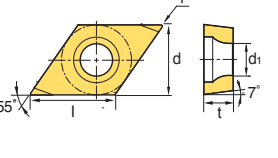

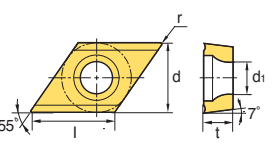

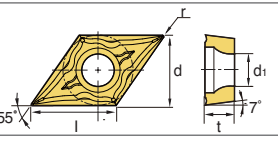

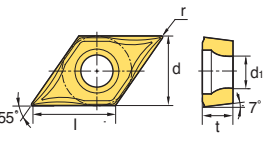
| Designación           | H <sub>1</sub> | H <sub>2</sub> | W  | L   | S  | h  | ℓ  | a  | b  | Inserto    | Tornillo  | Enchufe        | Llave |
|-----------------------|----------------|----------------|----|-----|----|----|----|----|----|------------|-----------|----------------|-------|
| SVJCR/L 1212-X11A-KHP | 12             | 3.5            | 12 | 120 | 12 | 12 | 26 | 40 | 70 | VC□T1103□□ | FTKA02565 | KHA0404-NYLOCK | TW07P |
| 1212-X12A-KHP         | 12             | 3.5            | 12 | 120 | 12 | 12 | 26 | 40 | 70 | VC□□1203□□ | FTKA02565 | KHA0404-NYLOCK | TW07P |

➔ Insertos Aplicables B86~87, B97






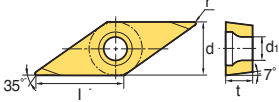

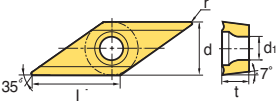

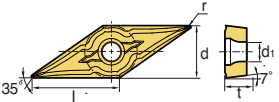

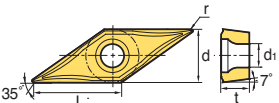

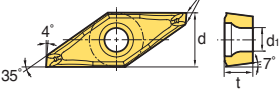

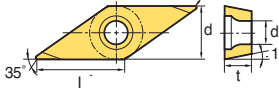

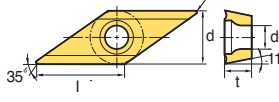

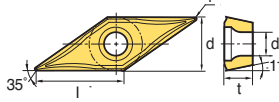
## Insertos

| Forma   | Designación   | Recubrimiento |        |        |        | Sin Recubrimiento<br>H01 | Dimensiones (mm) |       |      |       |                | Configuración   |
|---|---------------|---------------|--------|--------|--------|--------------------------|------------------|-------|------|-------|----------------|---|
|   |               | PC5300        | PC8105 | PC8110 | PC8115 |                          | l                | d     | t    | r     | d <sub>1</sub> |   |
| <br>Acabado (alta precisión)                 | 0602005MFR-KF | ●             |        | ●      |        |                          | 6.6              | 6.35  | 2.38 | <0.05 | 2.8            |    |
|   | 060201MFR-KF  | ●             |        | ●      |        |                          | 6.4              | 6.35  | 2.38 | <0.1  | 2.8            |   |
|   | 060202MFR-KF  | ●             |        | ●      |        |                          | 6.2              | 6.35  | 2.38 | <0.2  | 2.8            |   |
|   | 09T3005MFR-KF | ●             |        | ●      |        |                          | 9.8              | 9.525 | 3.97 | <0.05 | 4.4            |   |
|   | 09T301MFR-KF  | ●             |        | ●      |        |                          | 9.6              | 9.525 | 3.97 | <0.1  | 4.4            |   |
|   | 09T302MFR-KF  | ●             |        | ●      |        |                          | 9.2              | 9.525 | 3.97 | <0.2  | 4.4            |   |
|   | 0602005MFL-KF | ●             |        | ●      |        |                          | 6.6              | 6.35  | 2.38 | <0.05 | 2.8            |   |
|   | 060201MFL-KF  | ●             |        | ●      |        |                          | 6.4              | 6.35  | 2.38 | <0.1  | 2.8            |   |
|   | 060202MFL-KF  | ●             |        | ●      |        |                          | 6.2              | 6.35  | 2.38 | <0.2  | 2.8            |   |
|   | 09T3005MFL-KF | ●             |        | ●      |        |                          | 9.8              | 9.525 | 3.97 | <0.05 | 4.4            |   |
|   | 09T301MFL-KF  | ●             |        | ●      |        |                          | 9.6              | 9.525 | 3.97 | <0.1  | 4.4            |   |
|   | 09T302MFL-KF  | ●             |        | ●      |        |                          | 9.2              | 9.525 | 3.97 | <0.2  | 4.4            |   |
| <br>Corte medio a acabado (Alta precisión)   | 0602005MFR-KM | ●             |        | ●      |        |                          | 6.6              | 6.35  | 2.38 | <0.05 | 2.8            |    |
|   | 060201MFR-KM  | ●             |        | ●      |        |                          | 6.4              | 6.35  | 2.38 | <0.1  | 2.8            |   |
|   | 060202MFR-KM  | ●             |        | ●      |        |                          | 6.2              | 6.35  | 2.38 | <0.2  | 2.8            |   |
|   | 09T3005MFR-KM | ●             |        | ●      |        |                          | 9.8              | 9.525 | 3.97 | <0.05 | 4.4            |   |
|   | 09T301MFR-KM  | ●             |        | ●      |        |                          | 9.6              | 9.525 | 3.97 | <0.1  | 4.4            |   |
|   | 09T302MFR-KM  | ●             |        | ●      |        |                          | 9.2              | 9.525 | 3.97 | <0.2  | 4.4            |   |
|   | 0602005MFL-KM | ●             |        | ●      |        |                          | 6.6              | 6.35  | 2.38 | <0.05 | 2.8            |   |
|   | 060201MFL-KM  | ●             |        | ●      |        |                          | 6.4              | 6.35  | 2.38 | <0.1  | 2.8            |   |
|   | 060202MFL-KM  | ●             |        | ●      |        |                          | 6.2              | 6.35  | 2.38 | <0.2  | 2.8            |   |
|   | 09T3005MFL-KM | ●             |        | ●      |        |                          | 9.8              | 9.525 | 3.97 | <0.05 | 4.4            |   |
|   | 09T301MFL-KM  | ●             |        | ●      |        |                          | 9.6              | 9.525 | 3.97 | <0.1  | 4.4            |   |
|   | 09T302MFL-KM  | ●             |        | ●      |        |                          | 9.2              | 9.525 | 3.97 | <0.2  | 4.4            |   |
| <br>Acabado (alta precisión)               | 060201MFN-VP1 | ●             |        | ●      |        |                          | 6.6              | 6.35  | 2.38 | <0.1  | 2.8            |   |
|   | 060202MFN-VP1 | ●             |        | ●      |        |                          | 6.4              | 6.35  | 2.38 | <0.2  | 2.8            |   |
|   | 060204MFN-VP1 | ●             |        | ●      |        |                          | 6.2              | 6.35  | 2.38 | <0.4  | 2.8            |   |
|   | 09T301MFN-VP1 | ●             |        | ●      |        |                          | 9.8              | 9.525 | 3.97 | <0.1  | 4.4            |   |
|   | 09T302MFN-VP1 | ●             |        | ●      |        |                          | 9.6              | 9.525 | 3.97 | <0.2  | 4.4            |   |
|   | 09T304MFN-VP1 | ●             |        | ●      |        |                          | 9.2              | 9.525 | 3.97 | <0.4  | 4.4            |   |
| <br>Acabado (alta precisión)               | 0702005MFR-KF | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.05 | 2.8            |  |
|   | 070201MFR-KF  | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.1  | 2.8            |   |
|   | 070202MFR-KF  | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.2  | 2.8            |   |
|   | 11T3005MFR-KF | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.05 | 4.4            |   |
|   | 11T301MFR-KF  | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.1  | 4.4            |   |
|   | 11T302MFR-KF  | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.2  | 4.4            |   |
|   | 0702005MFL-KF | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.05 | 2.8            |   |
|   | 070201MFL-KF  | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.1  | 2.8            |   |
|   | 070202MFL-KF  | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.2  | 2.8            |   |
|   | 11T3005MFL-KF | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.05 | 4.4            |   |
|   | 11T301MFL-KF  | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.1  | 4.4            |   |
|   | 11T302MFL-KF  | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.2  | 4.4            |   |
| <br>Corte medio a acabado (Alta precisión) | 0702005MFR-KM | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.05 | 2.8            |  |
|   | 070201MFR-KM  | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.1  | 2.8            |   |
|   | 070202MFR-KM  | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.2  | 2.8            |   |
|   | 11T3005MFR-KM | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.05 | 4.4            |   |
|   | 11T301MFR-KM  | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.1  | 4.4            |   |
|   | 11T302MFR-KM  | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.2  | 4.4            |   |
|   | 0702005MFL-KM | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.05 | 2.8            |   |
|   | 070201MFL-KM  | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.1  | 2.8            |   |
|   | 070202MFL-KM  | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.2  | 2.8            |   |
|   | 11T3005MFL-KM | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.05 | 4.4            |   |
|   | 11T301MFL-KM  | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.1  | 4.4            |   |
|   | 11T302MFL-KM  | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.2  | 4.4            |   |
| <br>Medio (alta precisión)                 | 11T301MFN-MS  | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.1  | 4.4            |  |
|   | 11T302MFN-MS  | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.2  | 4.4            |   |
|   | 11T304MFN-MS  | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.4  | 4.4            |   |
| <br>Acabado (alta precisión)               | 070201MFN-VP1 | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.1  | 2.8            |  |
|   | 070202MFN-VP1 | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.2  | 2.8            |   |
|   | 070204MFN-VP1 | ●             |        | ●      |        |                          | 7.8              | 6.35  | 2.38 | <0.4  | 2.8            |   |
|   | 11T301MFN-VP1 | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.1  | 4.4            |   |
|   | 11T302MFN-VP1 | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.2  | 4.4            |   |
|   | 11T304MFN-VP1 | ●             |        | ●      |        |                          | 11.6             | 9.525 | 3.97 | <0.4  | 4.4            |   |

● : En Almacén



## Insertos

| Forma   | Designación   | Recubierto |        |        |        | Sin Recubrimiento<br>H01 | Dimensiones (mm) |      |      |       |                | Configuración   |
|---|---------------|------------|--------|--------|--------|--------------------------|------------------|------|------|-------|----------------|---|
|   |               | PC5300     | PC8105 | PC8110 | PC8115 |                          | l                | d    | t    | r     | d <sub>1</sub> |   |
| <br>Acabado (alta precisión)                 | 1103005MFR-KF | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.05 | 2.8            |    |
|   | 110301MFR-KF  | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.1  | 2.8            |   |
|   | 110302MFR-KF  | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.2  | 2.8            |   |
|   | 1103005MFL-KF | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.05 | 2.8            |   |
|   | 110301MFL-KF  | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.1  | 2.8            |   |
|   | 110302MFL-KF  | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.2  | 2.8            |   |
| <br>Corte medio a acabado (Alta precisión)   | 1103005MFR-KM | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.05 | 2.8            |    |
|   | 110301MFR-KM  | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.1  | 2.8            |   |
|   | 110302MFR-KM  | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.2  | 2.8            |   |
|   | 1103005MFL-KM | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.05 | 2.8            |   |
|   | 110301MFL-KM  | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.1  | 2.8            |   |
|   | 110302MFL-KM  | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.2  | 2.8            |   |
| <br>Corte medio a acabado (Alta precisión)   | 1203008FN-MS  |            |        |        |        |                          | 11.0             | 7.50 | 3.00 | <0.08 | 2.8            |    |
|   | 120301FN-MS   |            |        |        |        |                          | 11.0             | 7.50 | 3.00 | <0.1  | 2.8            |   |
|   | 120302FN-MS   |            |        |        |        |                          | 11.0             | 7.50 | 3.00 | <0.2  | 2.8            |   |
|   | 120304FN-MS   |            |        |        |        |                          | 11.0             | 7.50 | 3.00 | <0.4  | 2.8            |   |
| <br>Acabado (alta precisión)               | 110301MFN-VP1 | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.1  | 2.8            |  |
|   | 110302MFN-VP1 | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.2  | 2.8            |   |
|   | 110304MFN-VP1 | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.4  | 2.8            |   |
| <br>Acabado (alta precisión)               | 120300MFR-VP1 | ●          |        | ●      |        |                          | 11.0             | 7.50 | 3.18 | <0.0  | 2.8            |  |
|   | 120301MFR-VP1 | ●          |        | ●      |        |                          | 11.0             | 7.50 | 3.18 | <0.1  | 2.8            |   |
|   | 120302MFR-VP1 | ●          |        | ●      |        |                          | 11.0             | 7.50 | 3.18 | <0.2  | 2.8            |   |
|   | 120304MFR-VP1 | ●          |        | ●      |        |                          | 11.0             | 7.50 | 3.18 | <0.4  | 2.8            |   |
|   | 120308MFR-VP1 | ●          |        | ●      |        |                          | 11.0             | 7.50 | 3.18 | <0.8  | 2.8            |   |
| <br>Acabado (alta precisión)               | 0802005MFR-KF | ●          |        | ●      |        |                          | 8.0              | 6.35 | 2.38 | <0.1  | 2.3            |  |
|   | 080201MFR-KF  | ●          |        | ●      |        |                          | 8.0              | 6.35 | 2.38 | <0.1  | 2.3            |   |
|   | 080202MFR-KF  | ●          |        | ●      |        |                          | 8.0              | 6.35 | 2.38 | <0.2  | 2.3            |   |
|   | 0802005MFL-KF | ●          |        | ●      |        |                          | 8.0              | 6.35 | 2.38 | <0.1  | 2.3            |   |
|   | 080201MFL-KF  | ●          |        | ●      |        |                          | 8.0              | 6.35 | 2.38 | <0.1  | 2.3            |   |
|   | 080202MFL-KF  | ●          |        | ●      |        |                          | 8.0              | 6.35 | 2.38 | <0.2  | 2.3            |   |
| <br>Corte medio a acabado (Alta precisión) | 0802005MFR-KM | ●          |        | ●      |        |                          | 8.0              | 6.35 | 2.38 | <0.1  | 2.3            |  |
|   | 080201MFR-KM  | ●          |        | ●      |        |                          | 8.0              | 6.35 | 2.38 | <0.1  | 2.3            |   |
|   | 080202MFR-KM  | ●          |        | ●      |        |                          | 8.0              | 6.35 | 2.38 | <0.2  | 2.3            |   |
|   | 0802005MFL-KM | ●          |        | ●      |        |                          | 8.0              | 6.35 | 2.38 | <0.1  | 2.3            |   |
|   | 080201MFL-KM  | ●          |        | ●      |        |                          | 8.0              | 6.35 | 2.38 | <0.1  | 2.3            |   |
|   | 080202MFL-KM  | ●          |        | ●      |        |                          | 8.0              | 6.35 | 2.38 | <0.2  | 2.3            |   |
| <br>Acabado (alta precisión)               | 110301MFN-VP1 | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.1  | 2.8            |  |
|   | 110302MFN-VP1 | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.2  | 2.8            |   |
|   | 110304MFN-VP1 | ●          |        | ●      |        |                          | 11.0             | 6.35 | 3.18 | <0.4  | 2.8            |   |

● : En Almacen



# Auto Tools (Tipo Blade) **new**

- Inserto de cuchilla para tornos automáticos
- Para el mecanizado exterior de piezas pequeñas precisas
- 4 tipos: SSB (para dar marcha atrás), SGB (para ranurado), SBT (para roscar), SBC (para cortar)
- Uso conveniente de un soporte para todos los insertos de cuchillas
- Soporte exclusivo para la acción de corte cercano al husillo secundario

## ➤ Codificación de Insertos (Tipo Blade)

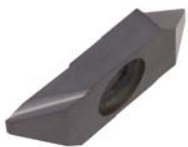
|                                       |                    |                           |   |                         |                            |  |  |   |     |
|---------------------------------------|--------------------|---------------------------|---|-------------------------|----------------------------|--|--|---|-----|
| <b>Torneado</b><br>(Torneado Trasero) | SB                 | B                         | R   | 25                      | 10                         |  |  |   |     |
|                                       | <u>Small blade</u> | <u>Torneado posterior</u> | <u>Mano</u><br>R: Derecho<br>L: Izquierdo | <u>Longitud inserto</u> | <u>Radio de punto</u>      |  |  |   |     |
| <b>Ranurado</b>                       | SB                 | G                         | R   | 25                      | 20                         |  |  |   |     |
|                                       | <u>Small blade</u> | <u>Ranurado</u>           | <u>Mano</u><br>R: Derecho<br>L: Izquierdo | <u>Longitud inserto</u> | <u>Ancho filo de corte</u> |  |  |   |     |
| <b>Roscado</b>                        | SB                 | T                         | R   | 25                      | 60                         | -  | N  | - | 010 |
|                                       | <u>Small blade</u> | <u>Threading</u>          | <u>Mano</u><br>R: Derecho<br>L: Izquierdo | <u>Longitud inserto</u> | <u>Ángulo de rosca</u>     | <u>Mano de rosca</u><br>R: Derecho L: Izquierdo<br>N: Neutro | <u>Nose radius</u>   |   |     |
| <b>Tronzado</b>                       | SB                 | C                         | R   | 25                      | 20                         | 16   | -  | N |     |
|                                       | <u>Small blade</u> | <u>Tronzado</u>           | <u>Mano</u><br>R: Derecho<br>L: Izquierdo | <u>Longitud inserto</u> | <u>Ancho filo de corte</u> | <u>Máximo diámetro a maquinar</u>                            | <u>Hand of thread</u><br>R: Derecho<br>L: Izquierdo<br>N: Neutro |   |     |

## ➤ Sistema códigos de porta (Tipo Blade)

|                    |                         |   |                     |                    |                         |                           |   |   |
|--------------------|-------------------------|---|---------------------|--------------------|-------------------------|---------------------------|---|---|
| SB                 | H                       | R   | 10                  | 10                 | -                       | K25                       | - | X |
| <u>Small blade</u> | <u>Portaherramienta</u> | <u>Mano</u><br>R: Derecho<br>L: Izquierdo | <u>Altura porta</u> | <u>Ancho porta</u> | <u>Longitud inserto</u> | <u>Husillo secundario</u> |   |   |

## ➤ Tipos de inserto de cuchilla

Possible aplicar varios tipos de insertos de cuchilla a un soporte



**SBB:** For back turning

- Ángulo de entrada: 59°
- Profundidad corte máxima: 4mm
- Radio de punta: : 0.05, 0.1, 0.2 mm



**SBG:** For grooving

- Ancho: 0.5~2.5 mm
- Radio de punta: 0.05 mm



**SBT:** For threading

- Ángulo de entrada: 60°
- Paso: 0.2~1.0 mm
- Radio de punta: 0.05mm



**SBC:** For cut off/Parting

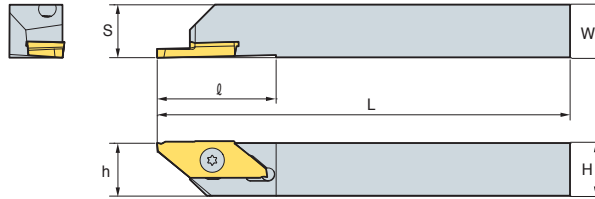
- Ancho de corte: 0.7-2.0
- D max: 16 mm
- Radio de punta: 0.05mm

# B Auto Tools (Tipo Blade)

## SBHR/L



SBBR SBGR  
SBTR SBCR



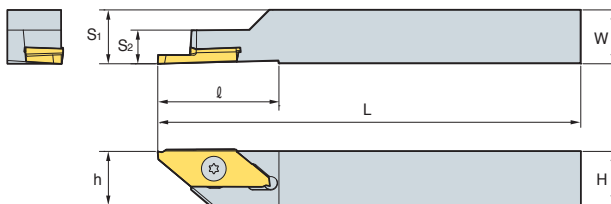
(mm)

| Designación     | H  | W  | L   | S  | h  | l  | Inserto  | Tornillo  | Llave |
|-----------------|----|----|-----|----|----|----|----------|-----------|-------|
| SBHR/L 1010-K25 | 10 | 10 | 125 | 10 | 10 | 27 | SB□R/L25 | FTKA0409S | T9    |
| 1212-K25        | 12 | 12 | 125 | 12 | 12 | 27 |          |           |       |
| 1616-K25        | 16 | 16 | 125 | 16 | 16 | 27 |          |           |       |

## SBHR/L-X (Husillo secundario)



SBBR SBGR  
SBTR SBCR



(mm)

| Designación       | H  | W  | L   | S1 | S2  | h  | l  | Inserto  | Tornillo  | Llave |
|-------------------|----|----|-----|----|-----|----|----|----------|-----------|-------|
| SBHR/L 1010-K25-X | 10 | 10 | 125 | 10 | 7.5 | 10 | 27 | SB□R/L25 | FTKA0407S | T9    |
| 1212-K25-X        | 12 | 12 | 125 | 12 | 7.5 | 12 | 27 |          |           |       |


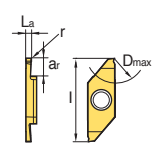
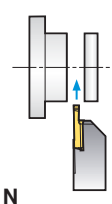
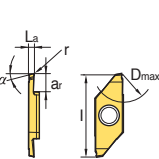
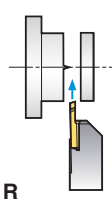
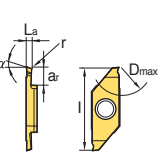
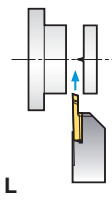
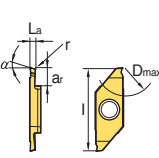
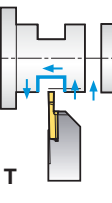
## Insertos

| Aplicación                 | Picture | Designación       | Recubierta |   |        |   | Dimensiones (mm) |          |      |      |     |      |      |       |               |      | Configuración | Dirección Corte |  |
|----------------------------|---------|-------------------|------------|---|--------|---|------------------|----------|------|------|-----|------|------|-------|---------------|------|---------------|-----------------|--|
|                            |         |                   | PC8110     |   | PC5300 |   | l                | $\alpha$ | t    | r    | La  | ar   | f    | D-MAX | Rango de paso |      |               |                 |  |
|                            |         |                   | R          | L | R      | L |                  |          |      |      |     |      |      |       | Min.          | Max. |               |                 |  |
| Torneado Trasero<br>SBBR/L |         | SBBR/L 25005      | ●          | ● | ●      | ● | 25               | 59       | 3.18 | 0.05 | -   | -    | -    | -     | -             | -    | -             |                 |  |
|                            |         | 25010             | ●          | ● | ●      | ● | 25               | 59       | 3.18 | 0.10 | -   | -    | -    | -     | -             | -    | -             |                 |  |
|                            |         | 25020             | ●          | ● | ●      | ● | 25               | 59       | 3.18 | 0.20 | -   | -    | -    | -     | -             | -    | -             |                 |  |
| Ranurado<br>SBGR/L         |         | SBGR/L 2505       | ●          | ● | ●      | ● | 25               | -        | -    | 0.05 | 0.5 | 1.35 | -    | -     | -             | -    | -             |                 |  |
|                            |         | 2510              | ●          | ● | ●      | ● | 25               | -        | -    | 0.05 | 1.0 | 2.75 | -    | -     | -             | -    | -             |                 |  |
|                            |         | 2515              | ●          | ● | ●      | ● | 25               | -        | -    | 0.05 | 1.5 | 3.75 | -    | -     | -             | -    | -             |                 |  |
|                            |         | 2520              | ●          | ● | ●      | ● | 25               | -        | -    | 0.05 | 2.0 | 3.75 | -    | -     | -             | -    | -             |                 |  |
|                            |         | 2525              | ●          | ● | ●      | ● | 25               | -        | -    | 0.05 | 2.5 | 3.75 | -    | -     | -             | -    | -             |                 |  |
| Roscado<br>SBTR/L          |         | SBTR/L 2560-N-005 | ●          | ● | ●      | ● | 25               | -        | -    | 0.05 | -   | -    | 1.59 | -     | 0.2           | 2.0  |               |                 |  |
|                            |         | 2560-N-010        | ●          | ● | ●      | ● | 25               | -        | -    | 0.10 | -   | -    | 1.59 | -     | 1.0           | 2.0  |               |                 |  |
|                            |         | 2560-R-005        | ●          | ● | ●      | ● | 25               | -        | -    | 0.05 | -   | -    | 0.6  | -     | 0.2           | 1.5  |               |                 |  |
|                            |         | 2560-R-010        | ●          | ● | ●      | ● | 25               | -        | -    | 0.10 | -   | -    | 0.6  | -     | 1.0           | 1.5  |               |                 |  |
|                            |         | 2560-L-005        | ●          | ● | ●      | ● | 25               | -        | -    | 0.05 | -   | -    | 0.6  | -     | 0.2           | 1.5  |               |                 |  |
|                            |         | 2560-L-010        | ●          | ● | ●      | ● | 25               | -        | -    | 0.10 | -   | -    | 0.6  | -     | 1.0           | 1.5  |               |                 |  |

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## Insertos KGT

| Aplicación | Picture   | Designación            | Recubierta |   |        |   | Dimensiones (mm) |          |   |      |      |     |   |       |               |      | Configuración   | Dirección Corte  |
|------------|---|------------------------|------------|---|--------|---|------------------|----------|---|------|------|-----|---|-------|---------------|------|---|--|
|            |   |                        | PC8110     |   | PC5300 |   | l                | $\alpha$ | t | r    | La   | ar  | f | D-MAX | Rango de paso |      |   |  |
|            |   |                        | R          | L | R      | L |                  |          |   |      |      |     |   |       | Min.          | Max. |   |  |
| Tronzado   | <br>SBCR/L | <b>SBCR/L 250708-N</b> | ●          | ● | ●      | ● | 25               | 0        | - | 0.05 | 0.70 | 4.3 | - | 8     | -             | -    |    | <br>N   |
|            |   | <b>251012-N</b>        | ●          | ● | ●      | ● | 25               | 0        | - | 0.05 | 1.00 | 6.3 | - | 12    | -             | -    |   |  |
|            |   | <b>251512-N</b>        | ●          | ● | ●      | ● | 25               | 0        | - | 0.05 | 1.50 | 6.3 | - | 12    | -             | -    |   |  |
|            |   | <b>252016-N</b>        | ●          | ● | ●      | ● | 25               | 0        | - | 0.05 | 2.00 | 8.3 | - | 16    | -             | -    |   |  |
|            |   | <b>250708-R</b>        | ●          | ● | ●      | ● | 25               | 15       | - | 0.05 | 0.70 | 4.3 | - | 8     | -             | -    |    | <br>R   |
|            |   | <b>251012-R</b>        | ●          | ● | ●      | ● | 25               | 15       | - | 0.05 | 1.00 | 6.3 | - | 12    | -             | -    |   |  |
|            |   | <b>251512-R</b>        | ●          | ● | ●      | ● | 25               | 15       | - | 0.05 | 1.50 | 6.3 | - | 12    | -             | -    |   |  |
|            |   | <b>252016-R</b>        | ●          | ● | ●      | ● | 25               | 15       | - | 0.05 | 2.00 | 8.3 | - | 16    | -             | -    |   |  |
|            |   | <b>250708-L</b>        | ●          | ● | ●      | ● | 25               | 15       | - | 0.05 | 0.70 | 4.3 | - | 8     | -             | -    |   | <br>L  |
|            |   | <b>251012-L</b>        | ●          | ● | ●      | ● | 25               | 15       | - | 0.05 | 1.00 | 6.3 | - | 12    | -             | -    |   |  |
|            |   | <b>251512-L</b>        | ●          | ● | ●      | ● | 25               | 15       | - | 0.05 | 1.50 | 6.3 | - | 12    | -             | -    |   |  |
|            |   | <b>252016-L</b>        | ●          | ● | ●      | ● | 25               | 15       | - | 0.05 | 2.00 | 8.3 | - | 16    | -             | -    |   |  |
|            |   | <b>251012-T</b>        | ●          | ● | ●      | ● | 25               | 0        | - | 0.05 | 1.00 | 6.3 | - | 12    | -             | -    |  | <br>T |
|            |   | <b>251512-T</b>        | ●          | ● | ●      | ● | 25               | 0        | - | 0.05 | 1.50 | 6.3 | - | 12    | -             | -    |   |  |
|            |   | <b>252016-T</b>        | ●          | ● | ●      | ● | 25               | 0        | - | 0.05 | 2.00 | 8.3 | - | 16    | -             | -    |   |  |

● : En Almacen



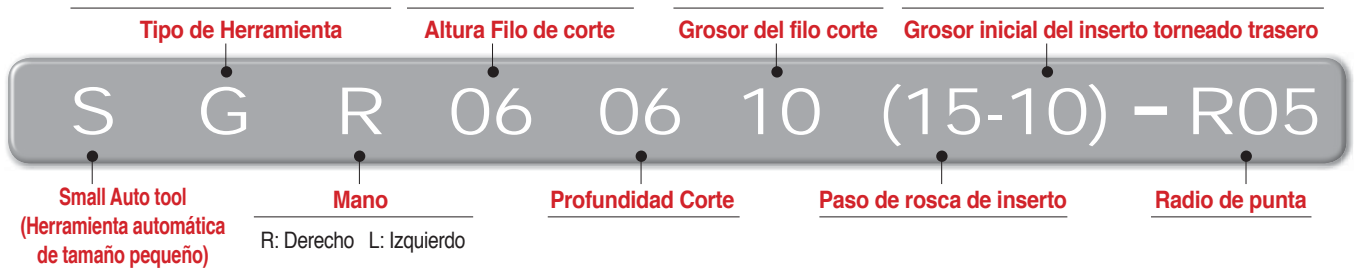
# B Auto Tools (multiusos)

## Auto tools (multiusos)

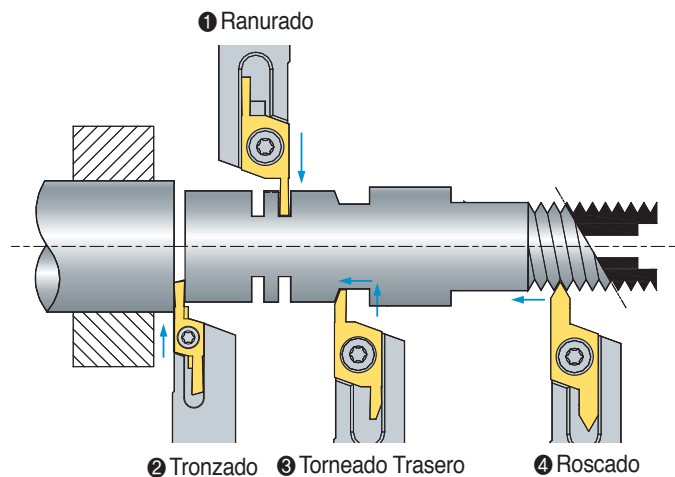
- Inserto multifuncional para tornos automáticos
- Para el mecanizado exterior de piezas pequeñas precisas
- 5 tipos: SB (para giro hacia atrás), SG (para ranurado), ST (para roscado), SC (para corte), SGB (para ranurado y giro hacia atrás)
- Uso conveniente de un soporte para todos los insertos
- Desplazamiento "0" a todos los soportes tipo ISO

### ➤ Codificación de Insertos (Tipo Multi utility)

B: Torneado Trasero G: Ranurado  
 C: Tronzado T: Roscado  
 GB : Ranurado & Torneado trasero

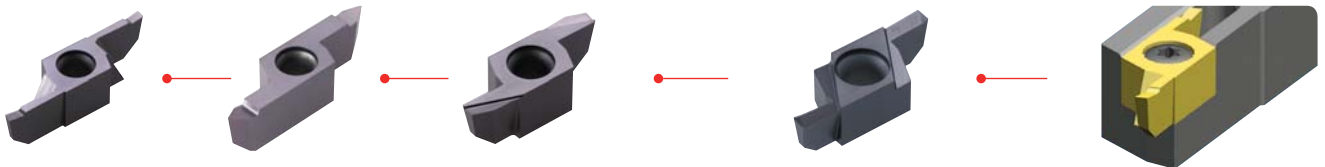


### ➤ Ejemplo Aplicación



### ➤ Tipos de insertos multifuncionales

Diferentes tipos de maquinados con solo un Portaherramienta (Ej : Tamaño del orificio del inserto = 06 - sujeción del portaherramientas para insertos)



SG: Ranurado

ST: Roscado

SB: Torneado Trasero

SGB: Ranurado & Torneado trasero

SC: Tronzado

### ➤ Condiciones de corte recomendadas

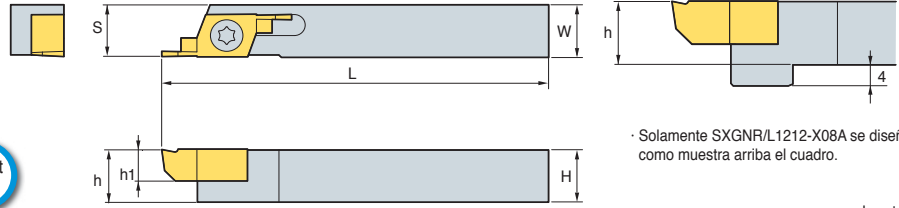
| Material             | Torneado                       |                     | Condiciones recomendadas de corte |                     | Tronzado                       |                     | Torneado Trasero               |                     |
|----------------------|--------------------------------|---------------------|-----------------------------------|---------------------|--------------------------------|---------------------|--------------------------------|---------------------|
|                      | Velocidad de corte, vc (m/min) | Avance, fn (mm/rev) | Velocidad de corte, vc (m/min)    | Avance, fn (mm/rev) | Velocidad de corte, vc (m/min) | Avance, fn (mm/rev) | Velocidad de corte, vc (m/min) | Avance, fn (mm/rev) |
| Acero inoxidable     | 50~120                         | 0.02~0.20           | 30~120                            | 0.02~0.05           | 30~120                         | 0.02~0.05           | 30~120                         | 0.02~0.20           |
| Acero al carbono     | 50~150                         | 0.01~0.25           | 50~150                            | 0.02~0.08           | 50~150                         | 0.01~0.08           | 50~150                         | 0.01~0.25           |
| Acero de fácil corte | 30~150                         | 0.02~0.25           | 30~150                            | 0.02~0.08           | 30~150                         | 0.01~0.08           | 30~150                         | 0.01~0.25           |
| Material no ferroso  | 70~200                         | 0.03~0.25           | 70~200                            | 0.03~0.10           | 70~200                         | 0.03~0.10           | 70~200                         | 0.03~0.30           |



# SXGNR/L



SBR, SGBR  
SCR, STR, SGR



· Solamente SXGNR/L1212-X08A se diseña como muestra arriba el cuadro.

· Inserto tipo R (mm)

| Designación              | H  | W  | L   | S  | h  | h1 | Inserto  | Tornillo  | Llave  |
|--------------------------|----|----|-----|----|----|----|----------|-----------|--------|
| <b>SXGNR/L</b> 1010-X06A | 10 | 10 | 125 | 10 | 10 | 6  | S□R/L 06 | FTNA 0408 | TW 15P |
| 1212-X06A                | 12 | 12 | 125 | 12 | 12 | 6  |          |           |        |
| 1616-X06A                | 16 | 16 | 125 | 16 | 16 | 6  |          |           |        |
| 2020-X06A                | 20 | 20 | 125 | 20 | 20 | 6  |          |           |        |
| 1212-X08A                | 12 | 12 | 130 | 12 | 12 | 8  | S□R/L 08 | FTNA 0411 | TW 15P |
| 1616-X08A                | 16 | 16 | 130 | 16 | 16 | 8  |          |           |        |
| 2020-X08A                | 20 | 20 | 130 | 20 | 20 | 8  |          |           |        |

## Insertos

| Aplicación       | Picture | Designación                | Coated |     | Dimensions (mm) |     |      |    |      |    |       |    | Configuracion | Direccion Corte |
|------------------|---------|----------------------------|--------|-----|-----------------|-----|------|----|------|----|-------|----|---------------|-----------------|
|                  |         |                            | PC9030 |     | b1              | b   | W    | L  | r    | h  | T-MAX | ØD |               |                 |
|                  |         |                            | R      | L   |                 |     |      |    |      |    |       |    |               |                 |
| Torneado Trasero |         | <b>SBR/L</b> 060520-10-R00 |        |     | 1               | 2   | 8    | 22 | 0    | 6  | 5.5   | -  |               |                 |
|                  |         | 060520-10-R05              |        |     | 1               | 2   | 8    | 22 | 0.05 | 6  | 5.5   | -  |               |                 |
|                  |         | 060520-10-R10              |        |     | 1               | 2   | 8    | 22 | 0.1  | 6  | 5.5   | -  |               |                 |
|                  |         | 060630-20-R00              |        |     | 2               | 3   | 8    | 24 | 0    | 6  | 6.5   | -  |               |                 |
|                  |         | 060630-20-R05              |        |     | 2               | 3   | 8    | 24 | 0.05 | 6  | 6.5   | -  |               |                 |
|                  |         | 060630-20-R10              |        |     | 2               | 3   | 8    | 24 | 0.1  | 6  | 6.5   | -  |               |                 |
|                  |         | 080630-20-R00              |        |     | 2               | 3   | 8    | 23 | 0    | 8  | 6.5   | -  |               |                 |
|                  |         | 080630-20-R05              |        |     | 2               | 3   | 8    | 23 | 0.05 | 8  | 6.5   | -  |               |                 |
|                  |         | 080630-20-R10              |        |     | 2               | 3   | 8    | 23 | 0.1  | 8  | 6.5   | -  |               |                 |
|                  |         | 080840-20-R00              |        |     | 2               | 4   | 8    | 27 | 0    | 8  | 8.5   | -  |               |                 |
| 080840-20-R05    |         |                            | 2      | 4   | 8               | 27  | 0.05 | 8  | 8.5  | -  |       |    |               |                 |
| 080840-20-R10    |         |                            | 2      | 4   | 8               | 27  | 0.1  | 8  | 8.5  | -  |       |    |               |                 |
| Tronzado         |         | <b>SCR/L</b> 060610-R00    |        |     | -               | 1   | 8    | 24 | 0    | 6  | -     | 11 |               |                 |
|                  |         | 060610-R05                 | ●      |     | -               | 1   | 8    | 24 | 0.05 | 6  | -     | 11 |               |                 |
|                  |         | 060610-R10                 | ●      |     | -               | 1   | 8    | 24 | 0.1  | 6  | -     | 11 |               |                 |
|                  |         | 060615-R00                 |        |     | -               | 1.5 | 8    | 24 | 0    | 6  | -     | 11 |               |                 |
|                  |         | 060615-R05                 | ●      |     | -               | 1.5 | 8    | 24 | 0.05 | 6  | -     | 11 |               |                 |
|                  |         | 060615-R10                 | ●      |     | -               | 1.5 | 8    | 24 | 0.1  | 6  | -     | 11 |               |                 |
|                  |         | 060620-R00                 |        |     | -               | 2   | 8    | 24 | 0    | 6  | -     | 11 |               |                 |
|                  |         | 060620-R05                 | ●      |     | -               | 2   | 8    | 24 | 0.05 | 6  | -     | 11 |               |                 |
|                  |         | 060620-R10                 | ●      |     | -               | 2   | 8    | 24 | 0.1  | 6  | -     | 11 |               |                 |
|                  |         | 081015-R00                 |        |     | -               | 1.5 | 8    | 31 | 0    | 8  | -     | 18 |               |                 |
|                  |         | 081015-R05                 |        |     | -               | 1.5 | 8    | 31 | 0.05 | 8  | -     | 18 |               |                 |
|                  |         | 081015-R10                 |        |     | -               | 1.5 | 8    | 31 | 0.1  | 8  | -     | 18 |               |                 |
|                  |         | 081020-R00                 |        |     | -               | 2   | 8    | 31 | 0    | 8  | -     | 18 |               |                 |
|                  |         | 081020-R05                 |        |     | -               | 2   | 8    | 31 | 0.05 | 8  | -     | 18 |               |                 |
|                  |         | 081020-R10                 | ●      |     | -               | 2   | 8    | 31 | 0.1  | 8  | -     | 18 |               |                 |
|                  |         | 081025-R00                 |        |     | -               | 2.5 | 8    | 31 | 0    | 8  | -     | 18 |               |                 |
|                  |         | 081025-R05                 | ●      |     | -               | 2.5 | 8    | 31 | 0.05 | 8  | -     | 18 |               |                 |
| 081025-R10       | ●       |                            | -      | 2.5 | 8               | 31  | 0.1  | 8  | -    | 18 |       |    |               |                 |
| 081030-R00       |         |                            | -      | 3   | 8               | 31  | 0    | 8  | -    | 18 |       |    |               |                 |
| 081030-R05       | ●       |                            | -      | 3   | 8               | 31  | 0.05 | 8  | -    | 18 |       |    |               |                 |
| 081030-R10       |         |                            | -      | 3   | 8               | 31  | 0.1  | 8  | -    | 18 |       |    |               |                 |

●: En Almacen



## Insertos

| Aplicación                  | Forma  | Designación        | Recubierto |   | Dimensiones (mm) |      |    |      |    |       |    |         | Configuración | Dirección Corte |
|-----------------------------|--------|--------------------|------------|---|------------------|------|----|------|----|-------|----|---------|---------------|-----------------|
|                             |        |                    | PC9030     |   | b                | W    | L  | r    | h  | T-MAX | ØD | Paso    |               |                 |
|                             |        |                    | R          | L |                  |      |    |      |    |       |    |         |               |                 |
| Ranurado                    | SGR/L  | SGR/L 060610-R00   |            |   | 1                | 8    | 24 | 0    | 6  | -     | 11 | -       |               |                 |
|                             |        | 060610-R05         | ●          |   | 1                | 8    | 24 | 0.05 | 6  | -     | 11 | -       |               |                 |
|                             |        | 060610-R10         | ●          |   | 1                | 8    | 24 | 0.1  | 6  | -     | 11 | -       |               |                 |
|                             |        | 060615-R00         |            |   | 1.5              | 8    | 24 | 0    | 6  | -     | 11 | -       |               |                 |
|                             |        | 060615-R05         | ●          |   | 1.5              | 8    | 24 | 0.05 | 6  | -     | 11 | -       |               |                 |
|                             |        | 060615-R10         | ●          |   | 1.5              | 8    | 24 | 0.1  | 6  | -     | 11 | -       |               |                 |
|                             |        | 060620-R00         |            |   | 2                | 8    | 24 | 0    | 6  | -     | 11 | -       |               |                 |
|                             |        | 060620-R05         | ●          |   | 2                | 8    | 24 | 0.05 | 6  | -     | 11 | -       |               |                 |
|                             |        | 060620-R10         | ●          |   | 2                | 8    | 24 | 0.1  | 6  | -     | 11 | -       |               |                 |
|                             |        | 081015-R00         |            |   | 1.5              | 8    | 31 | 0    | 8  | -     | 18 | -       |               |                 |
|                             |        | 081015-R05         |            |   | 1.5              | 8    | 31 | 0.05 | 8  | -     | 18 | -       |               |                 |
|                             |        | 081015-R10         |            |   | 1.5              | 8    | 31 | 0.1  | 8  | -     | 18 | -       |               |                 |
|                             |        | 081020-R00         |            |   | 2                | 8    | 31 | 0    | 8  | -     | 18 | -       |               |                 |
|                             |        | 081020-R05         | ●          |   | 2                | 8    | 31 | 0.05 | 8  | -     | 18 | -       |               |                 |
|                             |        | 081020-R10         |            |   | 2                | 8    | 31 | 0.1  | 8  | -     | 18 | -       |               |                 |
|                             |        | 081025-R00         |            |   | 2.5              | 8    | 31 | 0    | 8  | -     | 18 | -       |               |                 |
|                             |        | 081025-R05         |            |   | 2.5              | 8    | 31 | 0.05 | 8  | -     | 18 | -       |               |                 |
|                             |        | 081025-R10         |            |   | 2.5              | 8    | 31 | 0.1  | 8  | -     | 18 | -       |               |                 |
| 081030-R00                  |        |                    | 3          | 8 | 31               | 0    | 8  | -    | 18 | -     |    |         |               |                 |
| 081030-R05                  |        |                    | 3          | 8 | 31               | 0.05 | 8  | -    | 18 | -     |    |         |               |                 |
| 081030-R10                  |        |                    | 3          | 8 | 31               | 0.1  | 8  | -    | 18 | -     |    |         |               |                 |
| Ranurado & Torneado Trasero | SGBR/L | SGBR/L 0604520-R00 |            |   | 2                | 8    | 22 | 0    | 6  | 4.5   | -  | -       |               |                 |
|                             |        | 0604520-R05        |            |   | 2                | 8    | 22 | 0.05 | 6  | 4.5   | -  | -       |               |                 |
|                             |        | 0604520-R10        |            |   | 2                | 8    | 22 | 0.1  | 6  | 4.5   | -  | -       |               |                 |
|                             |        | 0604525-R00        |            |   | 2.5              | 8    | 22 | 0    | 6  | 4.5   | -  | -       |               |                 |
|                             |        | 0604525-R05        |            |   | 2.5              | 8    | 22 | 0.05 | 6  | 4.5   | -  | -       |               |                 |
|                             |        | 0604525-R10        |            |   | 2.5              | 8    | 22 | 0.1  | 6  | 4.5   | -  | -       |               |                 |
|                             |        | 0605530-R00        |            |   | 3                | 8    | 24 | 0    | 6  | 5.5   | -  | -       |               |                 |
|                             |        | 0605530-R05        |            |   | 3                | 8    | 24 | 0.05 | 6  | 5.5   | -  | -       |               |                 |
|                             |        | 0605530-R10        |            |   | 3                | 8    | 24 | 0.1  | 6  | 5.5   | -  | -       |               |                 |
|                             |        | 0805525-R00        |            |   | 2.5              | 8    | 24 | 0    | 8  | 5.5   | -  | -       |               |                 |
|                             |        | 0805525-R05        |            |   | 2.5              | 8    | 24 | 0.05 | 8  | 5.5   | -  | -       |               |                 |
|                             |        | 0805525-R10        |            |   | 2.5              | 8    | 24 | 0.1  | 8  | 5.5   | -  | -       |               |                 |
|                             |        | 0806530-R00        |            |   | 3                | 8    | 26 | 0    | 8  | 6.5   | -  | -       |               |                 |
| 0806530-R05                 |        |                    | 3          | 8 | 26               | 0.05 | 8  | 6.5  | -  | -     |    |         |               |                 |
| 0806530-R10                 |        |                    | 3          | 8 | 26               | 0.1  | 8  | 6.5  | -  | -     |    |         |               |                 |
| Roscado                     | STR/L  | STR/L 06073215     |            |   | 3.2              | 8    | 25 | 0.06 | 6  | 7     | -  | 0.5-1.5 |               |                 |
|                             |        | 06073230           |            |   | 3.2              | 8    | 25 | 0.19 | 6  | 7     | -  | 1.5-3.0 |               |                 |
|                             |        | 08103215           |            |   | 3.2              | 8    | 31 | 0.06 | 8  | 10.5  | -  | 0.5-1.5 |               |                 |
|                             |        | 08103230           |            |   | 3.2              | 8    | 31 | 0.19 | 8  | 10.5  | -  | 1.5-3.0 |               |                 |

● : En Almacen





## Auto tools (Tipo KGT/MGT)

- Inserto de ranurado para tornos automáticos
- Soporte exclusivo para tornos automáticos
- Inserto económico de doble cara
- Fuerte sistema de sujeción asegura un mecanizado estable y precisión
- Una amplia selección de rompevirutas según diversas condiciones de corte, tales como alimentación baja / alta

R: Derecho L: Izquierdo

### Codificación de Insertos (Tipo KGT/MGT)

|  |  |   |  |   |  |                                |  |                            |  |                     |  |
|--|--|---|--|---|--|--------------------------------|--|----------------------------|--|---------------------|--|
| KG   |  | M   |  | N   |  | 300                            |  | - 04                       |  | - T                 |  |
| <b>Sistema de código</b>                         |  | <b>Tolerancia</b>                               |  | <b>Mano</b>   |  | <b>Ancho del filo de corte</b> |  | <b>Radio de punta</b>      |  | <b>Rompevirutas</b> |  |
| Sistema KG<br>(Korloy Grooving: ranurado Korloy) |  | M: prensado con molde<br>G: corregido y afilado |  | N: neutral<br>R: Derecha<br>L: Izquierda<br>I: Interior |  | 2.0~8.0 mm                     |  | 0.2 mm<br>0.3 mm<br>0.4 mm |  | L/R/T/C<br>LP/RP    |  |
| Sistema MG<br>(Multi Grooving: ranurado)         |  |   |  |   |  |                                |  |                            |  |                     |  |

### Sistema códigos de porta (Tipo KGT/MGT)


|  |  |  |  |   |  |                            |  |   |  |                            |  |                          |  |
|--|--|--|--|---|--|----------------------------|--|---|--|----------------------------|--|--------------------------|--|
| KG   |  | E  |  | H   |  | R/L                        |  | 1212  |  | - 3                        |  | D25A                     |  |
| <b>Sistema de código</b>                         |  | <b>Aplicación</b>                          |  | <b>Tipo de porta</b>                        |  | <b>Mano</b>                |  | <b>Tamaño porta</b>   |  | <b>Ancho filo de corte</b> |  | <b>Diam max de corte</b> |  |
| Sistema KG<br>(Korloy Grooving: ranurado Korloy) |  | E: Exterior proceso<br>I: interior proceso |  | H: Horizontal<br>V: Vertical<br>U: rebajado |  | R: Derecha<br>L: Izquierda |  | Altura 12mm, ancho 12mm<br>(Para maquinado interno: diámetro mínimo de maquinado) |  | 2.0~3.0 mm                 |  | Ø15~Ø32 mm               |  |
| Sistema MG<br>(Multi Grooving: ranurado)         |  |  |  |   |  |                            |  |   |  |                            |  |                          |  |

### Tipos de rompevirutas

#### Tipo KGT

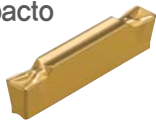
|   |  |   |
|---|--|---|
| <b>KGMN-L</b><br> <ul style="list-style-type: none"> <li>• filo afilado</li> <li>• Para baja alimentación mecanizado</li> <li>• Para diámetro pequeño partes</li> </ul>  | <b>KGMN-R</b><br> <ul style="list-style-type: none"> <li>• Corte reforzado borde</li> <li>• Para alta alimentación mecanizado</li> <li>• Para corte interrumpido</li> </ul>                       | <b>KGMN-T</b><br> <ul style="list-style-type: none"> <li>• filo afilado</li> <li>• Control de viruta más fuerte</li> <li>• Para torneado y ranurado</li> </ul> |
| <b>KGMR/L-LP</b><br> <ul style="list-style-type: none"> <li>• filo afilado</li> <li>• Para mecanizado de baja alimentación</li> <li>• Componente de pequeño diámetro</li> <li>• Mano derecha / zurda</li> <li>• Acero bajo en carbono</li> </ul> | <b>KGMR/L-RP</b><br> <ul style="list-style-type: none"> <li>• filo fuerte</li> <li>• Para mecanizado de alto avance</li> <li>• Para corte interrumpido</li> <li>• Mano derecha / zurda</li> </ul> | <b>KRMN-C</b><br> <ul style="list-style-type: none"> <li>• Control de chip mejorado</li> <li>• Copiar</li> <li>• Rebajado</li> </ul>                           |

#### Tipo MGT

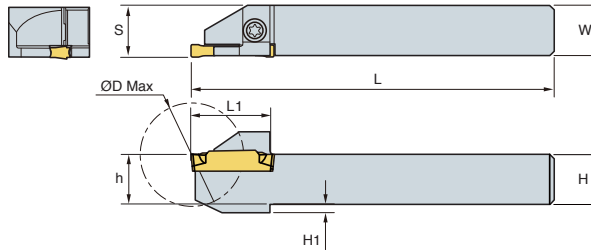
|  |  |
|--|--|
| <b>MGM(G)N-M</b><br> <ul style="list-style-type: none"> <li>• Control de chip más fácil al reducir el chip. Ancho con el uso de rompevirutas en rastrillo centro de superficie</li> <li>• Flujo de viruta suave por pequeños puntos en exterior mecanizado</li> <li>• Disponible tanto para mecanizado externo como ranurado</li> </ul> | <b>MGMN-G</b><br> <ul style="list-style-type: none"> <li>• El rompevirutas especialmente diseñado permite chips más estrechos para promover un mejor flujo de chips con el uso de puntos centrales</li> <li>• Exclusivo rompevirutas para ranurado</li> </ul> |
|--|--|

## KGEHR/L-D00A

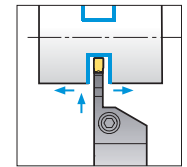
Tipo compacto



KGGN KGMN KGMR/L  
KRGN KRMN



Ranurado, Torneado, Tronzado



• Inserto tipo R (mm)

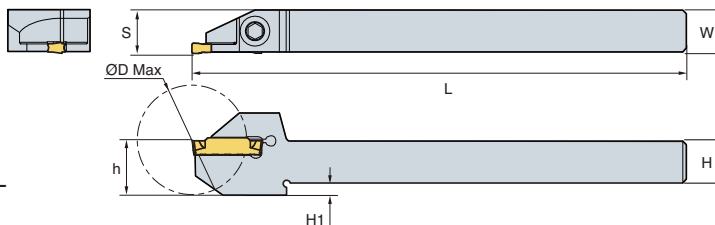
| Designación | Dimensiones (mm) |    |    |    |     |      |        | Insertos | Tornillo                                    | Llave    |       |
|-------------|------------------|----|----|----|-----|------|--------|----------|---|----------|-------|
|             | H                | W  | L1 | L  | S   | h1   | ØD_MAX |          |   |          |       |
| KGEHR/L     | 1010-2-D20A      | 10 | 10 | 19 | 125 | 10.2 | 2      | 20       | KGMN200-□-□<br>KGMR/L200-□-□<br>KRGN200-□-□ | ETNA0412 | TW15L |
|             | 1212-2-D25A      | 12 | 12 | 19 | 125 | 12.2 | 2      | 25       |   |          |       |
|             | 1616-2-D32A      | 16 | 16 | 24 | 125 | 16.2 | -      | 32       |   |          |       |
| KGEHR/L     | 1212-3-D25A      | 12 | 12 | 19 | 130 | 12.4 | 2      | 25       | KGMN300-□-□<br>KGMR/L300-□-□<br>KRMN300-C   | ETNA0412 | TW15L |
|             | 1616-3-D32A      | 16 | 16 | 24 | 130 | 16.4 | -      | 32       |   |          |       |

## KGEHR/L-D00B

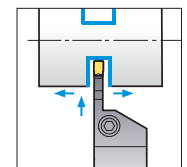
Tipo de alta rigidez



KGGN KGMN KGMR/L  
KRGN KRMN



Ranurado, Torneado, Tronzado



• Inserto tipo R (mm)

| Designación | Dimensiones (mm) |    |     |      |      |        | Insertos   | Tornillo   | Llave   |       |
|-------------|------------------|----|-----|------|------|--------|--|--|---------|-------|
|             | H                | W  | L   | S    | h1   | ØD_MAX |  |  |         |       |
| KGEHR/L     | 1010-2-D30B      | 10 | 10  | 125  | 10.2 | 6.6    | 30   | KGMN200-□-□<br>KGMR/L200-□-□<br>KRMN200-C<br>KGGN200-□-□ | MHA0512 | HW40L |
|             | 1212-2-D25B      | 12 | 12  | 125  | 12.5 | 3.5    | 25   |  |         |       |
|             | 1212-2-D30B      | 12 | 12  | 125  | 12.2 | 3.5    | 30   |  |         |       |
|             | 1616-2-D32B      | 16 | 16  | 125  | 16.2 | -      | 32   |  |         |       |
|             | 1212-3-D25B      | 12 | 12  | 125  | 12.4 | 3.5    | 25   |  |         |       |
|             | 1212-3-D32B      | 12 | 12  | 125  | 12.4 | 3.5    | 32   |  |         |       |
| 1616-3-D32B | 16               | 16 | 125 | 16.4 | -    | 32     | KGMN300-□-□<br>KGMR/L300-□-□<br>KRMN300-C<br>KGGN300-□-□ |  |         |       |

### Insertos KGT

| Aplicación              | Forma   | Designación | Recubierto |        |        |        |        |        | Dimensiones (mm) |     |     |     |     | Configuración |
|-------------------------|---------|-------------|------------|--------|--------|--------|--------|--------|------------------|-----|-----|-----|-----|---------------|
|                         |         |             | NC3120     | NC3225 | NC5330 | NC6315 | PC5300 | PC9030 | b                | r   | l   | d   | α ° |               |
| Ranurado                | KGMR-L  | KGMR        | 200-02-L   | ●      | ●      | ●      | ●      | ●      | 2.0              | 0.2 | 20  | 1.7 | -   |               |
|                         |         | 300-02-L    | ●          | ●      | ●      | ●      | ●      | 3.0    | 0.2              | 20  | 2.3 | -   |     |               |
| Ranurado, Tronzado      | KGMR-R  | KGMR        | 200-02-R   | ●      | ●      | ●      | ●      | ●      | 2.0              | 0.2 | 20  | 1.7 | -   |               |
|                         |         | 300-02-R    | ●          | ●      | ●      | ●      | ●      | 3.0    | 0.2              | 20  | 2.3 | -   |     |               |
| Ranurado, Torneado      | KGMR-T  | KGMR        | 200-02-T   | ●      | ●      | ●      | ●      | ●      | 2.0              | 0.2 | 20  | 1.7 | -   |               |
|                         |         | 300-02-T    | ●          | ●      | ●      | ●      | ●      | 3.0    | 0.2              | 20  | 2.3 | -   |     |               |
|                         |         | 300-04-T    | ●          | ●      | ●      | ●      | ●      | 3.0    | 0.4              | 20  | 2.3 | -   |     |               |
| Tronzado (Mano derecha) | KGMR-LP | KGMR        | 200-6D-LP  | ●      | ●      | ●      | ●      | ●      | 2.0              | 0.2 | 20  | -   | 6   |               |
|                         |         | 200-15D-LP  | ●          | ●      | ●      | ●      | ●      | 2.0    | 0.2              | 20  | -   | 15  |     |               |
|                         |         | 300-6D-LP   | ●          | ●      | ●      | ●      | ●      | 3.0    | 0.2              | 20  | -   | 6   |     |               |
|                         |         | 300-15D-LP  | ●          | ●      | ●      | ●      | ●      | 3.0    | 0.2              | 20  | -   | 15  |     |               |

● : En Almacen

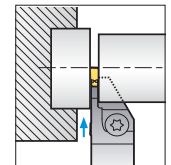
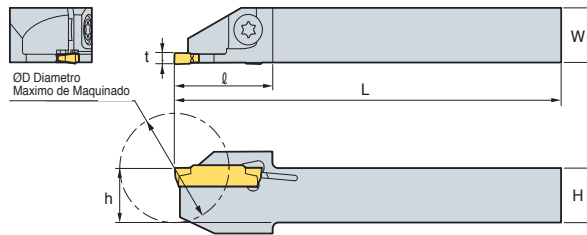


**Insertos KGT**

| Aplicación                | Forma | Designación | Recubierto        |        |        |        |        |        | Dimensiones (mm) |     |    |     |     | Configuración |
|---------------------------|-------|-------------|-------------------|--------|--------|--------|--------|--------|------------------|-----|----|-----|-----|---------------|
|                           |       |             | NC3120            | NC3225 | NC5330 | NC6315 | PC5300 | PC9030 | b                | r   | l  | d   | a ° |               |
| Tronzado (Mano derecha)   |       | <b>KGMR</b> | <b>200-6D-RP</b>  |        |        | ●      | ●      |        | 2.0              | 0.2 | 20 | -   | 6   |               |
|                           |       |             | <b>200-15D-RP</b> |        |        | ●      | ●      |        | 2.0              | 0.2 | 20 | -   | 15  |               |
|                           |       |             | <b>300-6D-RP</b>  |        |        | ●      | ●      |        | 3.0              | 0.2 | 20 | -   | 6   |               |
|                           |       |             | <b>300-15D-RP</b> |        |        | ●      | ●      |        | 3.0              | 0.2 | 20 | -   | 15  |               |
| Tronzado (Mano izquierda) |       | <b>KGML</b> | <b>200-6D-LP</b>  |        |        |        |        |        | 2.0              | 0.2 | 20 | 1.7 | 6   |               |
|                           |       |             | <b>200-15D-LP</b> |        |        |        |        |        | 2.0              | 0.2 | 20 | 1.7 | 15  |               |
|                           |       |             | <b>300-6D-LP</b>  |        |        |        |        |        | 3.0              | 0.2 | 20 | 2.3 | 6   |               |
|                           |       |             | <b>300-15D-LP</b> |        |        |        |        |        | 3.0              | 0.2 | 20 | 2.3 | 15  |               |
| Tronzado (Mano izquierda) |       | <b>KGML</b> | <b>200-6D-RP</b>  |        |        |        |        |        | 2.0              | 0.2 | 20 | 1.7 | 6   |               |
|                           |       |             | <b>200-15D-RP</b> |        |        |        |        |        | 2.0              | 0.2 | 20 | 1.7 | 15  |               |
|                           |       |             | <b>300-6D-RP</b>  |        |        |        |        |        | 3.0              | 0.2 | 20 | 2.3 | 6   |               |
|                           |       |             | <b>300-15D-RP</b> |        |        |        |        |        | 3.0              | 0.2 | 20 | 2.3 | 15  |               |
| Copiado                   |       | <b>KRMI</b> | <b>200-C</b>      |        |        |        |        |        | 2.0              | 1.0 | 20 | 1.7 | -   |               |
|                           |       |             | <b>300-C</b>      |        |        |        |        |        | 3.0              | 1.5 | 20 | 2.2 | -   |               |
|                           |       |             | <b>400-C</b>      |        |        |        |        |        | 4.0              | 2.0 | 20 | 3.2 | -   |               |
| Copiado                   |       | <b>KRMN</b> | <b>200-C</b>      | ●      | ●      | ●      | ●      |        | 2.0              | 1.0 | 20 | 1.7 | -   |               |
|                           |       |             | <b>300-C</b>      | ●      | ●      | ●      | ●      |        | 3.0              | 1.5 | 20 | 2.2 | -   |               |

●: En Almacen

**MGEHR/L**



• Inserto tipo R (mm)

| Designación    | ØD               | H=h | W  | L  | l   | t    | Insertos | Tornillo               | Llave            |
|----------------|------------------|-----|----|----|-----|------|----------|------------------------|------------------|
|                |                  |     |    |    |     |      |          |                        |                  |
| <b>MGEHR/L</b> | <b>1010-X15A</b> | 20  | 10 | 10 | 125 | 18   | 1.5      | MGMN150-G              | ETNA 0412 TW 15L |
|                | <b>1212-X15A</b> | 25  | 12 | 12 | 125 | 19.5 | 1.5      |                        |                  |
|                | <b>1010-X20A</b> | 20  | 10 | 10 | 125 | 18   | 2        | MGMN200-M<br>MGMN200-G | ETNA 0412 TW 15L |
|                | <b>1212-X20A</b> | 25  | 12 | 12 | 125 | 19.5 | 2        |                        |                  |
|                | <b>1616-X20A</b> | 32  | 16 | 16 | 125 | 25   | 2        | MGMN250-M<br>MGMN250-G | ETNA 0412 TW 15L |
|                | <b>1010-X25A</b> | 20  | 10 | 10 | 125 | 20   | 2.5      |                        |                  |
|                | <b>1212-X25A</b> | 25  | 12 | 12 | 125 | 20   | 2.5      |                        |                  |
|                | <b>1616-X25A</b> | 32  | 16 | 16 | 125 | 25   | 2.5      |                        |                  |

**Insertos MGT**

| Aplicación | Forma | Designación | Recubierto   |        |        |        |        |        |        | Sin Recubrimiento |     |       | Dimensiones (mm) |     |      |      |     | Configuración |  |
|------------|-------|-------------|--------------|--------|--------|--------|--------|--------|--------|-------------------|-----|-------|------------------|-----|------|------|-----|---------------|--|
|            |       |             | NC3120       | NC3225 | NC5330 | NC6315 | NC3030 | PC5300 | PC9030 | H01               | G10 | STA30 | b                | r   | l    | d    | t   |               |  |
| Ranurado   |       | <b>MGMN</b> | <b>150-G</b> | ●      |        |        |        | ●      | ●      | ●                 | ●   |       |                  | 1.5 | 0.15 | 16.0 | 1.2 | 3.5           |  |
|            |       |             | <b>200-G</b> | ●      | ●      |        |        | ●      | ●      | ●                 | ●   |       |                  | 2.0 | 0.2  | 16.0 | 1.6 | 3.5           |  |
|            |       |             | <b>250-G</b> | ●      |        |        |        | ●      | ●      | ●                 | ●   |       |                  | 2.5 | 0.2  | 18.5 | 2.0 | 3.85          |  |
| Ranurado   |       | <b>MGMN</b> | <b>200-M</b> | ●      | ●      | ●      |        | ●      | ●      | ●                 | ●   |       |                  | 2.0 | 0.2  | 16.0 | 1.6 | 3.5           |  |
|            |       |             | <b>250-M</b> | ●      | ●      |        |        | ●      | ●      | ●                 | ●   |       |                  | 2.5 | 0.2  | 18.5 | 2.0 | 3.85          |  |

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# B Auto Tools (Micro Boreado de Carburo (MSB))

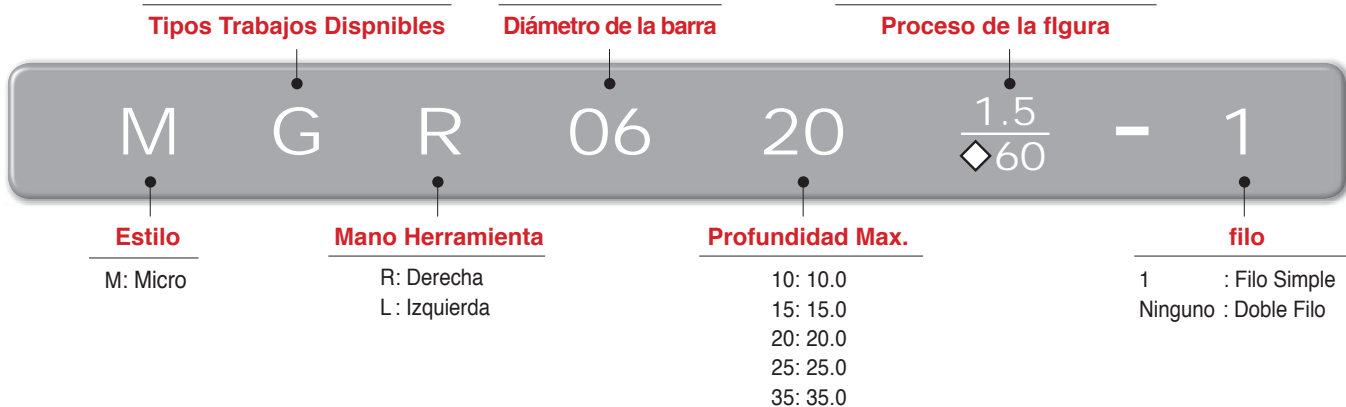
## Auto tools (Micro Boreado de Carburo (MSB))

- El grado perfecto de Korloy asegura vida larga de la herramienta
- Utilizados en diversas aplicaciones (Valvulas, partes medicas, partes automotrices, maquinaria y superconductores)
- Aplicables para varios tipos de maquinados (Interior, Ranurado, Roscado, etc)

### ➤ Sistema de codificación

|    |                     |          |
|----|---------------------|----------|
| B  | : Interior          |          |
| BC | : Copiado           |          |
| BB | : Interior          |          |
| BF | : haf l an          | 03: 3.0  |
| G  | : Ranurado Cuadrado | 04: 4.0  |
| GR | : Ranurado Redondo  | 06: 6.0  |
| GF | : Ranurado Frontal  | 08: 8.0  |
| T  | : Roscado           | 10: 10.0 |

|          |                    |          |       |
|----------|--------------------|----------|-------|
| Interior | Boş                |          |       |
| Copiado  | Grosor del proceso |          |       |
| Roscado  | 60°                | 55°      |       |
|          | Paso               | tpi      |       |
| ◇        | F                  | 0.25~1.0 | 72~24 |
|          | A                  | 0.5~1.5  | 48~16 |
|          | AG                 | 0.5~3.0  | 48~8  |



### ➤ Tipos de Sistemas MSB

| Estilo |          | Dureza (HB)     | Designación   |               |
|--------|----------|-----------------|---------------|---------------|
| 01     | Interior | Interior        | MBR/LOO☆☆     |               |
| 02     |          | Copiado         | MBCR/LOO☆☆    |               |
| 03     |          | TorneadoTrasero | MBBR/LOO☆☆    |               |
| 04     |          | Chaf l an       | MBFR/LOO☆☆    |               |
| 05     | Ranurado | Cuadrado        | MGR/LOO☆☆-□□  |               |
| 06     |          | Redondo         | MGRR/LOO☆☆-□□ |               |
| 07     |          | Frontal         | MGFR/LOO00-□□ |               |
| 08     | Roscado  | Parhial         | 60°           | MTR/LOO☆☆-◇60 |
|        |          |                 | 55°           | MTR/LOO☆☆-◇55 |

### ➤ Signos

|       |    |                                  |         |          |       |
|-------|----|----------------------------------|---------|----------|-------|
| Signo | ○○ | Diámetro de la barra de torneado |         |          |       |
|       | ☆☆ | Profundidad de Corte             |         |          |       |
|       | □□ | Espesor del ranurado             |         |          |       |
|       | ◇  | Paso / tpi                       | F       | 0.25~1.0 | 72~24 |
|       |    |                                  | A       | 0.5~1.5  | 48~16 |
| AG    |    |                                  | 0.5~3.0 | 48~8     |       |



**Grados**

| Grados | Recubrimiento        | Aplicaciones y características  |
|--------|----------------------|---|
| Z12M   | Carburo              | El sustrato del grano ultra fino asegura superior resistencia al desgaste y dureza<br>Aplicación maquinados de Fundición, Aluminio de aleación y metales no ferrosos.                                   |
| PC30M  | Recubrimiento de TiN | El sustrato del grano ultra fino con recubrimiento TiN asegura la vida larga de herramienta.<br>Aplicación Maquinado de Acero inoxidable, aleación resistente al calor y materiales difíciles de cortar |

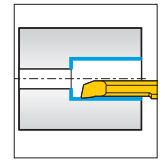
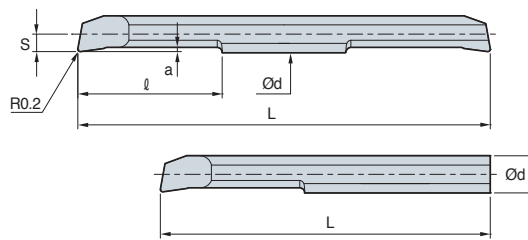
**Tipos de Maquinados**



**Tipos**

|                 |   |  |   |   |
|-----------------|---|--|---|---|
| <b>Interior</b> |   |  |   |   |
|                 | <b>Interior</b><br>Dia. mínimo de maquinado: Ø3.2 | <b>Copiado</b><br>Dia. mínimo de maquinado: Ø4.2           | <b>Torneado Posterior</b><br>Dia. mínimo de maquinado: Ø3.2 | <b>Chaflán</b><br>Dia. mínimo de maquinado: Ø4.2          |
|                 | <b>Ranurado</b>                                   |  |   |   |
|                 |   | <b>Ranurado Ciadrado</b><br>Dia. mínimo de maquinado: Ø3.2 | <b>Ranurado Redonde</b><br>Dia. mínimo de maquinado: Ø3.2   | <b>Ranurado Frontal</b><br>Dia. mínimo de maquinado: Ø6.0 |
| <b>Roscado</b>  |   |  |   |   |
|                 | <b>Roscado</b><br>Dia. mínimo de maquinado: Ø3.3  |  |   |   |

## Interior

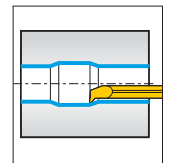
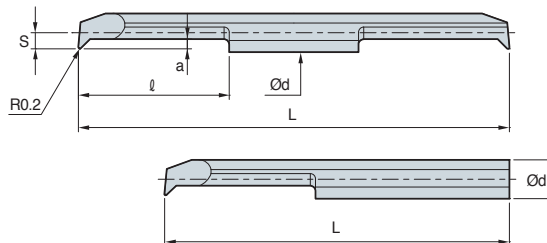


(mm)

| Filo doble  |            |          | Filo simple |            |          | Ød   | Diam. mínimo trabajo | l  | Longitud   |             | Detalles Filo de corte |     |
|-------------|------------|----------|-------------|------------|----------|------|----------------------|----|------------|-------------|------------------------|-----|
| Designación | Recubierto | Sin Rec. | Designación | Recubierto | Sin Rec. |      |                      |    | L          |             | a                      | S   |
|             | PC30M      | Z12M     |             | PC30M      | Z12M     |      |                      |    | Filo doble | Filo simple |                        |     |
| MBR         | 0310       | ●        | MBR         | 0310-1     |          | 3.0  | 3.2                  | 10 | 40         | 35          | 0.5                    | 1.4 |
|             | 0315       | ●        |             | 0315-1     |          |      |                      |    | 15         | 50          |                        |     |
|             | 0410       | ●        |             | 0410-1     |          |      |                      | 10 | 40         | 35          |                        |     |
|             | 0415       | ●        |             | 0415-1     |          | 4.0  | 4.2                  | 15 | 50         | 45          | 0.6                    | 1.9 |
|             | 0420       | ●        |             | 0420-1     |          |      |                      |    | 20         | 60          |                        |     |
|             | 0610       |          |             | 0610-1     |          |      |                      | 10 | 45         | 40          |                        |     |
|             | 0615       | ●        |             | 0615-1     |          | 6.0  | 6.2                  | 15 | 55         | 45          | 0.75                   | 2.9 |
|             | 0620       | ●        |             | 0620-1     |          |      |                      |    | 20         | 65          |                        |     |
|             | 0810       |          |             | 0810-1     |          |      |                      | 10 | 50         | 45          |                        |     |
|             | 0820       | ●        |             | 0820-1     |          | 8.0  | 8.2                  | 20 | 70         | 60          | 0.8                    | 3.9 |
|             | 0830       |          |             | 0830-1     |          |      |                      |    | 30         | 80          |                        |     |
|             | 1015       |          |             | 1015-1     |          |      |                      | 15 | 60         | 60          |                        |     |
|             | 1025       | ●        |             | 1025-1     |          | 10.0 | 10.2                 | 25 | 80         | 70          | 1.0                    | 4.9 |
| 1035        |            | 1035-1   |             | 35         | 100      |      |                      |    | 80         |             |                        |     |

● : En Almacen

## Copiado



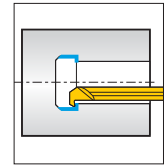
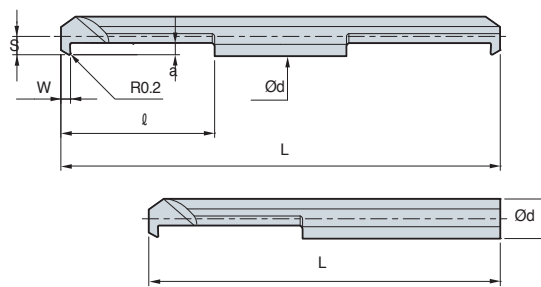
(mm)

| Filo doble  |            |          | Filo simple |            |          | Ød  | Diam. mínimo trabajo | l  | Longitud   |             | Detalles Filo de corte |     |
|-------------|------------|----------|-------------|------------|----------|-----|----------------------|----|------------|-------------|------------------------|-----|
| Designación | Recubierto | Sin Rec. | Designación | Recubierto | Sin Rec. |     |                      |    | L          |             | a                      | S   |
|             | PC30M      | Z12M     |             | PC30M      | Z12M     |     |                      |    | Filo doble | Filo simple |                        |     |
| MBCR        | 0410       |          | MBCR        | 0410-1     |          | 4.0 | 4.2                  | 10 | 40         | 35          | 1.0                    | 1.9 |
|             | 0415       | ●        |             | 0415-1     |          |     |                      |    | 15         | 50          |                        |     |
|             | 0420       | ●        |             | 0420-1     |          |     |                      | 20 | 60         | 50          |                        |     |
|             | 0610       |          |             | 0610-1     |          | 6.0 | 6.2                  | 10 | 45         | 40          | 1.3                    | 2.9 |
|             | 0615       | ●        |             | 0615-1     |          |     |                      |    | 15         | 55          |                        |     |
|             | 0620       | ●        |             | 0620-1     |          |     |                      | 20 | 60         | 50          |                        |     |

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# Boreado Inverso

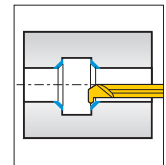
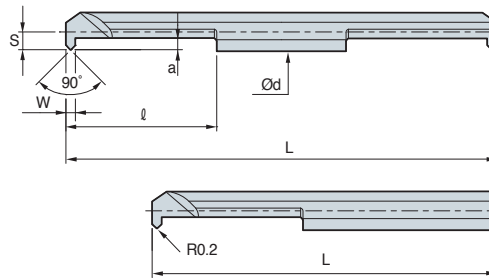


(mm)

| Filo doble  |            |          | Filo simple |            |          | Ød  | Diam. mínimo trabajo | l  | Longitud   |             | Detalles Filo de corte |     |     |    |
|-------------|------------|----------|-------------|------------|----------|-----|----------------------|----|------------|-------------|------------------------|-----|-----|----|
| Designación | Recubierto | Sin Rec. | Designación | Recubierto | Sin Rec. |     |                      |    | L          |             | W                      | a   | S   |    |
|             | PC30M      | Z12M     |             | PC30M      | Z12M     |     |                      |    | Filo doble | Filo simple |                        |     |     |    |
| MBBR        | 0310       |          | MBBR        | 0310-1     |          | 3.0 | 3.2                  | 10 | 40         | 35          | 1.5                    | 0.8 | 1.4 |    |
|             | 0315       |          |             | 0315-1     |          |     |                      |    | 15         | 50          |                        |     |     | 45 |
|             | 0410       |          |             | 0410-1     |          | 4.0 | 4.2                  | 10 | 40         | 35          | 2.0                    | 1.3 | 1.9 |    |
|             | 0415       |          |             | 0415-1     |          |     |                      |    | 15         | 50          |                        |     |     | 45 |
|             | 0420       |          |             | 0420-1     |          |     |                      |    | 20         | 60          |                        |     |     | 50 |
|             | 0610       |          |             | 0610-1     |          | 6.0 | 6.2                  | 10 | 45         | 40          | 2.0                    | 1.9 | 2.9 |    |
|             | 0615       |          |             | 0615-1     |          |     |                      |    | 15         | 55          |                        |     |     | 45 |
|             | 0620       |          |             | 0620-1     |          |     |                      |    | 20         | 65          |                        |     |     | 50 |

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# Chaflán



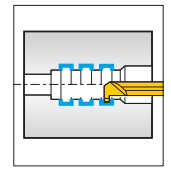
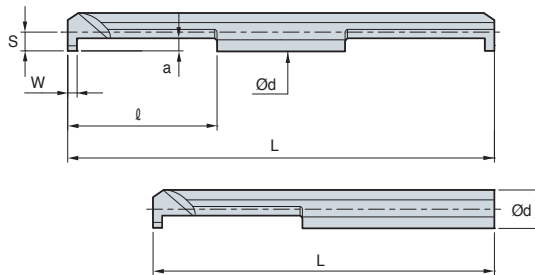
(mm)

| Filo doble  |            |          | Filo simple |            |          | Ød  | Diam. mínimo trabajo | l  | Longitud   |             | Detalles Filo de corte |     |     |    |
|-------------|------------|----------|-------------|------------|----------|-----|----------------------|----|------------|-------------|------------------------|-----|-----|----|
| Designación | Recubierto | Sin Rec. | Designación | Recubierto | Sin Rec. |     |                      |    | L          |             | W                      | a   | S   |    |
|             | PC30M      | Z12M     |             | PC30M      | Z12M     |     |                      |    | Filo doble | Filo simple |                        |     |     |    |
| MBFR        | 0410       |          | MBFR        | 0410-1     |          | 4.0 | 4.2                  | 10 | 40         | 35          | 0.8                    | 1.0 | 1.9 |    |
|             | 0415       |          |             | 0415-1     |          |     |                      |    | 15         | 50          |                        |     |     | 45 |
|             | 0420       |          |             | 0420-1     |          |     |                      |    | 20         | 60          |                        |     |     | 50 |
|             | 0610       |          |             | 0610-1     |          | 6.0 | 6.2                  | 10 | 45         | 40          | 1.4                    | 1.2 | 2.9 |    |
|             | 0615       |          |             | 0615-1     |          |     |                      |    | 15         | 55          |                        |     |     | 45 |
|             | 0620       |          |             | 0620-1     |          |     |                      |    | 20         | 65          |                        |     |     | 50 |

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# Ranurado Cuadrado



(mm)

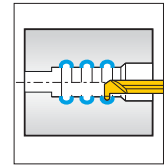
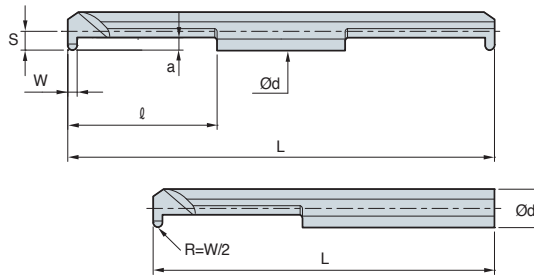
| Filo doble  |            |            | Filo simple |            |          | Ød  | Diam. mínimo trabajo | ℓ  | Longitud   |             | Detalles Filo de corte |     |     |
|-------------|------------|------------|-------------|------------|----------|-----|----------------------|----|------------|-------------|------------------------|-----|-----|
| Designación | Recubierto | Sin Rec.   | Designación | Recubierto | Sin Rec. |     |                      |    | L          |             | W                      | a   | S   |
|             | PC30M      | Z12M       |             | PC30M      | Z12M     |     |                      |    | Filo doble | Filo simple |                        |     |     |
| MGR         | 0310-1.0   |            | MGR         | 0310-1.0-1 |          | 3.0 | 3.2                  | 10 | 40         | 35          | 1.0                    | 0.8 | 1.4 |
|             | 0315-1.0   |            |             | 0315-1.0-1 |          |     |                      | 15 | 50         | 45          |                        |     |     |
|             | 0310-1.5   |            |             | 0310-1.5-1 |          |     |                      | 10 | 40         | 35          | 1.5                    |     |     |
|             | 0315-1.5   |            |             | 0315-1.5-1 |          |     |                      | 15 | 50         | 45          |                        |     |     |
|             | 0410-1.0   |            |             | 0410-1.0-1 |          | 4.0 | 4.2                  | 10 | 40         | 35          | 1.0                    | 1.4 | 1.9 |
|             | 0420-1.0   |            |             | 0420-1.0-1 |          |     |                      | 20 | 60         | 50          |                        |     |     |
|             | 0410-1.5   |            |             | 0410-1.5-1 |          |     |                      | 10 | 40         | 35          | 1.5                    |     |     |
|             | 0420-1.5   |            |             | 0420-1.5-1 |          |     |                      | 20 | 60         | 50          |                        |     |     |
|             | 0410-2.0   |            |             | 0410-2.0-1 |          | 6.0 | 6.2                  | 10 | 40         | 35          | 2.0                    | 1.8 | 2.9 |
|             | 0420-2.0   |            |             | 0420-2.0-1 |          |     |                      | 20 | 60         | 50          |                        |     |     |
|             | 0610-1.0   | ●          |             | 0610-1.0-1 |          |     |                      | 10 | 45         | 40          | 1.0                    |     |     |
|             | 0620-1.0   | ●          |             | 0620-1.0-1 |          |     |                      | 20 | 65         | 50          |                        |     |     |
|             | 0610-1.5   |            |             | 0610-1.5-1 |          | 10  | 45                   | 40 | 1.5        |             |                        |     |     |
|             | 0620-1.5   |            |             | 0620-1.5-1 |          | 20  | 65                   | 50 |            |             |                        |     |     |
|             | 0610-2.0   |            |             | 0610-2.0-1 |          | 10  | 45                   | 40 | 2.0        |             |                        |     |     |
|             | 0620-2.0   |            |             | 0620-2.0-1 |          | 20  | 65                   | 50 |            |             |                        |     |     |
|             | 0610-2.5   |            |             | 0610-2.5-1 |          | 10  | 45                   | 40 | 2.5        |             |                        |     |     |
|             | 0620-2.5   |            |             | 0620-2.5-1 |          | 20  | 65                   | 50 |            |             |                        |     |     |
|             | 0820-1.5   |            |             | 0820-1.5-1 |          | 8.0 | 8.2                  | 20 | 70         | 60          | 1.5                    | 2.5 | 3.9 |
|             | 0820-2.0   |            |             | 0820-2.0-1 |          |     |                      |    |            |             | 2.0                    |     |     |
| 0820-2.5    |            | 0820-2.5-1 |             | 2.5        | 3.5      |     |                      |    |            |             |                        |     |     |
| 0820-3.0    |            | 0820-3.0-1 |             | 3.0        |          |     |                      |    |            |             |                        |     |     |
| 1025-1.5    |            | 1025-1.5-1 |             | 10.0       | 10.2     | 25  | 80                   | 70 | 1.5        | 2.5         | 4.9                    |     |     |
| 1025-2.0    |            | 1025-2.0-1 |             |            |          |     |                      |    | 2.0        |             |                        |     |     |
| 1025-2.5    |            | 1025-2.5-1 |             |            |          |     |                      |    | 2.5        | 3.5         |                        |     |     |
| 1025-3.0    |            | 1025-3.0-1 |             |            |          |     |                      |    | 3.0        |             |                        |     |     |

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# Ranurado Redondo

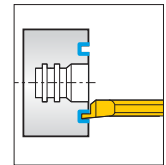
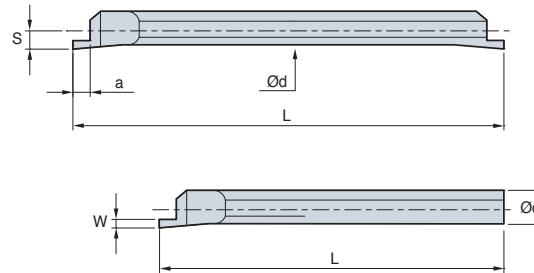


(mm)

| Filo doble  |            |          | Filo simple |            |          | Ød   | Diam. mínimo trabajo | ℓ  | Longitud   |             | Detalles Filo de corte |     |     |
|-------------|------------|----------|-------------|------------|----------|------|----------------------|----|------------|-------------|------------------------|-----|-----|
| Designación | Recubierto | Sin Rec. | Designación | Recubierto | Sin Rec. |      |                      |    | L          |             | W                      | a   | S   |
|             | PC30M      | Z12M     |             | PC30M      | Z12M     |      |                      |    | Filo doble | Filo simple |                        |     |     |
| MGRR        | 0310-0.8   |          | MGRR        | 0310-0.8-1 |          | 3.0  | 3.2                  | 10 | 40         | 35          | 0.8                    | 0.8 | 1.4 |
|             | 0315-0.8   |          |             | 0315-0.8-1 |          |      |                      |    | 15         | 50          |                        |     |     |
|             | 0410-1.0   |          |             | 0410-1.0-1 |          | 4.0  | 4.2                  | 10 | 40         | 35          | 1.0                    | 1.0 | 1.9 |
|             | 0420-1.0   |          |             | 0420-1.0-1 |          |      |                      |    | 20         | 60          |                        |     |     |
|             | 0610-1.0   |          |             | 0610-1.0-1 |          | 6.0  | 6.2                  | 10 | 45         | 40          | 1.0                    | 2.0 | 2.9 |
|             | 0620-1.0   |          |             | 0620-1.0-1 |          |      |                      |    | 20         | 65          |                        |     |     |
|             | 0610-1.5   |          |             | 0610-1.5-1 |          |      |                      |    | 10         | 45          | 40                     |     |     |
|             | 0620-1.5   |          |             | 0620-1.5-1 |          |      |                      |    | 20         | 65          | 50                     |     |     |
|             | 0610-2.0   |          |             | 0610-2.0-1 |          | 10.0 | 10.2                 | 20 | 45         | 40          | 2.0                    | 2.3 | 3.9 |
|             | 0620-2.0   |          |             | 0620-2.0-1 |          |      |                      |    | 20         | 65          |                        |     |     |
|             | 0820-1.0   |          |             | 0820-1.0-1 |          | 8.0  | 8.2                  | 20 | 70         | 60          | 1.0                    | 2.8 | 4.9 |
|             | 0820-1.5   |          |             | 0820-1.5-1 |          |      |                      |    |            |             | 1.5                    |     |     |
|             | 0820-2.0   |          |             | 0820-2.0-1 |          |      |                      |    |            |             | 2.0                    |     |     |
|             | 1025-1.0   |          |             | 1025-1.0-1 |          | 10.0 | 10.2                 | 25 | 80         | 70          | 1.0                    | 2.8 | 4.9 |
|             | 1025-1.5   |          |             | 1025-1.5-1 |          |      |                      |    |            |             | 1.5                    |     |     |
|             | 1025-2.0   |          |             | 1025-2.0-1 |          |      |                      |    |            |             | 2.0                    |     |     |

● : En Almacén

# Ranurado Frontal



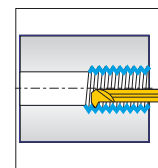
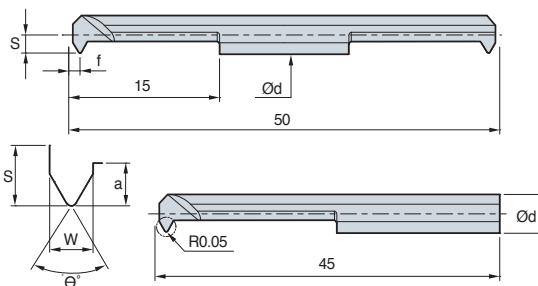
(mm)

| Filo doble  |            |            | Filo simple |            |          | Ød   | Diam. mínimo trabajo | Longitud   |             | Detalles Filo de corte |     |     |
|-------------|------------|------------|-------------|------------|----------|------|----------------------|------------|-------------|------------------------|-----|-----|
| Designación | Recubierto | Sin Rec.   | Designación | Recubierto | Sin Rec. |      |                      | L          |             | W                      | a   | S   |
|             | PC30M      | Z12M       |             | PC30M      | Z12M     |      |                      | Filo doble | Filo simple |                        |     |     |
| MGFR        | 0400-1.0   |            | MGFR        | 0400-1.0-1 |          | 4.0  | 6.0                  | 50         | 45          | 1.0                    | 1.5 | 1.8 |
|             | 0400-1.5   |            |             | 0400-1.5-1 |          |      |                      |            |             | 1.5                    | 2.0 |     |
|             | 0600-1.0   |            |             | 0600-1.0-1 |          | 6.0  | 8.5                  | 50         | 45          | 1.0                    | 1.5 | 2.9 |
|             | 0600-1.5   |            |             | 0600-1.5-1 |          |      |                      |            |             | 1.5                    | 2.0 |     |
|             | 0600-2.0   | ●          |             | 0600-2.0-1 |          | 8.0  | 10.4                 | 70         | 60          | 2.0                    | 2.5 | 3.9 |
|             | 0800-1.0   | ●          |             | 0800-1.0-1 |          |      |                      |            |             | 1.0                    | 1.5 |     |
|             | 0800-1.5   | ●          |             | 0800-1.5-1 |          |      |                      |            |             | 1.5                    | 2.0 |     |
|             | 0800-2.0   | ●          |             | 0800-2.0-1 |          |      |                      |            |             | 2.0                    | 2.5 |     |
|             | 0800-2.5   | ●          |             | 0800-2.5-1 | ●        | 10.0 | 12.4                 | 80         | 70          | 2.5                    | 3.0 | 4.9 |
|             | 0800-3.0   | ●          |             | 0800-3.0-1 | ●        |      |                      |            |             | 3.0                    | 3.5 |     |
|             |            |            |             | 0800-3.5-1 | ●        |      |                      |            |             | 3.5                    | 4.0 |     |
|             | 1000-2.0   |            |             | 1000-2.0-1 |          | 10.0 | 12.4                 | 80         | 70          | 2.0                    | 2.5 | 4.9 |
|             | 1000-2.5   |            |             | 1000-2.5-1 |          |      |                      |            |             | 2.5                    | 3.0 |     |
|             | 1000-3.0   |            |             | 1000-3.0-1 |          |      |                      |            |             | 3.0                    | 3.5 |     |
|             | 1000-3.5   |            |             | 1000-3.5-1 |          |      |                      |            |             | 3.5                    | 4.0 |     |
|             | 1000-4.0   |            |             | 1000-4.0-1 |          |      |                      |            |             | 4.0                    | 4.5 |     |
| 1000-4.5    |            | 1000-4.5-1 |             | 4.5        | 5.0      |      |                      |            |             |                        |     |     |

● : En Almacén



## Roscado



(mm)

| Filo doble  |                     |                  | Filo simple |                     |                  | Ød  | Diam. mínimo trabajo | Roscado |            |     | Detalles Filo de corte |     |     |
|-------------|---------------------|------------------|-------------|---------------------|------------------|-----|----------------------|---------|------------|-----|------------------------|-----|-----|
| Designación | Recubierto<br>PC30M | Sin Rec.<br>Z12M | Designación | Recubierto<br>PC30M | Sin Rec.<br>Z12M |     |                      | W       | Paso / tpi | θ°  | S                      | a   | f   |
| MTR         | 0315-F60            |                  | MTR         | 0315-F60-1          |                  | 3.0 | 3.3                  | 1.2     | 0.5~1.0    | 60° | 1.45                   | 1.2 | 0.6 |
|             | 0415-F60            |                  |             | 0415-F60-1          |                  | 4.0 | 4.3                  |         |            |     | 1.95                   |     |     |
|             | 0615-A60            |                  |             | 0615-A60-1          |                  | 6.0 | 6.2                  |         |            |     | 2.0                    |     |     |
|             | 0315-F55            |                  |             | 0315-F55-1          |                  | 3.0 | 3.3                  | 1.2     | 48~24      | 55° | 1.45                   | 1.2 | 0.6 |
|             | 0415-F55            |                  |             | 0415-F55-1          |                  | 4.0 | 4.3                  |         |            |     | 1.95                   |     |     |
|             | 0615-A55            |                  |             | 0615-A55-1          |                  | 6.0 | 6.2                  |         |            |     | 2.0                    |     |     |

● : En Almacen

## SLEEVE

## SL (SLEEVE)

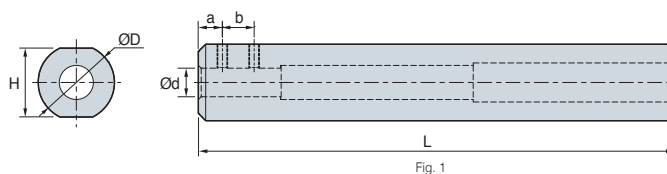


Fig. 1

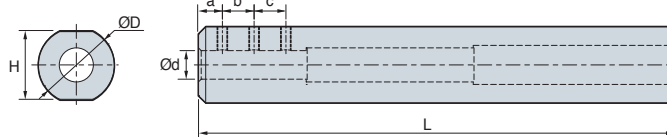


Fig. 2

(mm)

| Designación | Ød | a | b  | c  | ØD | H  | L   | Tornillo | Llave | Fig. |
|-------------|----|---|----|----|----|----|-----|----------|-------|------|
| SL1603      | 3  | 5 | -  | -  | 16 | 14 | 100 | M3       | HW15L | 1    |
| SL1604      | 4  | 5 | 6  | -  | 16 | 14 | 100 | M4       | HW20L |      |
| SL1605      | 5  | 5 | 8  | -  | 16 | 14 | 100 | M4       | HW20L |      |
| SL1606      | 6  | 5 | 6  | 6  | 16 | 14 | 100 | M4       | HW20L | 2    |
| SL1607      | 7  | 5 | 6  | 8  | 16 | 14 | 100 | M4       | HW20L |      |
| SL2008      | 8  | 5 | 10 | 10 | 20 | 18 | 100 | M4       | HW20L | 2    |
| SL2010      | 10 | 5 | 10 | 10 | 20 | 18 | 100 | M5       | HW20L |      |

\* Tolerancia excelente y aspereza superficial optimizada



# Multi Turn

## ➤ Sistema Codificación



## ➤ Codificación de Insertos

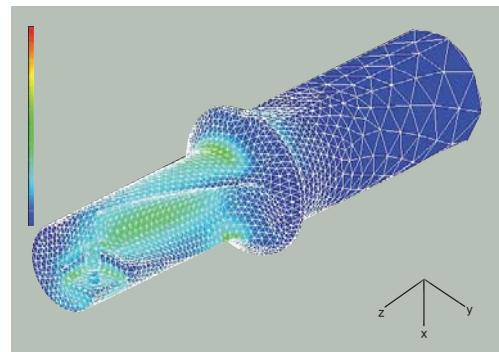


## ➤ Diseño de Herramientas

- Doble sistema de refrigeración
- Excelente sistema de evacuación de virutas

• Diseño eespecial de la flauta que minimiza la acumilación de virutas

※ **Aviso:** la sujeción del inserto debe llevarse a cabo como se muestra en la foto



• Stress minimizado durante el proceso de corte, previniendo así daños por vibración y alargando el tiempo de vida de la herramienta

Diseño Optimizado

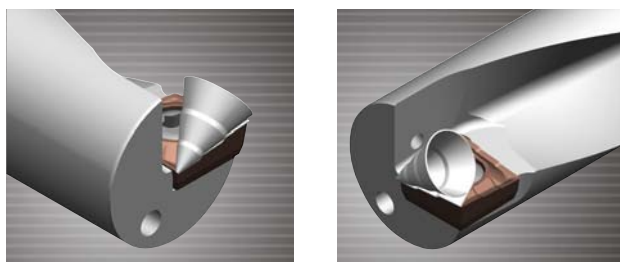
## ➤ Filo de corte escalonado

Filo P/Barrenado (Barrenado)

Filo para Torneado (Interno, la externo y careado)

Multi-Turn      Competidor A

- La viruta se evacua con una forma especial gracias a la mejor geometría del filo
- Buena evacuación y control de viruta debido al radio de la punta de radio pequeño

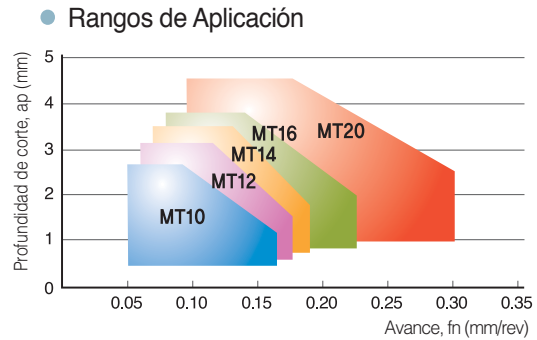
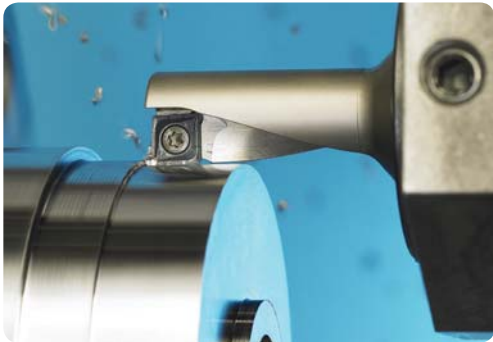


| Comparison                   | Multi turn | Competidor A | Competidor B |
|------------------------------|------------|--------------|--------------|
| Avance<br>fn (mm/rev) = 0.08 |            |              |              |
| Avance<br>fn (mm/rev) = 0.10 |            |              |              |
| Anchura de la viruta(tasa)   | 80%        | 100%         | 120%         |

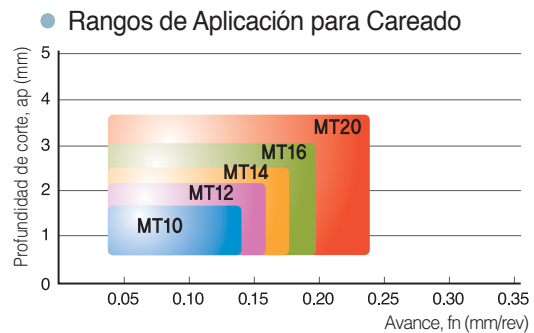
# B Información Técnica de Herramientas Multi Turn

## Guía Usuario

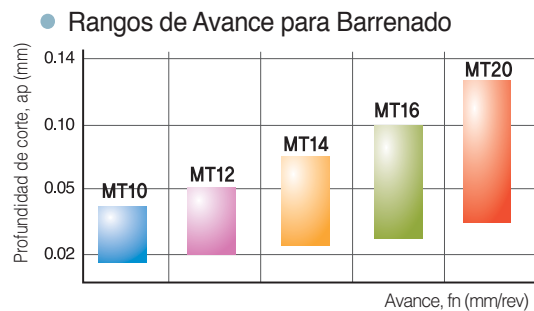
### Torneado Externo / Interno



### Careado

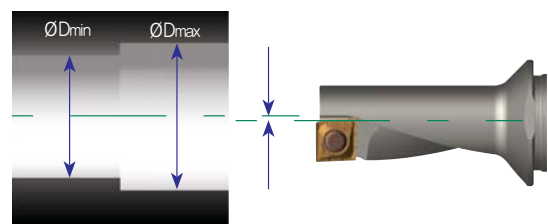


### Barrenado



### Offset (Diámetro de Compensación)

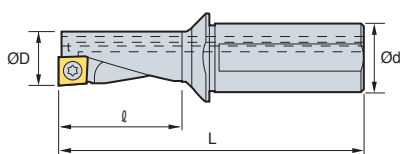
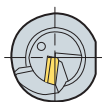
| Designación   | Diámetro (mm) | ØDmin (mm) | ØDmax (mm) |
|---------------|---------------|------------|------------|
| MT10R/L-2.25D | 10            | 9.85       | 10.35      |
| MT12R/L-2.25D | 12            | 11.85      | 12.35      |
| MT14R/L-2.25D | 14            | 13.85      | 14.35      |
| MT16R/L-2.25D | 16            | 15.85      | 16.35      |
| MT20R/L-2.25D | 20            | 19.85      | 20.35      |
| MT25R/L-2.25D | 25            | 24.85      | 25.35      |
| MT32R/L-2.25D | 32            | 31.85      | 32.35      |



Los diámetros en barrenado son ajustados en el offset



# MT (Multi-Turn)



| Designación |             | ØD | Ød | l    | L     | Inserto    | Tornillo   | Llave |
|-------------|-------------|----|----|------|-------|------------|------------|-------|
| MT          | 10R/L-2.25D | 10 | 12 | 22.5 | 69.5  | QC□T050204 | FTNA0204S  | TW06P |
|             | 12R/L-2.25D | 12 | 16 | 27.0 | 78.0  | QC□T060204 | FTNA02205S | TW06P |
|             | 14R/L-2.25D | 14 | 16 | 31.5 | 83.5  | QC□T070304 | FTKA02555  | TW07P |
|             | 16R/L-2.25D | 16 | 20 | 36.0 | 94.0  | QC□T080304 | FTNA0306   | TW09P |
|             | 20R/L-2.25D | 20 | 25 | 45.0 | 111.0 | QC□T10T304 | FTNA03508  | TW15P |
|             | 25R/L-2.25D | 25 | 32 | 56.5 | 130.0 | QC□T130408 | FTNC04509  | TW20S |
|             | 32R/L-2.25D | 32 | 40 | 72.0 | 160.0 | QC□T170508 | FTNC04511  | TW20S |

## Insertos

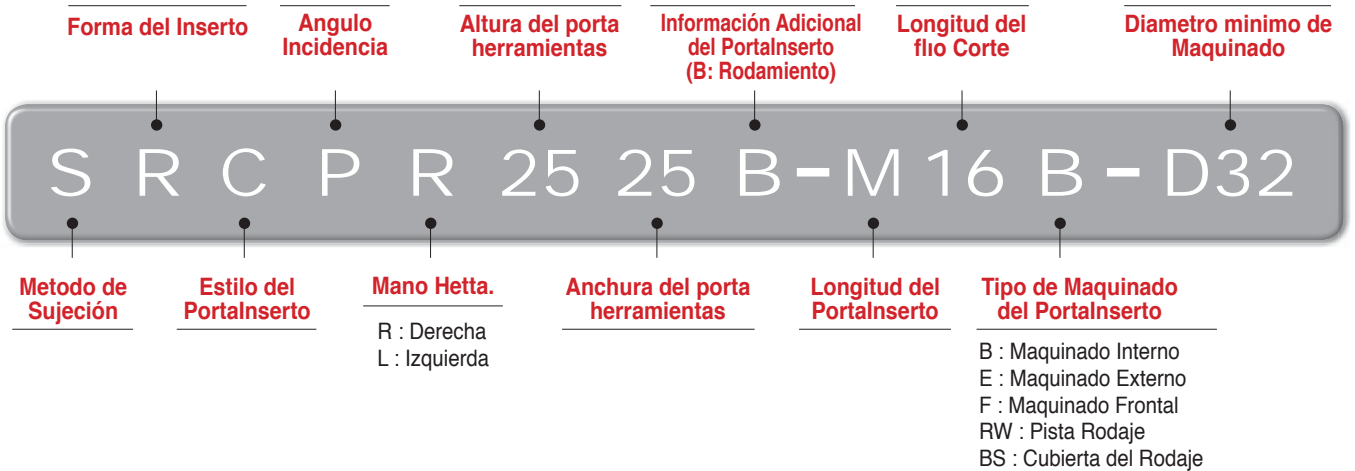
| Imagen    | Designación    | Recubierto |        |        |        | Sin Recubrimiento |      | Dimensiones (mm) |      |      |     |                 | Configuration |
|-----------|----------------|------------|--------|--------|--------|-------------------|------|------------------|------|------|-----|-----------------|---------------|
|           |                | NC3120     | NC3225 | NC6315 | PC5300 | H01               | H05  | l                | d    | t    | r   | Ød <sub>1</sub> |               |
|           | QCMT 050204-CM |            | ●      | ●      | ●      |                   |      | 5.0              | 5.4  | 2.10 | 0.4 | 2.3             |               |
|           | 060204-CM      |            | ●      | ●      | ●      |                   |      | 6.0              | 6.4  | 2.38 | 0.4 | 2.5             |               |
|           | 070304-CM      |            | ●      | ●      | ●      |                   |      | 7.0              | 7.4  | 3.18 | 0.4 | 2.8             |               |
|           | 080304-CM      |            | ●      | ●      | ●      |                   |      | 8.0              | 8.4  | 3.18 | 0.4 | 3.4             |               |
|           | 10T304-CM      |            | ●      |        |        | ●                 |      | 10.0             | 10.4 | 3.97 | 0.4 | 4.0             |               |
|           | 130408-CM      |            | ●      |        |        | ●                 |      | 12.7             | 13.5 | 4.76 | 0.8 | 5.5             |               |
|           | QCMT 170508-CM |            | ●      | ●      | ●      |                   |      | 16.7             | 17.5 | 5.56 | 0.8 | 5.5             |               |
|           | QCGT 050204-CA |            |        |        |        | ●                 |      | 5.0              | 5.4  | 2.10 | 0.4 | 2.3             |               |
|           | 060204-CA      |            |        |        |        | ●                 |      | 6.0              | 6.4  | 2.38 | 0.4 | 2.5             |               |
|           | 070304-CA      |            |        |        |        | ●                 |      | 7.0              | 7.4  | 3.18 | 0.4 | 2.8             |               |
|           | 080304-CA      |            |        |        |        | ●                 |      | 8.0              | 8.4  | 3.18 | 0.4 | 3.4             |               |
|           | 10T304-CA      |            |        |        |        | ●                 |      | 10.0             | 10.4 | 3.97 | 0.4 | 4.0             |               |
| 130408-CA |                |            |        |        | ●      |                   | 12.7 | 13.5             | 4.76 | 0.8  | 5.5 |                 |               |
| 170508-CA |                |            |        |        | ●      |                   | 16.7 | 17.5             | 5.56 | 0.8  | 5.5 |                 |               |

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## Solución en Rodamientos

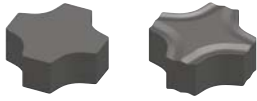
### Sistema Codificación



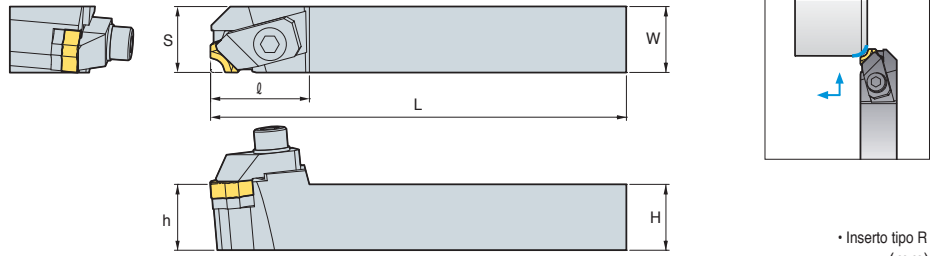
### Sistema Codificación para el Maquinado de Pistas de Rodaje & Cubierta del Rodaje



### CMSN...F Tipo



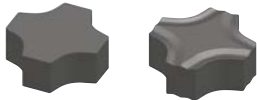
MC12□□ MC12□□-BR  
MC15□□



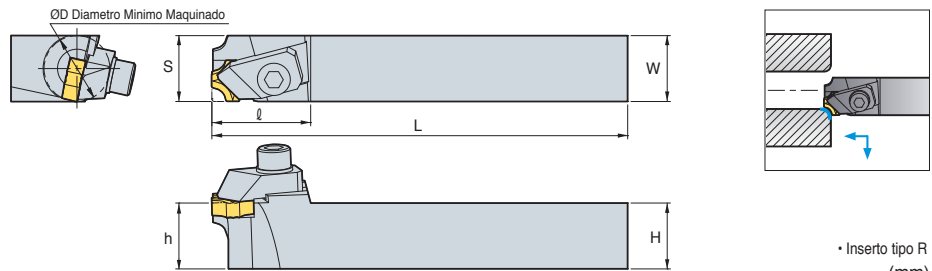
• Inserto tipo R (mm)

| Designación | H          | W  | L  | S   | h  | ℓ  | Insertos | Brida     | Tornillo Brida | Placa   | Tornillo Placa | Llave  |       |
|-------------|------------|----|----|-----|----|----|----------|-----------|----------------|---------|----------------|--------|-------|
| CMSNR/L     | 2020B-L12F | 20 | 20 | 140 | 21 | 20 | 33       | MC12□□    | CH6R/L1B       | BHA0620 | SX42CB         | SS0308 | HW50L |
|             | 2023B-L12F | 20 | 23 | 140 | 24 | 20 | 33       | MC12□□-BR |                |         |                |        |       |
|             | 2525B-L15F | 25 | 25 | 140 | 26 | 25 | 35       | MC15□□    |                |         |                |        |       |

### CMSN...B Tipo



MC12□□ MC12□□-BR



• Inserto tipo R (mm)

| Designación | ØD             | H  | W  | L  | S   | h  | ℓ  | Insertos | Brida    | Tornillo Brida | Placa   | Tornillo Placa | Llave  |
|-------------|----------------|----|----|----|-----|----|----|----------|----------|----------------|---------|----------------|--------|
| CMSNR/L     | 2020B-L12B-D28 | 28 | 20 | 20 | 140 | 21 | 20 | MC12□□   | CH6R/L1B | BHA0620        | SX42CB  | SS0308         | HW50L  |
|             | 2525B-L12B-D28 | 28 | 25 | 25 | 140 | 26 | 25 |          | 33       | CH6R/L1B       | BHA0620 | SX42CB         | SS0308 |
|             | 1620B-L12B-D20 | 20 | 16 | 20 | 140 | 18 | 16 | 32       | CH6R/L1B | BHA0620        | -       | -              | HW50L  |
|             | 2023B-L12B-D28 | 28 | 20 | 23 | 140 | 24 | 20 | 33       | CH6R/L1B | BHA0620        | SX42CB  | SS0308         | HW50L  |

### Insertos

| Aplicación    | Imagen | Designación | Cermet | Dimensiones (mm) |      |      |        |      | Conguración |
|---------------|--------|-------------|--------|------------------|------|------|--------|------|-------------|
|               |        |             | CN2000 | R                | θ°   | B    | d      | t    |             |
| R-Chaflaneado |        | MC0906      |        | 0.6              | 12   | 1.8  | 9.525  | 3.18 |             |
|               |        | MC0910      |        | 1.0              | 12   | 2.4  | 9.525  | 3.18 |             |
|               |        | MC1206      |        | 0.6              | 18   | 1.8  | 12.7   | 4.76 |             |
|               |        | MC1210      |        | 1.0              | 18   | 2.4  | 12.7   | 4.76 |             |
|               |        | MC1212      |        | 1.2              | 18   | 2.2  | 12.7   | 4.76 |             |
|               |        | MC1215      |        | 1.5              | 18   | 3.0  | 12.7   | 4.76 |             |
|               |        | MC1220      |        | 2.0              | 18   | 3.8  | 12.7   | 4.76 |             |
|               |        | MC1225      |        | 2.5              | 18   | 2.8  | 12.7   | 4.76 |             |
|               |        | MC1525      |        | 2.5              | 18   | 4.0  | 15.875 | 5.56 |             |
|               |        | MC1530      |        | 3.0              | 18   | 4.7  | 15.875 | 5.56 |             |
|               |        | MC1540      |        | 4.0              | 20   | 4.7  | 15.875 | 5.56 |             |
|               |        | MC1206-BR   |        | 0.6              | 18   | 1.8  | 12.7   | 4.76 |             |
|               |        | MC1210-BR   |        | 1.0              | 18   | 2.4  | 12.7   | 4.76 |             |
|               |        | MC1212-BR   |        | 1.2              | 18   | 2.2  | 12.7   | 4.76 |             |
| MC1215-BR     |        | 1.5         | 18     | 3.0              | 12.7 | 4.76 |        |      |             |
| MC1220-BR     |        | 2.0         | 18     | 3.2              | 12.7 | 4.76 |        |      |             |
| MC1230-BR     |        | 3.0         | 18     | 3.7              | 12.7 | 4.76 |        |      |             |
| MC1235-BR     |        | 3.5         | 18     | 3.9              | 12.7 | 4.76 |        |      |             |

●: En Almacén

### Formato Orden Especial

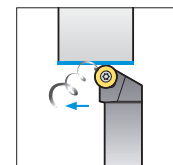
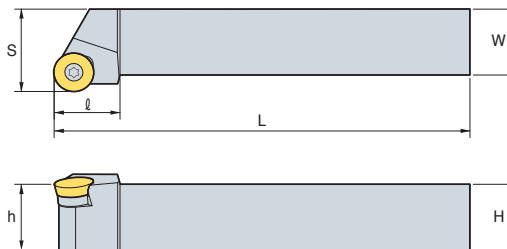
| Designación | CN1000 | CN2000 | R | θ° | B | d | t | Conguración |
|-------------|--------|--------|---|----|---|---|---|-------------|
| MC...       |        |        |   |    |   |   |   |             |



## SRGP...E Tipo



RPGT1203M0  
RPGT1604M0  
RPGT2004M0



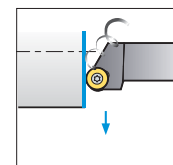
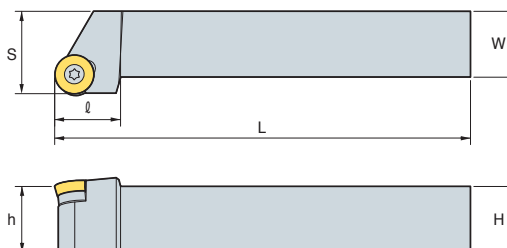
• Inserto tipo R  
(mm)

| Designación        | H  | W  | L   | S  | h  | $\varnothing$ | Insertos   | Tornillo | Placa   | Tornillo Placa | Llave |
|--------------------|----|----|-----|----|----|---------------|------------|----------|---------|----------------|-------|
| SRGPR/L 2020B-L12E | 20 | 20 | 140 | 25 | 20 | 20            | RPGT1203M0 | FTKA0410 | SR1203S | SHXN0609F      | TW15P |
| 2020B-L16E         | 20 | 20 | 140 | 25 | 20 | 20            | RPGT1604M0 | FTNA0513 | SR16T3S | SHXN0712F      | TW20P |
| 2525B-L20E         | 25 | 25 | 140 | 32 | 25 | 30            | RPGT2004M0 | FTNA0513 | SR20T3S | SHXN0712F      | TW20P |

## SRGP...F Tipo



RPGT1203M0  
RPGT1604M0  
RPGT2004M0



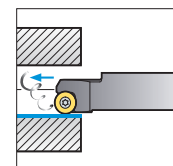
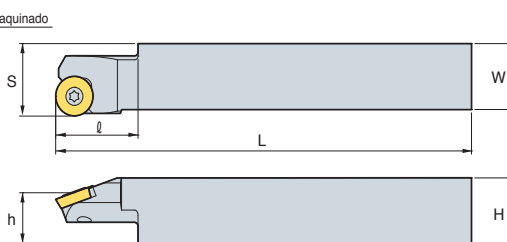
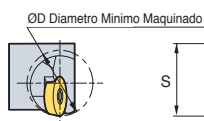
• Inserto tipo R  
(mm)

| Designación        | H  | W  | L   | S  | h  | $\varnothing$ | Insertos   | Tornillo | Placa   | Tornillo Placa | Llave |
|--------------------|----|----|-----|----|----|---------------|------------|----------|---------|----------------|-------|
| SRGPR/L 2020B-L12F | 20 | 20 | 140 | 25 | 20 | 20            | RPGT1203M0 | FTKA0410 | SR1203S | SHXN0609F      | TW15P |
| 2020B-L16F         | 20 | 20 | 140 | 25 | 20 | 20            | RPGT1604M0 | FTNA0513 | SR16T3S | SHXN0712F      | TW20P |
| 2525B-L20F         | 25 | 25 | 140 | 32 | 25 | 30            | RPGT2004M0 | FTNA0513 | SR20T3S | SHXN0712F      | TW20P |

## SRCP...B Tipo



RPGT0802M0  
RPGT1203M0  
RPGT1604M0



• Inserto tipo R  
(mm)

| Designación             | ØD | H  | W  | L   | S    | h    | $\varnothing$ | Insertos   | Tornillo | Llave |
|-------------------------|----|----|----|-----|------|------|---------------|------------|----------|-------|
| SRCP/R/L 2020B-L08B-D12 | 12 | 20 | 20 | 140 | 21.5 | 15.5 | 25            | RPGT0802M0 | FTKA0305 | TW09P |
| 1919B-L12B-D15          | 15 | 19 | 19 | 140 | 21   | 16   | 25            | RPGT1203M0 | FTNA0408 | TW15P |
| 2020B-L12B-D20          | 20 | 20 | 20 | 140 | 22   | 15.5 | 25            | RPGT1203M0 | FTNA0408 | TW15P |
| 2525B-L16B-D32          | 32 | 25 | 25 | 140 | 27   | 20   | 30            | RPGT1604M0 | FTKA0510 | TW20P |

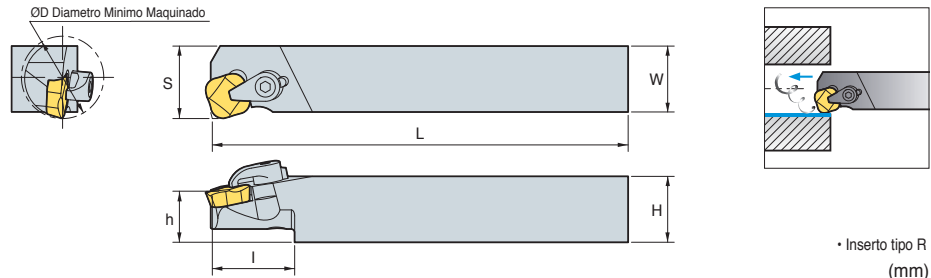




# CSKP...B Tipo



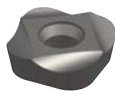
SPGR120440L



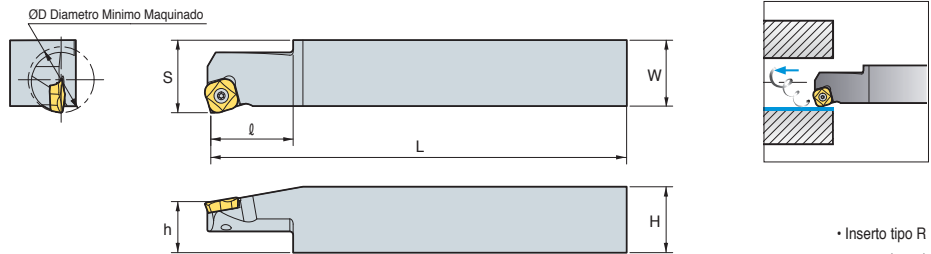
• Inserto tipo R (mm)

| Designación            | ØD | H  | W  | L   | S  | h  | l  | Insertos      | Brida | Tornillo Brida | Llave |
|------------------------|----|----|----|-----|----|----|----|---------------|-------|----------------|-------|
| CSKPR/L 2022B-L12B-D30 | 30 | 20 | 22 | 140 | 27 | 20 | 37 | SPGR120440R/L | CH5R1 | CHX0510        | HW30L |

# SSKP...B Tipo



SPGH090330L



• Inserto tipo R (mm)

| Designación            | ØD | H  | W  | L   | S    | h  | l  | Insertos      | Tornillo | Llave |
|------------------------|----|----|----|-----|------|----|----|---------------|----------|-------|
| SSKPR/L 2020B-L09B-D12 | 12 | 20 | 20 | 140 | 21.7 | 19 | 20 | SPGH090330R/L | FTNA0307 | TW09P |
| 2020B-L09B-D13         | 13 | 20 | 20 | 140 | 21.7 | 19 | 20 |               |          |       |
| 2020B-L09B-D20         | 20 | 20 | 20 | 140 | 21.7 | 19 | 20 |               |          |       |

## Insertos

| Aplicación       | Imagen | Designación | Cermet | Dimensiones (mm) |     |                |      | Conguración |  |
|------------------|--------|-------------|--------|------------------|-----|----------------|------|-------------|--|
|                  |        |             | CN2000 | r                | d   | d <sub>1</sub> | t    |             |  |
| Torneado interno |        | RPGT0802M0  |        | -                | 8   | 3.4            | 2.38 |             |  |
|                  |        | RPGT1203M0  |        | -                | 12  | 4.4            | 3.18 |             |  |
|                  |        | RPGT1604M0  |        | -                | 16  | 5.5            | 4.76 |             |  |
|                  |        | RPGT2004M0  |        | -                | 20  | 5.5            | 4.76 |             |  |
|                  |        | SPGR120440L |        |                  | 4.0 | 12..7          | -    | 4.76        |  |
|                  |        |             |        |                  |     |                |      |             |  |
|                  |        | SPGH090330L |        |                  | 3.0 | 9.525          | 3.4  | 3.18        |  |

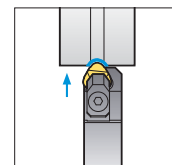
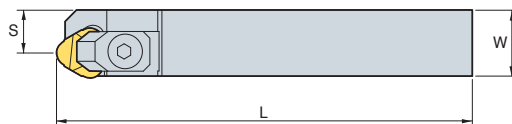
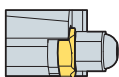


# B Solución en Rodamientos

## CKFN...RW Tipo



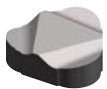
KORIC



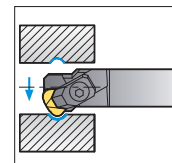
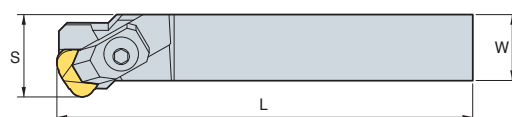
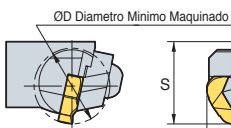
• Inserto tipo R (mm)

| Designación         | H  | W  | L   | S    | h  | Insertos     | Brida    | Tornillo Brida | Placa  | Tornillo Placa | Llave |
|---------------------|----|----|-----|------|----|--------------|----------|----------------|--------|----------------|-------|
| CKFNR/L 2020B-L22RW | 20 | 20 | 140 | 12.5 | 20 | KORIC2204R/L | CH6N1B   | BHA0620        | ST42CB | SS0408         | HW50L |
| 2022B-L27RW         | 20 | 22 | 140 | 13   | 20 | KORIC2704R/L | CH8R/L1B | BHA0820        | ST52CB | SS0408         | HW60L |
| 2025B-L33RW         | 20 | 25 | 140 | 16   | 20 | KORIC3306R/L | CH8R/L1B | BHA0820        | ST62CB | SS0408         | HW60L |
| 2533B-L44RW         | 25 | 33 | 140 | 21   | 25 | KORIC4408R/L | CH8R/L1B | BHA0820        | ST82CB | SS0408         | HW60L |

## CKGN...RW Tipo



KORIC



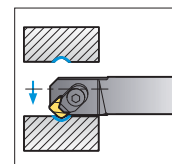
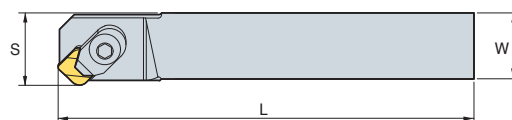
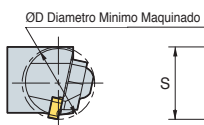
• Inserto tipo R (mm)

| Designación             | ØD | H  | W  | L   | S  | h  | Insertos     | Brida    | Tornillo Brida | Placa  | Tornillo Placa | Llave |
|-------------------------|----|----|----|-----|----|----|--------------|----------|----------------|--------|----------------|-------|
| CKGNR/L 2022B-L22RW-D23 | 23 | 20 | 22 | 140 | 30 | 20 | KORIC2204R/L | CH6R/L3B | BHA0620        | ST42CB | SS0408         | HW50L |
| 2022B-L27RW-D29         | 29 | 20 | 22 | 140 | 34 | 20 | KORIC2704R/L | CH6R/L7B | BHA0620        | ST52CB | SS0408         | HW50L |
| 2025B-L33RW-D38         | 38 | 20 | 25 | 140 | 33 | 20 | KORIC3306R/L | CH6R/L5B | BHA0620        | ST62CB | SS0408         | HW50L |
| 2528B-L38RW-D50         | 50 | 25 | 28 | 140 | 46 | 25 | KORIC3806R/L | CH8R/L2B | BHA0820        | ST72CB | SS0408         | HW60L |
| 2528B-L44RW-D52         | 52 | 25 | 28 | 140 | 50 | 25 | KORIC4408R/L | CH8R/L2B | BHA0820        | ST82CB | SS0408         | HW60L |

## CSGN...RW Tipo



SNGN

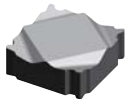


• Inserto tipo R (mm)

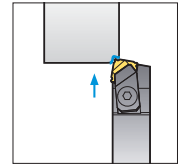
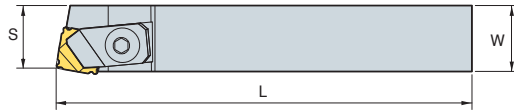
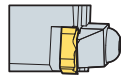
| Designación             | ØD | H  | W  | L   | S  | h  | Insertos     | Brida | Tornillo Brida | Llave |
|-------------------------|----|----|----|-----|----|----|--------------|-------|----------------|-------|
| CSGNR/L 2020B-L09RW-D17 | 17 | 20 | 20 | 140 | 22 | 20 | SNGN0903WR/L | CH5R1 | CHX0510        | HW30L |
| 2020B-L09RW-D22         | 22 | 20 | 20 | 140 | 22 | 20 | SNGN0903WR/L | CH5R1 | CHX0510        | HW30L |



## CSBN...BS Tipo



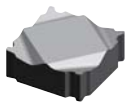
SNGN



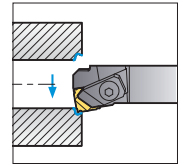
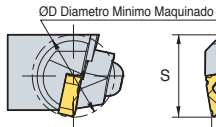
• Inserto tipo R (mm)

| Designación         | H  | W  | L   | S  | h  | Insertos     | Brida  | Tornillo Brida | Placa  | Tornillo Placa | Llave |
|---------------------|----|----|-----|----|----|--------------|--------|----------------|--------|----------------|-------|
| CSBNR/L 2023B-L12BS | 20 | 23 | 140 | 21 | 20 | SNGN1204SR/L | CH6N1B | BHA0620        | SS42CB | SS0308         | HW50L |
| 2525B-L15BS         | 25 | 25 | 140 | 23 | 25 | SNGN1504SR/L | CH6N1B | BHA0620        | SS52CB | SS0408         | HW50L |

## CSKN...BS Tipo



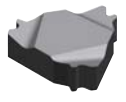
SNGN



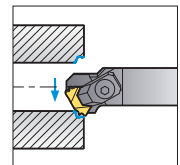
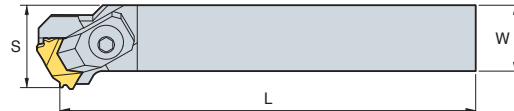
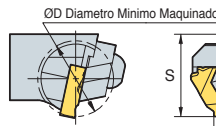
• Inserto tipo R (mm)

| Designación             | ØD | H  | W  | L   | S  | h  | Insertos     | Brida    | Tornillo Brida | Placa  | Tornillo Placa | Llave |
|-------------------------|----|----|----|-----|----|----|--------------|----------|----------------|--------|----------------|-------|
| CSKNR/L 1622B-L09BS-D14 | 14 | 16 | 22 | 140 | 16 | 16 | SNGN0903SR/L | CH6R/L2B | BHA0620        | -      | -              | HW50L |
| 2022B-L12BS-D26         | 26 | 20 | 22 | 140 | 27 | 20 | SNGN1204SR/L | CH6R/L1B | BHA0620        | SS42CB | SS0308         | HW50L |
| 2525B-L15BS-D35         | 35 | 25 | 25 | 140 | 31 | 25 | SNGN1504SR/L | CH6R/L3B | BHA0620        | SS52CB | SS0408         | HW50L |

## CTGN...BS Tipo



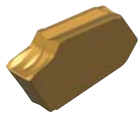
TNGN



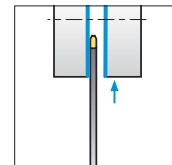
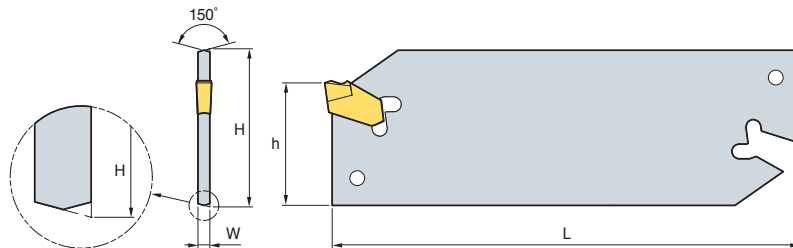
• Inserto tipo R (mm)

| Designación             | ØD | H  | W  | L   | S  | h  | Insertos     | Brida    | Tornillo Brida | Placa  | Tornillo Placa | Llave |
|-------------------------|----|----|----|-----|----|----|--------------|----------|----------------|--------|----------------|-------|
| CTGNR/L 2021B-K22BS-D25 | 25 | 20 | 21 | 140 | 30 | 20 | TNGN2204SR/L | CH6R/L7B | BHA0620        | ST42CB | SS0408         | HW50L |

## SPB-S Tipo



SP



(mm)

| Designación | H      | W  | L   | h   | Insertos | Llave           |       |
|-------------|--------|----|-----|-----|----------|-----------------|-------|
| SPB         | 1626-S | 26 | 1.3 | 110 | 21       | SP160           | SW15S |
|             | 1632-S | 32 | 1.3 | 150 | 25       |                 |       |
|             | 1826-S | 26 | 1.5 | 110 | 21       | SP180           |       |
|             | 1832-S | 32 | 1.5 | 150 | 25       |                 |       |
|             | 226-S  | 26 | 1.6 | 110 | 21       | SP200, SP200R/L |       |
|             | 232-S  | 32 | 1.6 | 150 | 25       |                 |       |
|             | 326-S  | 26 | 2.4 | 110 | 21       | SP300, SP300R/L |       |
|             | 332-S  | 32 | 2.4 | 150 | 25       |                 |       |
|             | 426-S  | 26 | 3.2 | 110 | 21       | SP400, SP400R/L |       |
|             | 432-S  | 32 | 3.2 | 150 | 25       |                 |       |
|             | 526-S  | 26 | 4.0 | 110 | 21       | SP500, SP500R/L |       |
|             | 532-S  | 32 | 4.0 | 150 | 25       |                 |       |
|             | 626-S  | 26 | 5.2 | 110 | 21       | SP600, SP600R/L |       |
|             | 632-S  | 32 | 5.2 | 150 | 25       |                 |       |

## Insertos

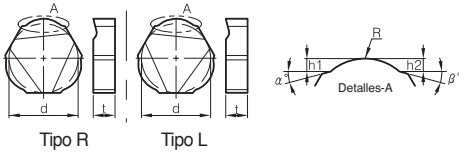
| Aplicación | Imagen | Designación | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. | Dimensiones (mm) |      |      | Conguracion |          |      |
|------------|--------|-------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------------------|------|------|-------------|----------|------|
|            |        |             | NCM325     | NC3120 | NC3225 | NC3030 | NC5330 | PC3035 | PC8105 | PC8110 | PC5300 | PC9030 |          | W                | l    | r    |             |          |      |
| Tronzado   |        | SP 160      |            |        |        |        |        |        |        |        |        |        |          |                  | 1.6  | 7.8  | 0.16        | <br><br> |      |
|            |        | SP 180      |            |        |        |        |        |        |        |        |        |        |          |                  |      | 1.8  | 9.3         |          | 0.16 |
|            |        | SP 200      | ●          |        | ●      | ●      | ●      |        |        | ●      | ●      | ●      |          |                  |      | 2.2  | 9.3         |          | 0.2  |
|            |        | SP 200R     |            |        |        | ●      |        |        |        |        |        | ●      |          |                  |      | 2.2  | 9.3         |          | 0.2  |
|            |        | SP 200L     |            |        |        |        |        |        |        |        |        | ●      |          |                  |      | 2.2  | 9.3         |          | 0.2  |
|            |        | SP 300      | ●          | ●      | ●      | ●      | ●      |        |        | ●      | ●      | ●      | ●        |                  |      | 3.1  | 11.3        |          | 0.2  |
|            |        | SP 300R     | ●          |        | ●      | ●      |        |        |        | ●      |        |        |          |                  |      | 3.1  | 11.3        |          | 0.2  |
|            |        | SP 300L     |            |        |        | ●      |        |        |        |        |        |        |          |                  |      | 3.1  | 11.3        |          | 0.2  |
|            |        | SP 400      | ●          | ●      | ●      | ●      | ●      |        |        | ●      | ●      | ●      |          |                  |      | 4.1  | 11.3        |          | 0.25 |
|            |        | SP 400R     |            |        |        | ●      |        |        |        | ●      |        |        |          |                  |      | 4.1  | 11.3        |          | 0.25 |
|            |        | SP 400L     |            |        |        | ●      |        |        |        |        |        |        |          |                  |      | 4.1  | 11.3        |          | 0.25 |
|            |        | SP 500      | ●          |        |        | ●      | ●      |        |        | ●      | ●      |        |          |                  |      | 5.1  | 11.4        |          | 0.3  |
|            |        | SP 500R     |            |        |        |        |        |        |        |        |        |        |          |                  |      | 5.1  | 11.4        |          | 0.3  |
|            |        | SP 500L     |            |        |        |        |        |        |        |        |        |        |          |                  |      | 5.1  | 11.4        |          | 0.3  |
|            |        | SP 600      |            |        |        | ●      | ●      |        |        |        | ●      |        |          |                  |      | 6.4  | 11.4        |          | 0.35 |
|            |        | SP 600R     |            |        |        |        |        |        |        |        |        |        |          |                  |      | 6.4  | 11.4        |          | 0.35 |
| SP 600L    |        |             |            |        |        |        |        |        |        |        |        |        |          | 6.4              | 11.4 | 0.35 |             |          |      |

● : En Almacen



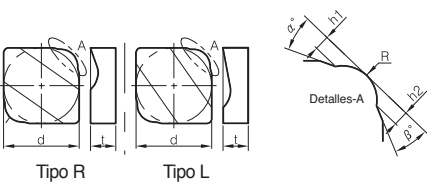
**Pista Rodamiento**

**Tipo KORIC... R/L**



|       |         | d      | t    | R | h <sub>1</sub> | h <sub>2</sub> | α° | β° |
|-------|---------|--------|------|---|----------------|----------------|----|----|
| KORIC | 2204R/L | 12.7   | 4.76 |   |                |                |    |    |
|       | 2704R/L | 15.875 | 4.76 |   |                |                |    |    |
|       | 3306R/L | 19.05  | 6.0  |   |                |                |    |    |
|       | 3806R/L | 22.225 | 6.0  |   |                |                |    |    |
|       | 4408R/L | 25.4   | 8.0  |   |                |                |    |    |

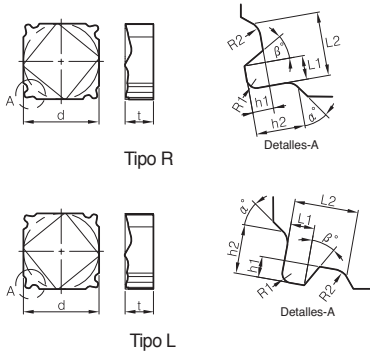
**Tipo SNGN... WR/L**



|      |          | d      | t    | R | h <sub>1</sub> | h <sub>2</sub> | α° | β° |
|------|----------|--------|------|---|----------------|----------------|----|----|
| SNGN | 0903WR/L | 9.525  | 3.18 |   |                |                |    |    |
|      | 1504WR/L | 15.875 | 4.76 |   |                |                |    |    |
|      | 1905WR/L | 19.05  | 5.56 |   |                |                |    |    |

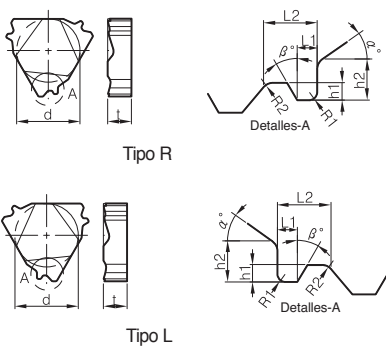
**Cubierta Pista de Rodamiento**

**Tipo SNGN...SR/L**



|      |          | d      | t    | L <sub>1</sub> | L <sub>2</sub> | h <sub>1</sub> | h <sub>2</sub> | R <sub>1</sub> | R <sub>2</sub> | α° | β° |
|------|----------|--------|------|----------------|----------------|----------------|----------------|----------------|----------------|----|----|
| SNGN | 0903SR/L | 9.525  | 3.18 |                |                |                |                |                |                |    |    |
|      | 1204SR/L | 12.7   | 4.76 |                |                |                |                |                |                |    |    |
|      | 1504SR/L | 15.875 | 4.76 |                |                |                |                |                |                |    |    |

**Tipo TNGN...SR/L**



|      |           | d    | t    | L <sub>1</sub> | L <sub>2</sub> | h <sub>1</sub> | h <sub>2</sub> | R <sub>1</sub> | R <sub>2</sub> | α° | β° |
|------|-----------|------|------|----------------|----------------|----------------|----------------|----------------|----------------|----|----|
| TNGN | 02204SR/L | 12.7 | 4.76 |                |                |                |                |                |                |    |    |

# B Sistema Codificación para Portalinsertos(ISO)


P S K N R 25 25 - M 12

1 2 3 4 5 6 7 8 9

Método Sujeción Portalinsertos    Forma del Inserto    Estilo Portalinserto    Angulo de Incidencia    Mano de la Herramienta    Altura del porta herramientas    Ancho del porta herramientas    Longitud Portalinserto    Longitud del Filo del Inserto

### 1 Método Sujeción Portalinsertos

P S K N R 25 25 - M 12

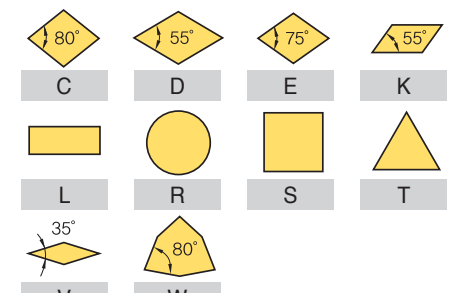


Brida Superior  
Brida Superior (Perno y Bridap)  
Brida Superior (Multibrida, Perno y Brida)  
Con Perno Bloqueador  
Tornillo  
Brida Superior (Brida Ancha, perno y Brida)

C D M P S W

### 2 Forma del Inserto

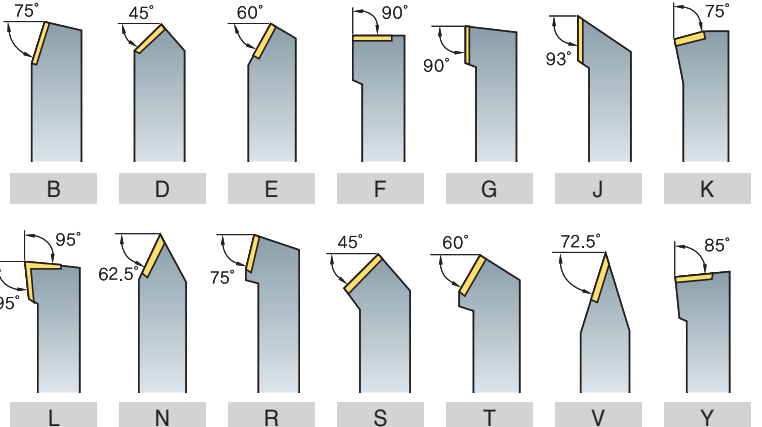
P S K N R 25 25 - M 12



C D E K  
L R S T  
V W

### 3 Estilo Portalinserto

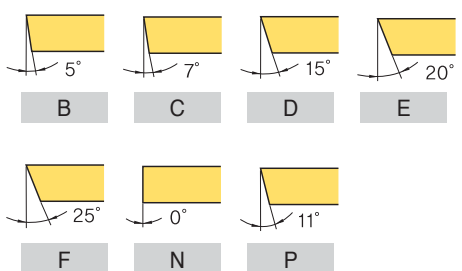
P S K N R 25 25 - M 12



B D E F G J K  
L N R S T V Y

### 4 Angulo de Incidencia

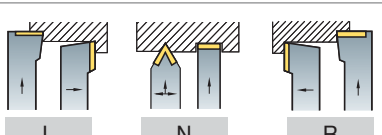
P S K N R 25 25 - M 12



B C D E  
F N P

### 5 Mano de la Herramienta

P S K N R 25 25 - M 12



L N R

### 6 Altura del porta herramientas

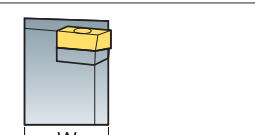
P S K N R 25 25 - M 12



H

### 7 Ancho del porta herramientas

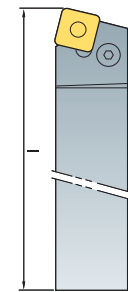
P S K N R 25 25 - M 12



W

### 8 Longitud Portalinserto

P S K N R 25 25 - M 12

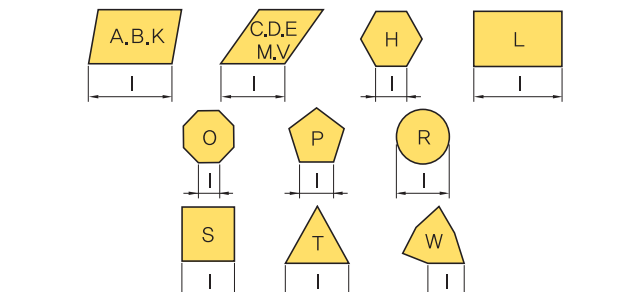


|        |         |         |
|--------|---------|---------|
| A - 32 | H - 100 | Q - 180 |
| B - 40 | J - 110 | R - 200 |
| C - 50 | K - 125 | S - 250 |
| D - 60 | L - 140 | T - 300 |
| E - 70 | M - 150 | U - 350 |
| F - 80 | N - 160 | V - 400 |
| G - 90 | P - 170 | W - 450 |

X-Especial

### 9 Longitud del Filo del Inserto

P S K N R 25 25 - M 12




Sistema de Brida Doble

|                     |         |         |         |         |         |       |         |         |         |         |
|---------------------|---------|---------|---------|---------|---------|-------|---------|---------|---------|---------|
| Forma del Corte     |         |         |         |         |         |       |         |         |         |         |
| Designación         | DCBNR/L | DCKNR/L | DCLNR/L | DDJNR/L | DSBNR/L | DSDNN | DSKNR/L | DSSNR/L | DTFNR/L | DTGNR/L |
| Angulo Acercamiento | 75°     | 75°     | 95°     | 93°     | 75°     | 45°   | 75°     | 45°     | 90°     | 90°     |
| Pag.                | B154    | B154    | B154    | B155    | B155    | B156  | B156    | B156    | B157    | B157    |
| Torneado            | ●       |         | ●       | ●       | ●       | ●     |         | ●       |         | ●       |
| Copiado             |         |         |         | ●       |         |       |         |         |         |         |
| Careado             |         | ●       | ●       |         |         |       | ●       | ●       | ●       |         |
| Chafflanes          |         |         |         |         |         | ●     |         |         |         |         |
| Torneado Tras.      |         |         | ●       | ●       |         |       |         |         |         |         |
| Forma del Corte     |         |         |         |         |         |       |         |         |         |         |
| Designación         | DVJNR/L | DVVNN   | DWLNR/L |         |         |       |         |         |         |         |
| Angulo Acercamiento | 93°     | 72.5°   | 95°     |         |         |       |         |         |         |         |
| Pag.                | B157    | B158    | B158    |         |         |       |         |         |         |         |
| Torneado            | ●       | ●       | ●       |         |         |       |         |         |         |         |
| Copiado             | ●       | ●       |         |         |         |       |         |         |         |         |
| Careado             |         |         | ●       |         |         |       |         |         |         |         |
| Chafflanes          |         |         |         |         |         |       |         |         |         |         |
| Torneado Tras.      | ●       |         | ●       |         |         |       |         |         |         |         |

Sistema de Palanca

|                     |         |         |         |         |         |       |         |         |       |         |
|---------------------|---------|---------|---------|---------|---------|-------|---------|---------|-------|---------|
| Forma del Corte     |         |         |         |         |         |       |         |         |       |         |
| Designación         | PCBNR/L | PCKNR/L | PCLNR/L | PDJNR/L | PDNNR/L | PRDCN | PRGCR/L | PSBNR/L | PSDNN | PSKNR/L |
| Angulo Acercamiento | 75°     | 75°     | 95°     | 93°     | 62.5°   | -     | -       | 75°     | 45°   | 75°     |
| Pag.                | B159    | B159    | B160    | B160    | B161    | B162  | B162    | B163    | B163  | B164    |
| Torneado            | ●       | ●       | ●       | ●       | ●       | ●     | ●       | ●       | ●     |         |
| Copiado             |         |         |         | ●       | ●       | ●     | ●       |         |       |         |
| Careado             |         |         | ●       |         |         |       |         |         |       | ●       |
| Chafflanes          |         |         |         |         |         |       |         |         |       |         |
| Torneado Tras.      |         |         | ●       | ●       |         |       |         |         |       |         |
| Forma del Corte     |         |         |         |         |         |       |         |         |       |         |
| Designación         | PSSNR/L | PTFNR/L | PTGNR/L | PTTNR/L | PWLNR/L |       |         |         |       |         |
| Angulo Acercamiento | 45°     | 90°     | 90°     | 60°     | 95°     |       |         |         |       |         |
| Pag.                | B164    | B165    | B165    | B166    | B166    |       |         |         |       |         |
| Torneado            | ●       |         | ●       | ●       | ●       |       |         |         |       |         |
| Copiado             |         |         |         |         |         |       |         |         |       |         |
| Careado             | ●       | ●       |         |         | ●       |       |         |         |       |         |
| Chafflanes          |         |         |         | ●       |         |       |         |         |       |         |
| Torneado Tras.      |         |         |         |         | ●       |       |         |         |       |         |

## Sistema Brida Ancha

|                     |       |         |         |         |  |  |  |  |  |  |
|---------------------|-------|---------|---------|---------|--|--|--|--|--|--|
| Forma del Corte     |       |         |         |         |  |  |  |  |  |  |
| Designación         | WTENN | WTJNR/L | WTXNR/L | WWLNR/L |  |  |  |  |  |  |
| Angulo Acercamiento | 60°   | 93°     | 105°    | 95°     |  |  |  |  |  |  |
| Pag.                | B167  | B167    | B167    | B168    |  |  |  |  |  |  |
| Torneado            | ●     | ●       | ●       | ●       |  |  |  |  |  |  |
| Copiado             | ●     | ●       | ●       |         |  |  |  |  |  |  |
| Careado             |       |         |         | ●       |  |  |  |  |  |  |
| Chafilnes           |       |         |         |         |  |  |  |  |  |  |
| Torneado Tras.      |       | ●       | ●       | ●       |  |  |  |  |  |  |

## Sistema de Brida

|                     |         |         |       |         |         |         |  |  |  |  |
|---------------------|---------|---------|-------|---------|---------|---------|--|--|--|--|
| Forma del Corte     |         |         |       |         |         |         |  |  |  |  |
| Designación         | CKJNR/L | CKNNR/L | CSDPN | CSKPR/L | CTFPR/L | CTGPR/L |  |  |  |  |
| Angulo Acercamiento | 93°     | 62.5°   | 45°   | 75°     | 90°     | 90°     |  |  |  |  |
| Pag.                | B169    | B169    | B169  | B170    | B170    | B170    |  |  |  |  |
| Torneado            | ●       | ●       | ●     |         |         | ●       |  |  |  |  |
| Copiado             | ●       | ●       |       |         |         |         |  |  |  |  |
| Careado             |         |         |       | ●       | ●       |         |  |  |  |  |
| Chafilnes           |         |         |       |         |         |         |  |  |  |  |
| Torneado Tras.      | ●       |         |       |         |         |         |  |  |  |  |

## Sistema Multi-trabe

|                     |         |         |       |         |         |       |         |         |       |         |
|---------------------|---------|---------|-------|---------|---------|-------|---------|---------|-------|---------|
| Forma del Corte     |         |         |       |         |         |       |         |         |       |         |
| Designación         | MCKNR/L | MCLNR/L | MCMNN | MCRNR/L | MDJNR/L | MDNNN | MDQNR/L | MSBNR/L | MSDNN | MSKNR/L |
| Angulo Acercamiento | 75°     | 95°     | 50°   | 75°     | 93°     | 62.5° | 107.5°  | 75°     | 45°   | 75°     |
| Pag.                | B171    | B171    | B171  | B172    | B172    | B172  | B173    | B173    | B173  | B174    |
| Torneado            |         | ●       | ●     | ●       | ●       | ●     | ●       | ●       | ●     |         |
| Copiado             |         |         |       |         | ●       | ●     | ●       |         |       |         |
| Careado             | ●       | ●       |       |         |         |       |         |         |       | ●       |
| Chafilnes           |         |         |       |         |         |       |         |         |       |         |
| Torneado Tras.      |         | ●       |       |         | ●       |       | ●       |         |       |         |

|                     |         |         |       |         |         |         |         |         |       |         |
|---------------------|---------|---------|-------|---------|---------|---------|---------|---------|-------|---------|
| Forma del Corte     |         |         |       |         |         |         |         |         |       |         |
| Designación         | MSRNR/L | MSSNR/L | MTENN | MTFNR/L | MTGNR/L | MTJNR/L | MVJNR/L | MVQNR/L | MVVNN | MWLNR/L |
| Angulo Acercamiento | 75°     | 45°     | 60°   | 90°     | 90°     | 93°     | 93°     | 117.5°  | 72.5° | 95°     |
| Pag.                | B174    | B175    | B175  | B175    | B176    | B176    | B176    | B177    | B177  | B177    |
| Torneado            | ●       | ●       | ●     |         | ●       | ●       | ●       | ●       | ●     | ●       |
| Copiado             |         |         | ●     |         |         | ●       | ●       | ●       | ●     |         |
| Careado             |         | ●       |       | ●       |         | ●       |         |         |       | ●       |
| Chafilnes           |         |         |       |         |         |         |         |         |       |         |
| Torneado Tras.      |         |         |       |         |         | ●       | ●       | ●       |       | ●       |





Sistema con Tornillo

|                     |         |         |         |         |       |       |         |         |       |         |
|---------------------|---------|---------|---------|---------|-------|-------|---------|---------|-------|---------|
| Forma del Corte     |         |         |         |         |       |       |         |         |       |         |
| Designación         | SCACR/L | SCLCR/L | SDACR/L | SDJCR/L | SDNCN | SRDCN | SRGCR/L | SSBCR/L | SSDCN | SSKCR/L |
| Angulo Acercamiento | 90°     | 95°     | 90°     | 93°     | 62.5° | -     | -       | 75°     | 45°   | 75°     |
| Pag.                | B178    | B178    | B178    | B179    | B179  | B179  | B180    | B180    | B180  | B181    |
| Torneado            | ●       | ●       | ●       | ●       | ●     | ●     | ●       | ●       | ●     |         |
| Copiado             |         |         | ●       | ●       | ●     | ●     | ●       |         |       |         |
| Careado             |         | ●       |         |         |       |       |         |         |       | ●       |
| Chafilanes          |         |         |         |         |       |       |         |         |       |         |
| Torneado Tras.      |         | ●       |         | ●       |       |       |         |         |       |         |

|                     |         |         |         |         |         |         |         |         |         |       |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------|
| Forma del Corte     |         |         |         |         |         |         |         |         |         |       |
| Designación         | SSSCR/L | STACR/L | STFCR/L | STGCR/L | STTCR/L | SVABR/L | SVHBR/L | SVJBR/L | SVJCR/L | SVVBN |
| Angulo Acercamiento | 45°     | 90°     | 90°     | 90°     | 60°     | 90°     | 107.5°  | 93°     | 93°     | 72.5° |
| Pag.                | B181    | B181    | B182    | B182    | B182    | B183    | B183    | B183    | B184    | B184  |
| Torneado            | ●       | ●       |         | ●       | ●       | ●       | ●       | ●       | ●       | ●     |
| Copiado             |         |         |         |         |         | ●       | ●       | ●       | ●       | ●     |
| Careado             | ●       |         | ●       |         |         |         |         |         |         |       |
| Chafilanes          |         |         |         |         |         |         |         |         |         |       |
| Torneado Tras.      |         |         |         |         |         | ●       | ●       | ●       | ●       |       |

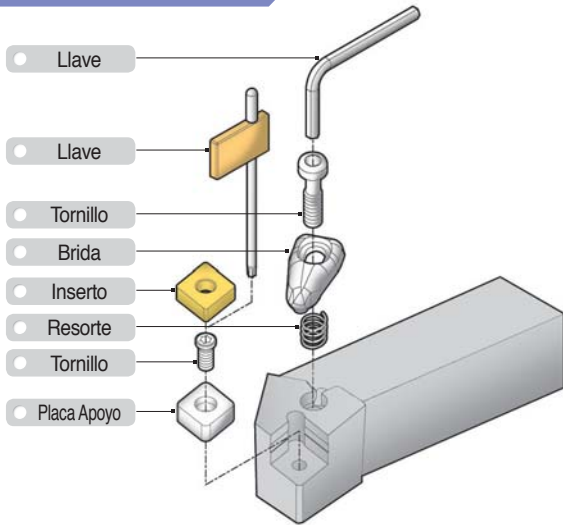
|                     |       |  |  |  |  |  |  |  |  |  |
|---------------------|-------|--|--|--|--|--|--|--|--|--|
| Forma del Corte     |       |  |  |  |  |  |  |  |  |  |
| Designación         | SVVCN |  |  |  |  |  |  |  |  |  |
| Angulo Acercamiento | 72.5° |  |  |  |  |  |  |  |  |  |
| Pag.                | B184  |  |  |  |  |  |  |  |  |  |
| Torneado            | ●     |  |  |  |  |  |  |  |  |  |
| Copiado             | ●     |  |  |  |  |  |  |  |  |  |
| Careado             |       |  |  |  |  |  |  |  |  |  |
| Chafilanes          |       |  |  |  |  |  |  |  |  |  |
| Torneado Tras.      |       |  |  |  |  |  |  |  |  |  |

Portaherramientas insertos de cerámica

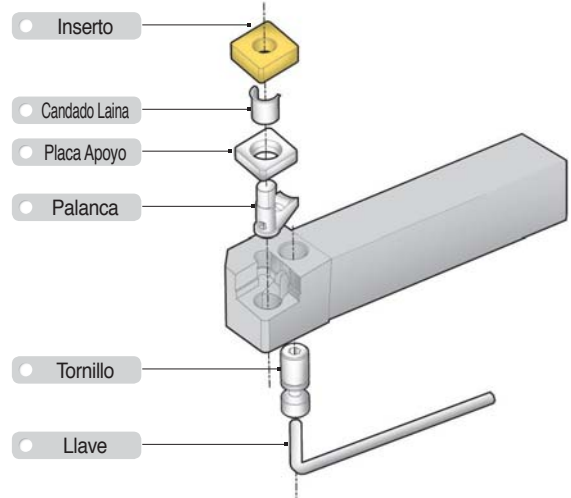
|                     |         |       |         |       |         |         |         |  |  |  |
|---------------------|---------|-------|---------|-------|---------|---------|---------|--|--|--|
| Forma del Corte     |         |       |         |       |         |         |         |  |  |  |
| Designación         | CCNLR/L | CRDNN | CRGNR/L | CSDNN | CSKNR/L | CTFNR/L | CTGNR/L |  |  |  |
| Angulo Acercamiento | 95°     | -     | -       | 45°   | 75°     | 90°     | 90°     |  |  |  |
| Pag.                | B185    | B185  | B185    | B185  | B186    | B186    | B186    |  |  |  |
| Torneado            | ●       | ●     | ●       | ●     |         |         | ●       |  |  |  |
| Copiado             |         |       | ●       |       |         |         |         |  |  |  |
| Careado             | ●       |       |         |       | ●       | ●       |         |  |  |  |
| Chafilanes          |         |       |         |       |         |         |         |  |  |  |
| Torneado Tras.      | ●       |       |         |       |         |         |         |  |  |  |

## Ensamblado de Portalinsertos

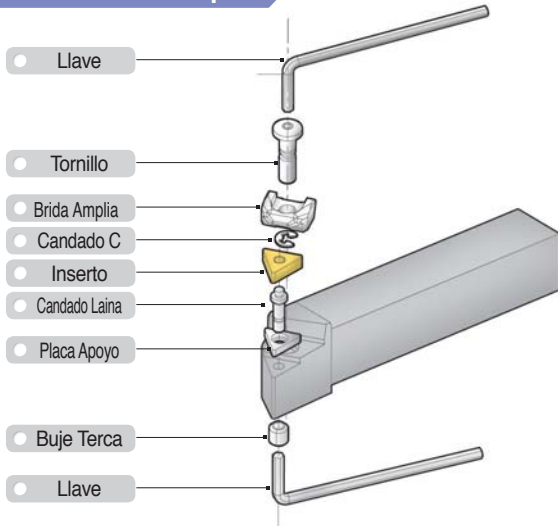
### Sistema de Brida Doble



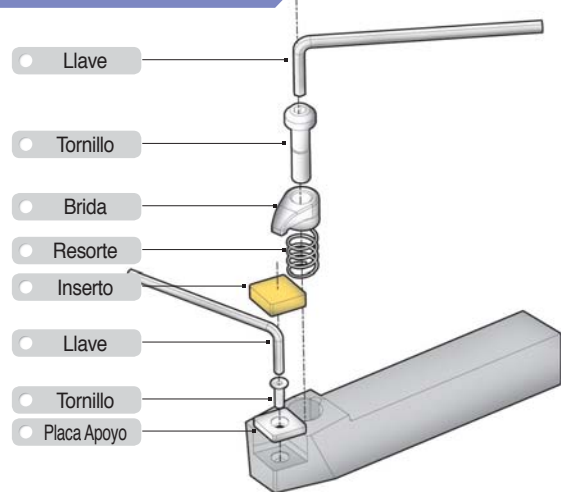
### Sistema de Palanca



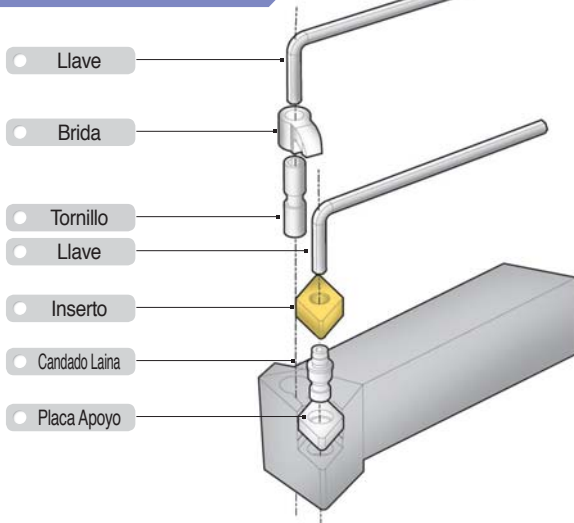
### Sistema Brida Amplia



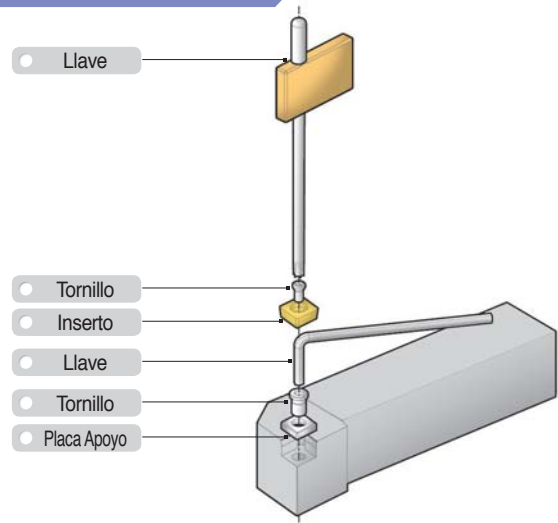
### Sistema de Brida



### Sistema Multi-trabe



### Sistema con Tornillo

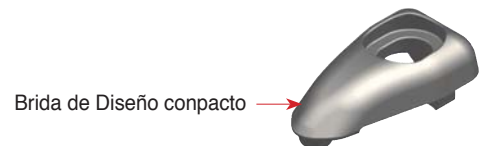
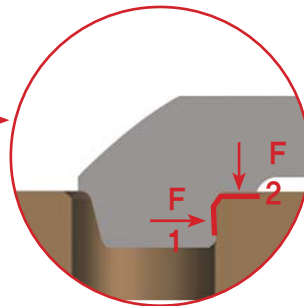
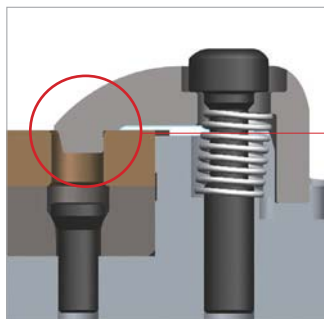
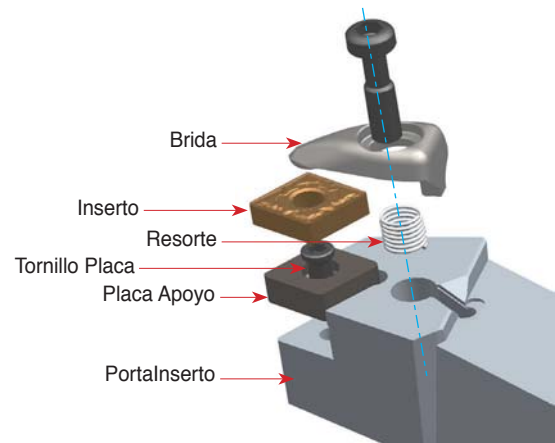


## Sistema de brida doble

### Diseño estable de Alta calidad y Precisión

#### Características

- Sistema de sujeción simple y poderoso operado por el tornillo de la brida
- Poderosa sujeción de 2 vías (superior e inferior) conveniente para el maquinado en condiciones de corte muy duras
- Ofrece una mejor precisión, debido al diseño especial de la brida en la parte posterior
- Diseño optimizado y compacto para evitar interferencia con la viruta, así como una mejor sujeción del inserto



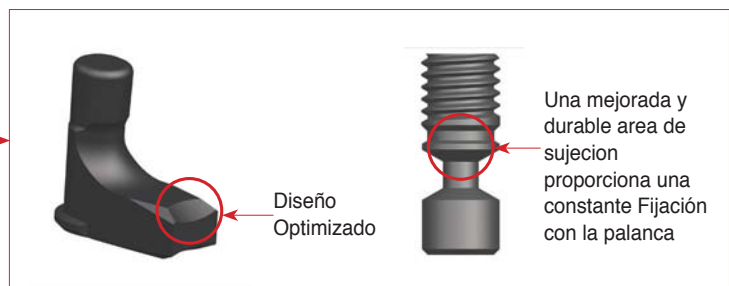
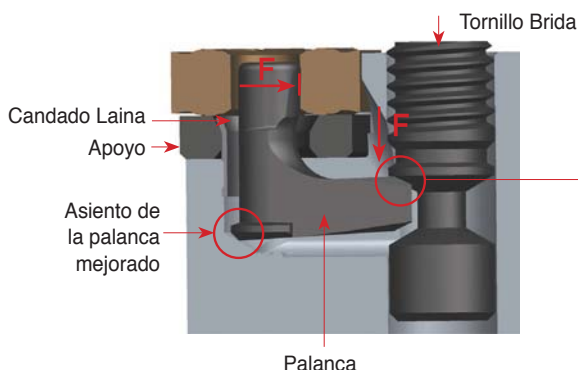
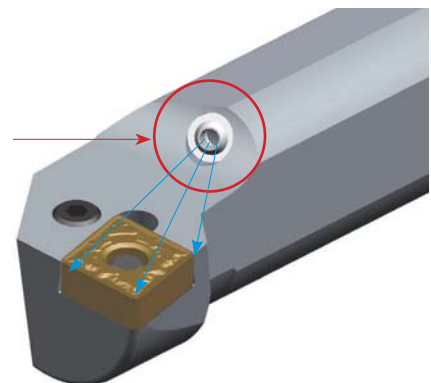
## Sistema de Palanca

### Rigidez y estabilidad de amarre excelentes en comparación con los existentes porta herramientas de palanca

#### Características

- El portalinserto ofrece una precisión debido al diseño especial y a la mejora de la palanca de en la punta
- La durabilidad de las piezas se ha mejorado
- Superior Tornillo de la herramienta debido al potente sistema de sujeción y al diseño optimizado de la pieza.
- El diseño de la parte derecha en el cuerpo de portalinserto hace que sea fácil la descripción de cada producto
- Boquilla ajustable del refrigerante da la opción de cambiar de dirección la dirección del flujo de refrigerante. El portalinserto ofrece una precisión debido al diseño especial y a la mejora de la palanca de en la punta

Orificio de Refrigeración

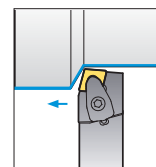
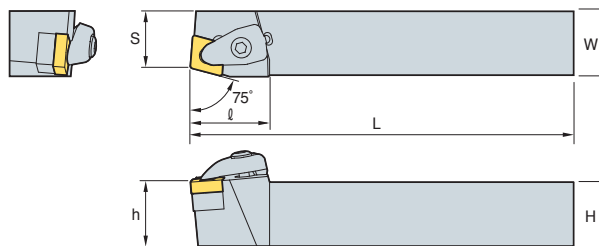


# B Sistema de Brida Doble

## DCBNR/L



CN□□



75°

• Inserto tipo R (mm)

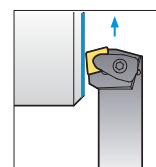
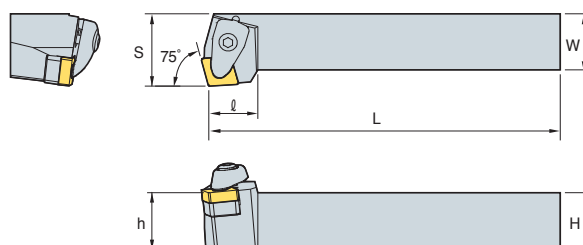
| Designación             | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |
|-------------------------|----|----|-----|----|----|----|------------|-------|----------------|-------|----------------|---------|-------|
| <b>DCBNR/L 2020-K12</b> | 20 | 20 | 125 | 17 | 20 | 31 | CN□□1204□□ |       |                |       |                |         |       |
| <b>2525-M12</b>         | 25 | 25 | 150 | 22 | 25 | 31 |            |       |                |       |                |         |       |
| <b>3225-P12</b>         | 32 | 25 | 170 | 22 | 32 | 31 |            |       |                |       |                |         |       |
| <b>2525-M16</b>         | 25 | 25 | 150 | 22 | 25 | 36 | CN□□1606□□ |       |                |       |                |         |       |
| <b>3232-P16</b>         | 32 | 32 | 170 | 27 | 32 | 36 |            |       |                |       |                |         |       |
| <b>3232-P19</b>         | 32 | 32 | 170 | 27 | 32 | 40 |            |       |                |       |                |         |       |
| <b>4040-S19</b>         | 40 | 40 | 250 | 35 | 40 | 40 | CN□□1906□□ |       |                |       |                |         |       |

➔ Insertos Aplicables B28~B35

## DCKNR/L



CN□□



75°

• Inserto tipo R (mm)

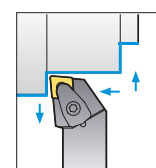
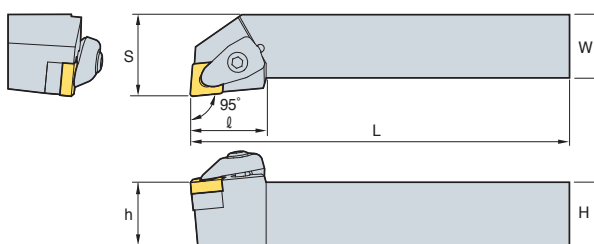
| Designación             | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |
|-------------------------|----|----|-----|----|----|----|------------|-------|----------------|-------|----------------|---------|-------|
| <b>DCKNR/L 2020-K12</b> | 20 | 20 | 125 | 25 | 20 | 21 | CN□□1204□□ |       |                |       |                |         |       |
| <b>2525-M12</b>         | 25 | 25 | 150 | 32 | 25 | 21 |            |       |                |       |                |         |       |
| <b>3225-P12</b>         | 32 | 25 | 170 | 32 | 32 | 21 |            |       |                |       |                |         |       |
| <b>3232-P16</b>         | 32 | 32 | 170 | 40 | 32 | 26 | CN□□1606□□ |       |                |       |                |         |       |
| <b>4040-S16</b>         | 40 | 40 | 250 | 50 | 40 | 26 |            |       |                |       |                |         |       |

➔ Insertos Aplicables B28~B35

## DCLNR/L



CN□□



95°

• Inserto tipo R (mm)

| Designación             | H  | W  | L   | S  | h  | ℓ    | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |
|-------------------------|----|----|-----|----|----|------|------------|-------|----------------|-------|----------------|---------|-------|
| <b>DCLNR/L 2020-K09</b> | 20 | 20 | 125 | 25 | 20 | 24.5 | CN□□0903□□ |       |                |       |                |         |       |
| <b>2525-M09</b>         | 25 | 25 | 150 | 32 | 25 | 24.5 |            |       |                |       |                |         |       |
| <b>2020-K12</b>         | 20 | 20 | 125 | 25 | 20 | 30   |            |       |                |       |                |         |       |
| <b>2525-M12</b>         | 25 | 25 | 150 | 32 | 25 | 30   | CN□□1204□□ |       |                |       |                |         |       |
| <b>3225-P12</b>         | 32 | 25 | 170 | 32 | 32 | 30   |            |       |                |       |                |         |       |
| <b>3232-P12</b>         | 32 | 32 | 170 | 40 | 32 | 30   |            |       |                |       |                |         |       |
| <b>2525-M16</b>         | 25 | 25 | 150 | 32 | 25 | 36   | CN□□1606□□ |       |                |       |                |         |       |
| <b>3225-P16</b>         | 32 | 25 | 170 | 32 | 32 | 36   |            |       |                |       |                |         |       |
| <b>3232-P16</b>         | 32 | 32 | 170 | 40 | 32 | 36   |            |       |                |       |                |         |       |
| <b>2525-M19</b>         | 25 | 25 | 150 | 32 | 25 | 40   | CN□□1906□□ |       |                |       |                |         |       |
| <b>3225-P19</b>         | 32 | 25 | 170 | 32 | 32 | 40   |            |       |                |       |                |         |       |
| <b>3232-P19</b>         | 32 | 32 | 170 | 40 | 32 | 40   |            |       |                |       |                |         |       |
| <b>3232-P19</b>         | 32 | 32 | 170 | 40 | 32 | 40   |            |       |                |       |                |         |       |
| <b>4040-S19</b>         | 40 | 40 | 250 | 50 | 40 | 40   |            |       |                |       |                |         |       |

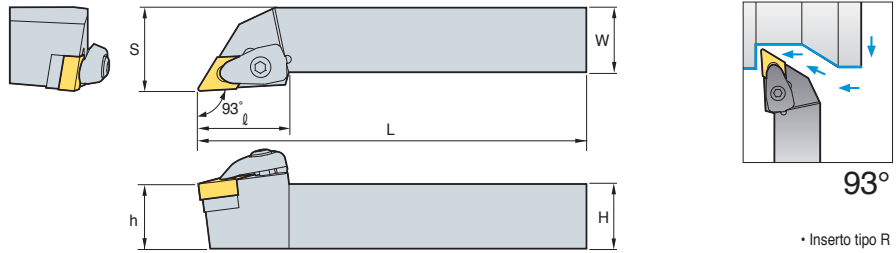
➔ Insertos Aplicables B28~B35



# DDJNR/L



DN□□



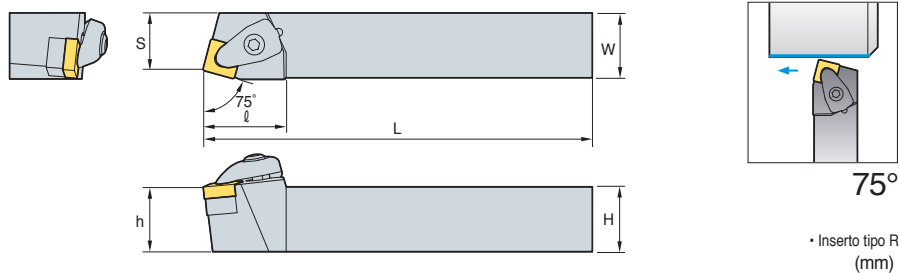
| Designación             | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |
|-------------------------|----|----|-----|----|----|----|------------|-------|----------------|-------|----------------|---------|-------|
| <b>DDJNR/L</b> 2020-K11 | 20 | 20 | 125 | 25 | 20 | 30 | DN□□1104□□ |       |                |       |                |         |       |
| 2525-M11                | 25 | 25 | 150 | 32 | 25 | 30 |            |       |                |       |                |         |       |
| 3225-P11                | 32 | 25 | 170 | 32 | 32 | 30 |            |       |                |       |                |         |       |
| 3232-P11                | 32 | 32 | 170 | 40 | 32 | 30 | DN□□1506□□ |       |                |       |                |         |       |
| 2020-K15                | 20 | 20 | 125 | 25 | 20 | 35 |            |       |                |       |                |         |       |
| 2525-M15                | 25 | 25 | 150 | 32 | 25 | 35 |            |       |                |       |                |         |       |
| 3225-P15                | 32 | 25 | 170 | 32 | 32 | 35 |            |       |                |       |                |         |       |
| 3232-P15                | 32 | 32 | 170 | 40 | 32 | 35 | DN□□1504□□ |       |                |       |                |         |       |
| 2020-K15-3              | 20 | 20 | 125 | 25 | 20 | 35 |            |       |                |       |                |         |       |
| 2525-M15-3              | 25 | 25 | 150 | 32 | 25 | 35 |            |       |                |       |                |         |       |
| 3232-P15-3              | 32 | 32 | 170 | 40 | 32 | 35 |            |       |                |       |                |         |       |

Insertos Aplicables B36-B42

# DSBNR/L



SN□□



| Designación             | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |
|-------------------------|----|----|-----|----|----|----|------------|-------|----------------|-------|----------------|---------|-------|
| <b>DSBNR/L</b> 2020-K09 | 20 | 20 | 125 | 17 | 20 | 25 | SN□□0903□□ |       |                |       |                |         |       |
| 2525-M09                | 25 | 25 | 150 | 22 | 25 | 25 |            |       |                |       |                |         |       |
| 2020-K12                | 20 | 20 | 125 | 17 | 20 | 32 | SN□□1204□□ |       |                |       |                |         |       |
| 2525-M12                | 25 | 25 | 150 | 22 | 25 | 32 |            |       |                |       |                |         |       |
| 3225-P12                | 32 | 25 | 170 | 22 | 32 | 32 |            |       |                |       |                |         |       |
| 3232-P12                | 32 | 32 | 170 | 27 | 32 | 32 | SN□□1506□□ |       |                |       |                |         |       |
| 2525-M15                | 25 | 25 | 150 | 22 | 25 | 38 |            |       |                |       |                |         |       |
| 3225-P15                | 32 | 25 | 170 | 22 | 32 | 38 |            |       |                |       |                |         |       |
| 3232-P15                | 32 | 32 | 170 | 27 | 32 | 38 |            |       |                |       |                |         |       |
| 3232-P19                | 32 | 32 | 170 | 27 | 32 | 43 | SN□□1906□□ |       |                |       |                |         |       |
| 4040-S19                | 40 | 40 | 250 | 35 | 40 | 43 |            |       |                |       |                |         |       |

Insertos Aplicables B44-B52

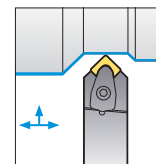
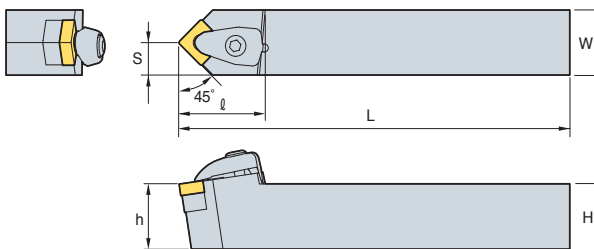


# B Sistema de Brida Doble

## DSDNN



SN□□



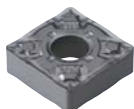
45°

• Inserto tipo R (mm)

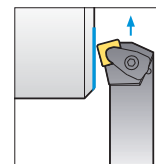
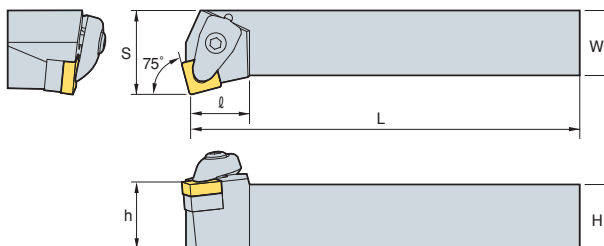
| Designación           | H  | W  | L   | S    | h  | ℓ    | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |
|-----------------------|----|----|-----|------|----|------|------------|-------|----------------|-------|----------------|---------|-------|
| <b>DSDNN</b> 2020-K09 | 20 | 20 | 125 | 10   | 20 | 26.5 | SN□□0903□□ | CVH3  | CHX0415        | SS32V | FTKA0307       | SPR0510 | HW25P |
| 2020-K12              | 20 | 20 | 125 | 10   | 20 | 33   | SN□□1204□□ | CVH4  | CHX0518        | SS44V | FTKA0410       | SPR0714 | HW30P |
| 2525-M12              | 25 | 25 | 150 | 12.5 | 25 | 33   |            |       |                |       |                |         |       |
| 3225-P12              | 32 | 25 | 170 | 12.5 | 32 | 33   |            |       |                |       |                |         |       |
| 3232-P12              | 32 | 32 | 170 | 16   | 32 | 33   |            |       |                |       |                |         |       |
| 2525-M15              | 25 | 25 | 150 | 12.5 | 25 | 39.4 | SN□□1506□□ | CVH5  | CHX0622        | SS54V | FTNA0511       | SPR0811 | HW25P |
| 3232-P15              | 32 | 32 | 170 | 16   | 32 | 38   |            |       |                |       |                |         |       |
| 3232-P19              | 32 | 32 | 170 | 16   | 32 | 43   | SN□□1906□□ | CVH6  | CHX0622        | SS64V | FTNA0511       | SPR0811 | HW40L |
| 4040-S19              | 40 | 40 | 250 | 20   | 40 | 45   |            |       |                |       |                |         |       |

➔ Insertos Aplicables B44~B52

## DSKNR/L



SN□□



75°

• Inserto tipo R (mm)

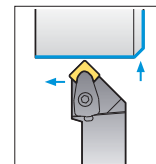
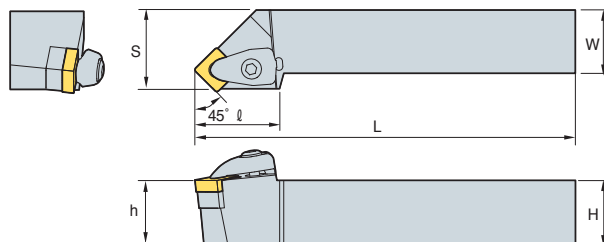
| Designación             | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |
|-------------------------|----|----|-----|----|----|----|------------|-------|----------------|-------|----------------|---------|-------|
| <b>DSKNR/L</b> 2020-K09 | 20 | 20 | 125 | 25 | 20 | 20 | SN□□0903□□ | CVH3  | CHX0415        | SS32V | FTKA0307       | SPR0510 | HW25P |
| 2020-K12                | 20 | 20 | 125 | 25 | 20 | 23 | SN□□1204□□ | CVH4  | CHX0518        | SS44V | FTKA0410       | SPR0714 | HW30P |
| 2525-M12                | 25 | 25 | 150 | 32 | 25 | 23 |            |       |                |       |                |         |       |
| 3232-P12                | 32 | 32 | 170 | 40 | 32 | 23 |            |       |                |       |                |         |       |
| 3232-P15                | 32 | 32 | 170 | 40 | 32 | 28 | SN□□1506□□ | CVH5  | CHX0622        | SS54V | FTNA0511       | SPR0811 | HW40L |
| 3232-P19                | 32 | 32 | 170 | 40 | 32 | 35 | SN□□1906□□ | CVH6  | CHX0622        | SC64V | FTNA0511       | SPR0811 | HW40L |
| 4040-S19                | 40 | 40 | 250 | 50 | 40 | 43 |            |       |                |       |                |         |       |

➔ Insertos Aplicables B44~B52

## DSSNR/L



SN□□



45°

• Inserto tipo R (mm)

| Designación             | H  | W  | L   | S  | h  | ℓ    | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |
|-------------------------|----|----|-----|----|----|------|------------|-------|----------------|-------|----------------|---------|-------|
| <b>DSSNR/L</b> 2020-K09 | 20 | 20 | 125 | 25 | 20 | 28.5 | SN□□0903□□ | CVH3  | CHX0415        | SS32V | FTKA0307       | SPR0510 | HW25P |
| 2020-K12                | 20 | 20 | 125 | 25 | 20 | 35   | SN□□1204□□ | CVH4  | CHX0518        | SS44V | FTKA0410       | SPR0714 | HW30P |
| 2525-M12                | 25 | 25 | 150 | 32 | 25 | 35   |            |       |                |       |                |         |       |
| 3225-P12                | 32 | 25 | 170 | 32 | 32 | 35   |            |       |                |       |                |         |       |
| 3232-P12                | 32 | 32 | 170 | 40 | 32 | 35   |            |       |                |       |                |         |       |
| 2525-M15                | 25 | 25 | 150 | 32 | 25 | 38.5 | SN□□1506□□ | CVH5  | CHX0622        | SS54V | FTNA0511       | SPR0811 | HW40L |
| 3232-P15                | 32 | 32 | 170 | 40 | 32 | 38.5 |            |       |                |       |                |         |       |
| 3232-P19                | 32 | 32 | 170 | 40 | 32 | 46   |            |       |                |       |                |         |       |
| 4040-S19                | 40 | 40 | 250 | 50 | 40 | 46   | SN□□1906□□ | CVH6  | CHX0622        | SS64V | FTNA0511       | SPR0811 | HW40L |

➔ Insertos Aplicables B44~B52



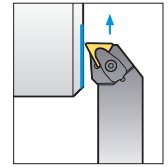
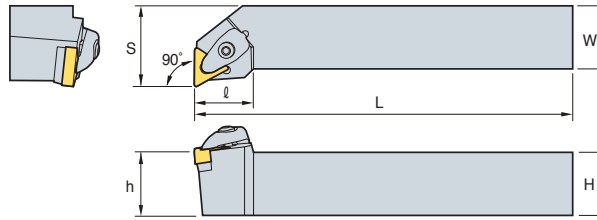
B

Torneado

# DTFNR/L



TN□□



90°

• Inserto tipo R  
(mm)

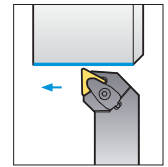
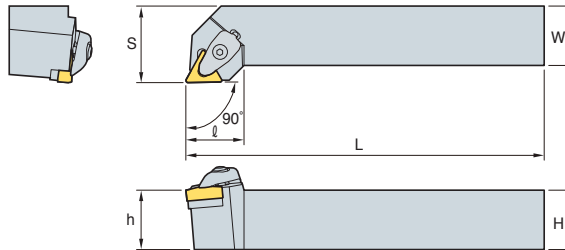
| Designación | H        | W  | L  | S   | h  | ℓ  | Inserto | Brida      | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |  |
|-------------|----------|----|----|-----|----|----|---------|------------|----------------|-------|----------------|---------|-------|--|
| DTFNR/L     | 2020-K16 | 20 | 20 | 125 | 25 | 20 | 24.5    | TN□□1604□□ |                |       |                |         |       |  |
|             | 2525-M16 | 25 | 25 | 150 | 32 | 25 | 24.5    |            |                |       |                |         |       |  |
|             | 3232-P16 | 32 | 32 | 170 | 40 | 32 | 23.5    |            |                |       |                |         |       |  |
| DTFNR/L     | 2525-M22 | 25 | 25 | 150 | 32 | 25 | 33      | TN□□2204□□ |                |       |                |         |       |  |
|             | 3225-P22 | 32 | 25 | 170 | 32 | 32 | 33      |            |                |       |                |         |       |  |
|             | 3232-P22 | 32 | 32 | 170 | 40 | 32 | 33      |            |                |       |                |         |       |  |

➔ Insertos Aplicables B53~B59

# DTGNR/L



TN□□



90°

• Inserto tipo R  
(mm)

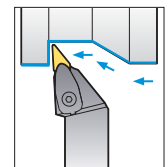
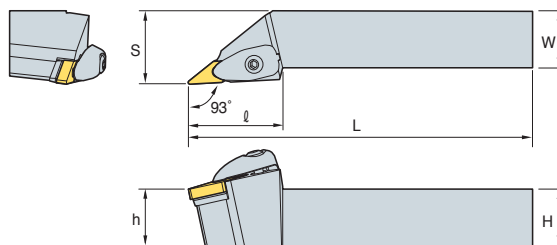
| Designación | H        | W  | L  | S   | h  | ℓ  | Inserto | Brida      | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |  |
|-------------|----------|----|----|-----|----|----|---------|------------|----------------|-------|----------------|---------|-------|--|
| DTGNR/L     | 2020-K16 | 20 | 20 | 125 | 25 | 20 | 24.5    | TN□□1604□□ |                |       |                |         |       |  |
|             | 2525-M16 | 25 | 25 | 150 | 32 | 25 | 24.5    |            |                |       |                |         |       |  |
|             | 3232-P16 | 32 | 32 | 170 | 40 | 32 | 24.5    |            |                |       |                |         |       |  |
| DTGNR/L     | 2525-M22 | 25 | 25 | 150 | 32 | 25 | 32.6    | TN□□2204□□ |                |       |                |         |       |  |
|             | 3225-P22 | 32 | 25 | 170 | 32 | 32 | 32.6    |            |                |       |                |         |       |  |
|             | 3232-P22 | 32 | 32 | 170 | 40 | 32 | 32.6    |            |                |       |                |         |       |  |

➔ Insertos Aplicables B53~B59

# DVJNR/L



VN□□



93°

• Inserto tipo R  
(mm)

| Designación | H        | W  | L  | S   | h  | ℓ  | Inserto | Brida      | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |  |
|-------------|----------|----|----|-----|----|----|---------|------------|----------------|-------|----------------|---------|-------|--|
| DVJNR/L     | 2020-K16 | 20 | 20 | 125 | 25 | 20 | 41.5    | VN□□1604□□ |                |       |                |         |       |  |
|             | 2525-M16 | 25 | 25 | 150 | 32 | 25 | 41.5    |            |                |       |                |         |       |  |
|             | 3232-P16 | 32 | 32 | 170 | 40 | 32 | 41.5    |            |                |       |                |         |       |  |

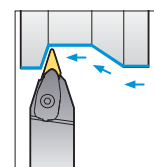
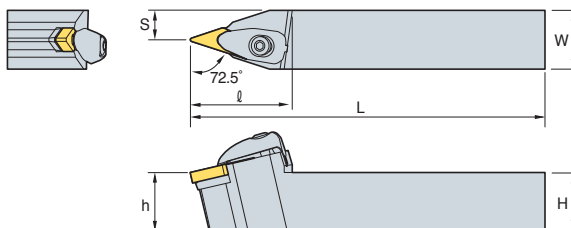
➔ Insertos Aplicables B60~B61

# B Sistema de Brida Doble

## DVVNN



VN□□



72.5°

• Inserto tipo R (mm)

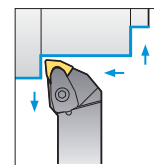
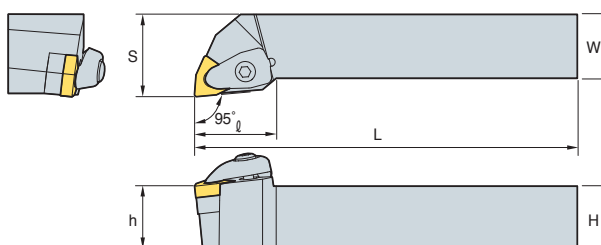
| Designación           | H  | W  | L   | S    | h  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |
|-----------------------|----|----|-----|------|----|----|------------|-------|----------------|-------|----------------|---------|-------|
| <b>DVVNN 2020-K16</b> | 20 | 20 | 125 | 10   | 20 | 40 | VN□□1604□□ |       |                |       |                |         |       |
| <b>2525-M16</b>       | 25 | 25 | 150 | 12.5 | 25 | 40 |            | CVH3V | CHX0518        | SV32V | FTNA03508      | SPR0714 | HW30P |
| <b>3232-P16</b>       | 32 | 32 | 170 | 16   | 32 | 40 |            |       |                |       |                |         |       |

➔ Insertos Aplicables B60~B61

## DWLNRL



WN□□



95°

• Inserto tipo R (mm)

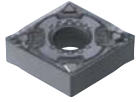
| Designación            | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Llave |
|------------------------|----|----|-----|----|----|----|------------|-------|----------------|-------|----------------|---------|-------|
| <b>DWLNRL 2020-K06</b> | 20 | 20 | 125 | 25 | 20 | 26 | WN□□0604□□ |       |                |       |                |         |       |
| <b>2525-M06</b>        | 25 | 25 | 150 | 32 | 25 | 26 |            | CVH3  | CHX0415        | SW32V | FTKA0307       | SPR0510 | HW25P |
| <b>2020-K08</b>        | 20 | 20 | 125 | 25 | 20 | 32 | WN□□0804□□ |       |                |       |                |         |       |
| <b>2525-M08</b>        | 25 | 25 | 150 | 32 | 25 | 32 |            | CVH4  | CHX0518        | SW44V | FTKA0410       | SPR0714 | HW30P |

➔ Insertos Aplicables B62~B65

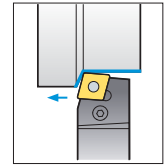
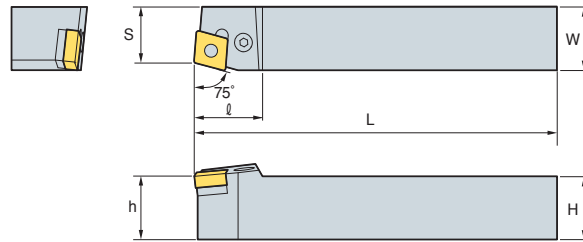




# PCBNR/L



CN□□



75°

• Inserto tipo R (mm)

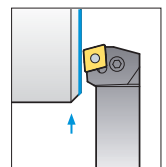
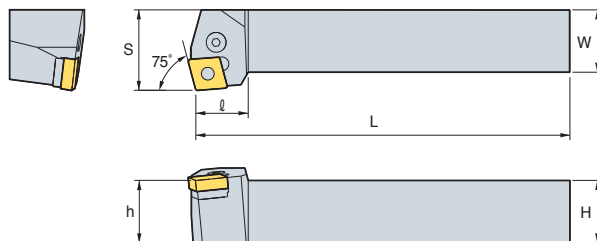
| Designación       | H                | W  | L   | S   | h  | ℓ  | Inserto     | Palanca     | Tornillo | Placa    | Candado lana | Llave | Pin Punch |       |
|-------------------|------------------|----|-----|-----|----|----|-------------|-------------|----------|----------|--------------|-------|-----------|-------|
| <b>PCBNR/L</b>    | <b>2020-K12</b>  | 20 | 20  | 125 | 17 | 20 | CN□□ 1204□□ | LV4         | VHX0821  | SC42     | SP4          | HW30L | LSPS4     |       |
|                   | <b>2525-M12</b>  | 25 | 25  | 150 | 22 | 25 |             |             |          |          |              |       |           | 27    |
|                   | <b>3225-P12</b>  | 32 | 25  | 170 | 22 | 32 | 27          | CN□□ 1606□□ | LV5      | VHX0825  | SC53         | SP5   | HW30L     | LSPS6 |
|                   | <b>2525-M16</b>  | 25 | 25  | 150 | 22 | 25 | 33          |             |          |          |              |       |           |       |
|                   | <b>3232-P16</b>  | 32 | 32  | 170 | 27 | 32 | 33          | CN□□ 1906□□ | LV6N     | VHX1027N | SC63N        | SP6N  | HW40L     | LSPS6 |
|                   | <b>3232-P19</b>  | 32 | 32  | 170 | 27 | 32 | 36          |             |          |          |              |       |           |       |
|                   | <b>4040-S19</b>  | 40 | 40  | 250 | 35 | 40 | 36          | CN□□ 2509□□ | LV8N     | VHX1236N | SC84N        | SP8N  | HW50L     | LSPS8 |
|                   | <b>4040-S25</b>  | 40 | 40  | 250 | 35 | 40 | 47          |             |          |          |              |       |           |       |
| <b>4040-S25-5</b> | 40               | 40 | 250 | 35  | 40 | 47 | CN□□ 2507□□ | LV8N        | VHX1236N | SC84N    | SP8N         | HW50L | LSPS8     |       |
| <b>5050-T25</b>   | 50               | 50 | 300 | 43  | 50 | 47 | CN□□ 2509□□ |             |          |          |              |       |           |       |
| <b>PCBNR/L</b>    | <b>2020-K12N</b> | 20 | 20  | 125 | 17 | 20 | CN□□ 1204□□ | LV4N        | VHX0820N | SC42N    | SP4N         | HW30L | LSPS4     |       |
|                   | <b>2525-M12N</b> | 25 | 25  | 150 | 22 | 25 |             |             |          |          |              |       |           | 27    |
|                   | <b>3225-P12N</b> | 32 | 25  | 170 | 22 | 32 | 27          | CN□□ 1606□□ | LV5N     | VHX820AN | SC53N        | SP5N  | HW30L     | LSPS5 |
|                   | <b>2525-M16N</b> | 25 | 25  | 150 | 22 | 25 | 33          |             |          |          |              |       |           |       |
|                   | <b>3232-P16N</b> | 32 | 32  | 170 | 27 | 32 | 33          | CN□□ 1906□□ | LV6N     | VHX1027N | SC63N        | SP6N  | HW40L     | LSPS8 |
|                   | <b>3232-P19N</b> | 32 | 32  | 170 | 27 | 32 | 36          |             |          |          |              |       |           |       |

↻ Insertos Aplicables B28~B35

# PCKNR/L



CN□□



95°

• Inserto tipo R (mm)

| Designación      | H                | W  | L   | S   | h  | ℓ  | Inserto     | Palanca     | Tornillo | Placa     | Candado lana | Llave | Pin Punch |       |
|------------------|------------------|----|-----|-----|----|----|-------------|-------------|----------|-----------|--------------|-------|-----------|-------|
| <b>PCKNR/L</b>   | <b>2020-K12</b>  | 20 | 20  | 125 | 25 | 20 | CN□□ 1204□□ | LV4         | VHX0821  | SC42      | SP4          | HW30L | LSPS4     |       |
|                  | <b>2525-M12</b>  | 25 | 25  | 150 | 32 | 25 |             |             |          |           |              |       |           | 27    |
|                  | <b>3225-P12</b>  | 32 | 25  | 170 | 40 | 32 | 30          | CN□□ 1606□□ | LV5      | VHX0825   | SC53         | SP5   | HW30L     | HW30L |
|                  | <b>3232-P16</b>  | 32 | 32  | 170 | 40 | 32 | 26          |             |          |           |              |       |           |       |
|                  | <b>4040-S16</b>  | 40 | 40  | 250 | 50 | 40 | 25          | CN□□ 1204□□ | LV4N     | VHX0820N  | SC42N        | SP4N  | HW30L     | LSPS4 |
| <b>2020-K12N</b> | 20               | 20 | 125 | 25  | 20 | 27 |             |             |          |           |              |       |           |       |
| <b>PCKNR/L</b>   | <b>2525-M12N</b> | 25 | 25  | 150 | 32 | 25 | 27          | CN□□ 1204□□ | LV4N     | VHX0820N  | SC42N        | SP4N  | HW30L     | LSPS4 |
|                  | <b>3225-P12N</b> | 32 | 25  | 170 | 40 | 32 | 30          |             |          |           |              |       |           |       |
|                  | <b>3232-P16N</b> | 32 | 32  | 170 | 40 | 32 | 26          | CN□□ 1606□□ | LV5N     | VHX0820AN | SC53N        | SP5N  | HW30L     | LSPS5 |
|                  | <b>4040-S16N</b> | 40 | 40  | 250 | 50 | 40 | 25          |             |          |           |              |       |           |       |

↻ Insertos Aplicables B28~B35

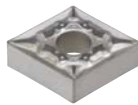


- Los portas y las piezas mejoradas aseguran funcionamiento y durabilidad
- “N” Soporte Nuevo (Portaherramientas & partes)

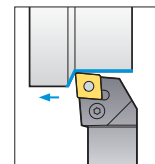
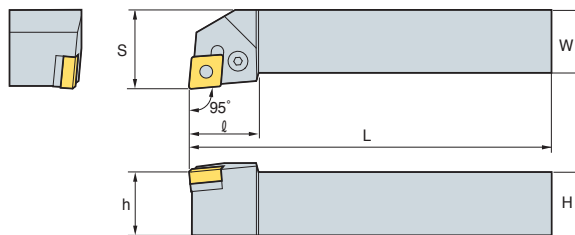


# B Sistema de Palanca

## PCLNR/L



CN□□



95°

• Inserto tipo R (mm)

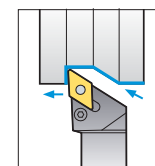
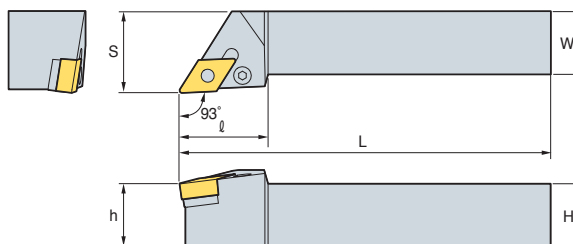
| Designación              | H  | W  | L   | S  | h  | l  | Inserto     | Palanca | Tornillo             | Placa | Candado laina | Llave | Pin Punch |
|--------------------------|----|----|-----|----|----|----|-------------|---------|----------------------|-------|---------------|-------|-----------|
| <b>PCLNR/L 1616-H09</b>  | 16 | 16 | 100 | 20 | 16 | 20 | CN□□ 0903□□ | LV3     | VHX0617              | SC32  | SP3           | HW25L | LSPS3     |
| <b>2020-K09</b>          | 20 | 20 | 125 | 25 | 20 | 22 |             |         |                      |       |               |       |           |
| <b>2525-M09</b>          | 25 | 25 | 150 | 32 | 25 | 22 |             |         |                      |       |               |       |           |
| <b>1616-H12</b>          | 16 | 16 | 100 | 20 | 16 | 28 | CN□□ 1204□□ | LV4     | VHX0821              | SC42  | SP4           | HW30L | LSPS4     |
| <b>2020-K12</b>          | 20 | 20 | 125 | 25 | 20 | 28 |             |         |                      |       |               |       |           |
| <b>2525-M12</b>          | 25 | 25 | 150 | 32 | 25 | 28 |             |         |                      |       |               |       |           |
| <b>3225-P12</b>          | 32 | 25 | 170 | 32 | 32 | 28 | CN□□ 1606□□ | LV5     | VHX0825              | SC53  | SP5           | HW30L | LSPS5     |
| <b>3232-P12</b>          | 32 | 32 | 170 | 40 | 32 | 28 |             |         |                      |       |               |       |           |
| <b>2525-M16</b>          | 25 | 25 | 150 | 32 | 25 | 33 |             |         |                      |       |               |       |           |
| <b>3232-P16</b>          | 32 | 32 | 170 | 40 | 32 | 33 | CN□□ 1906□□ | LV6N    | VHX1027N             | SC63N | SP6N          | HW40L | LSPS6     |
| <b>2525-M19</b>          | 25 | 25 | 150 | 32 | 25 | 36 |             |         |                      |       |               |       |           |
| <b>3225-P19</b>          | 32 | 25 | 170 | 32 | 32 | 36 |             |         |                      |       |               |       |           |
| <b>3232-P19</b>          | 32 | 32 | 170 | 40 | 32 | 36 | CN□□ 2509□□ | LV8N    | VHX1236N             | SC84N | SP8N          | HW50L | LSPS8     |
| <b>4040-P19</b>          | 40 | 40 | 170 | 50 | 40 | 36 |             |         |                      |       |               |       |           |
| <b>4040-S19</b>          | 40 | 40 | 250 | 50 | 40 | 36 |             |         |                      |       |               |       |           |
| <b>4040-S25</b>          | 40 | 40 | 250 | 50 | 40 | 47 | CN□□ 2507□□ | LV8N    | VHX1236N             | SC84N | SP8N          | HW50L | LSPS8     |
| <b>5050-T25</b>          | 50 | 50 | 300 | 60 | 50 | 47 |             |         |                      |       |               |       |           |
| <b>4040-S25-5</b>        | 40 | 40 | 250 | 50 | 40 | 47 |             |         |                      |       |               |       |           |
| <b>5050-S25-5</b>        | 50 | 50 | 300 | 60 | 50 | 47 |             |         |                      |       |               |       |           |
| <b>PCLNR/L 1616-H09N</b> | 16 | 16 | 100 | 20 | 16 | 20 | CN□□ 0903□□ | LV3N    | VHX0617N             | SC32N | SP3           | HW25L | LSPS3     |
| <b>2020-K09N</b>         | 20 | 20 | 125 | 25 | 20 | 22 |             |         |                      |       |               |       |           |
| <b>2525-M09N</b>         | 25 | 25 | 150 | 32 | 25 | 22 |             |         |                      |       |               |       |           |
| <b>1616-H12N</b>         | 16 | 16 | 100 | 20 | 16 | 28 | CN□□ 1204□□ | LV4N    | VHX0817N<br>VHX0820N | SC42N | SP4N          | HW30L | LSPS4     |
| <b>2020-K12N</b>         | 20 | 20 | 125 | 25 | 20 | 28 |             |         |                      |       |               |       |           |
| <b>2525-M12N</b>         | 25 | 25 | 150 | 32 | 25 | 28 |             |         |                      |       |               |       |           |
| <b>3225-P12N</b>         | 32 | 25 | 170 | 32 | 32 | 28 | CN□□ 1606□□ | LV5N    | VHX0820AN            | SC53N | SP5N          | HW30L | LSPS5     |
| <b>3232-P12N</b>         | 32 | 32 | 170 | 40 | 32 | 28 |             |         |                      |       |               |       |           |
| <b>2525-M16N</b>         | 25 | 25 | 150 | 32 | 25 | 33 |             |         |                      |       |               |       |           |
| <b>3232-P16N</b>         | 32 | 32 | 170 | 40 | 32 | 33 | CN□□ 1906□□ | LV6N    | VHX1027N             | SC63N | SP6N          | HW40L | LSPS6     |
| <b>2525-M19N</b>         | 25 | 25 | 150 | 32 | 25 | 38 |             |         |                      |       |               |       |           |
| <b>4040-S19N</b>         | 40 | 40 | 250 | 50 | 40 | 36 |             |         |                      |       |               |       |           |

➔ Insertos Aplicables B28~B35

## PDJNR/L



DN□□



93°

• Inserto tipo R (mm)

| Designación             | H  | W  | L   | S  | h  | l  | Inserto     | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |
|-------------------------|----|----|-----|----|----|----|-------------|---------|----------|-------|---------------|-------|-----------|
| <b>PDJNR/L 1616-H11</b> | 16 | 16 | 100 | 20 | 16 | 25 | DN□□ 1104□□ | LV3     | VHX0617  | SD317 | SP3           | HW25L | LSPS3     |
| <b>2020-K11</b>         | 20 | 20 | 125 | 25 | 20 | 25 |             |         |          |       |               |       |           |
| <b>2525-M11</b>         | 25 | 25 | 150 | 32 | 25 | 30 |             |         |          |       |               |       |           |
| <b>2020-K15</b>         | 20 | 20 | 125 | 25 | 20 | 35 | DN□□ 1506□□ | LV4B    | VHX0821  | SD42  | SP4           | HW30L | LSPS4     |
| <b>2525-M15</b>         | 25 | 25 | 150 | 32 | 25 | 35 |             |         |          |       |               |       |           |
| <b>3225-P15</b>         | 32 | 25 | 170 | 32 | 32 | 35 |             |         |          |       |               |       |           |
| <b>3232-P15</b>         | 32 | 32 | 170 | 40 | 32 | 35 | DN□□ 1504□□ | LV4     | VHX0821  | SD42  | SP4           | HW30L | LSPS4     |
| <b>2020-K15-3</b>       | 20 | 20 | 125 | 25 | 20 | 35 |             |         |          |       |               |       |           |
| <b>2525-M15-3</b>       | 25 | 25 | 150 | 32 | 25 | 35 |             |         |          |       |               |       |           |
| <b>3232-P15-3</b>       | 32 | 32 | 170 | 40 | 32 | 35 |             |         |          |       |               |       |           |

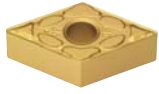
➔ Insertos Aplicables B36~B42



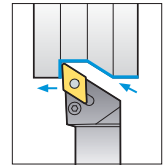
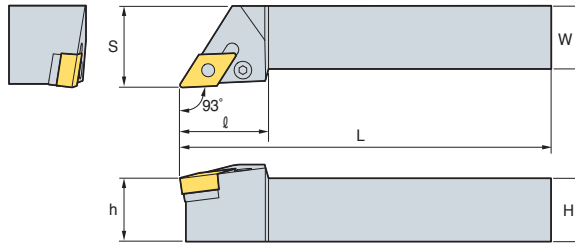
B

Torneado

# PDJNR/L



DN□□



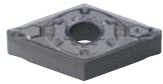
93°

• Inserto tipo R (mm)

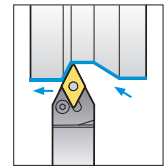
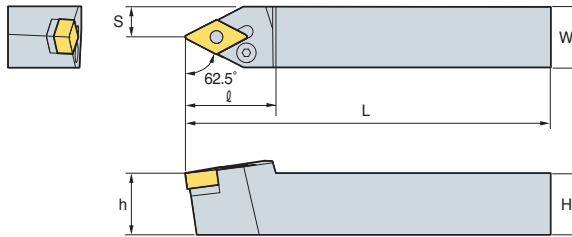
| Designación | H           | W  | L  | S   | h  | ℓ  | Inserto     | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |       |          |          |       |       |       |       |
|-------------|-------------|----|----|-----|----|----|-------------|---------|----------|-------|---------------|-------|-----------|-------|----------|----------|-------|-------|-------|-------|
| PDJNR/L     | 1616-H11N   | 16 | 16 | 100 | 20 | 16 | DN□□ 1104□□ |         |          |       |               |       |           |       |          |          |       |       |       |       |
|             | 2020-K11N   | 20 | 20 | 125 | 25 | 20 |             |         |          |       |               |       |           | LV3AN | VHX0617N | SD32N    | SP3   | HW25L | LSPS3 |       |
|             | 2525-M11N   | 25 | 25 | 150 | 32 | 25 |             |         |          |       |               |       |           | 30    |          |          |       |       |       |       |
| PDJNR/L     | 2020-K15N   | 20 | 20 | 125 | 25 | 20 | DN□□ 1506□□ |         |          |       |               |       |           |       |          |          |       |       |       |       |
|             | 2525-M15N   | 25 | 25 | 150 | 32 | 25 |             |         |          |       |               |       |           | 35    | LV4BN    | VHX0821N | SD42N | SP4N  | HW30L | LSPS4 |
|             | 3225-P15N   | 32 | 25 | 170 | 32 | 32 |             |         |          |       |               |       |           | 35    |          |          |       |       |       |       |
|             | 3232-P15N   | 32 | 32 | 170 | 40 | 32 |             |         |          |       |               |       |           | 35    |          |          |       |       |       |       |
| PDJNR/L     | 2020-K15-3N | 20 | 20 | 125 | 25 | 20 | DN□□ 1504□□ |         |          |       |               |       |           |       |          |          |       |       |       |       |
|             | 2525-M15-3N | 25 | 25 | 150 | 32 | 25 |             |         |          |       |               |       |           | 35    | LV4BN    | VHX0821N | SD43N | SP4N  | HW30L | LSPS4 |
|             | 3232-P15-3N | 32 | 32 | 170 | 40 | 32 |             |         |          |       |               |       |           | 35    |          |          |       |       |       |       |

➔ Insertos Aplicables B36~B42

# PDNNR/L



DN□□



62.5°

• Inserto tipo R (mm)

| Designación | H           | W  | L  | S   | h    | ℓ  | Inserto     | Palanca     | Tornillo | Placa | Candado laina | Llave | Pin Punch |    |       |          |       |      |       |       |
|-------------|-------------|----|----|-----|------|----|-------------|-------------|----------|-------|---------------|-------|-----------|----|-------|----------|-------|------|-------|-------|
| PDNNR/L     | 2020-K15    | 20 | 20 | 125 | 8    | 20 | DN□□ 1506□□ |             |          |       |               |       |           |    |       |          |       |      |       |       |
|             | 2525-M15    | 25 | 25 | 150 | 12.5 | 25 |             |             |          |       |               |       |           | 37 | LV4B  | VHX0821  | SD42  | SP4  | HW30L | LSPS4 |
|             | 3232-P15    | 32 | 32 | 150 | 16   | 32 |             |             |          |       |               |       |           | 37 |       |          |       |      |       |       |
|             | 4025-M15    | 40 | 25 | 170 | 12.5 | 32 | 37          | DN□□ 1504□□ |          |       |               |       |           |    |       |          |       |      |       |       |
|             | 2525-M15-3  | 25 | 25 | 150 | 12.5 | 25 | 37          |             |          |       |               |       |           |    | LV4   | VHX0821  | SD42  | SP4  | HW30L | LSPS4 |
|             | 4025-M15-3  | 40 | 25 | 150 | 12.5 | 25 | 37          |             |          |       |               |       |           |    |       |          |       |      |       |       |
| PDNNR/L     | 2020-K15N   | 20 | 20 | 125 | 8    | 20 | DN□□ 1506□□ |             |          |       |               |       |           |    |       |          |       |      |       |       |
|             | 2525-M15N   | 25 | 25 | 150 | 12.5 | 25 |             |             |          |       |               |       |           | 37 | LV4BN | VHX0821N | SD42N | SP4N | HW30L | LSPS4 |
|             | 3232-P15N   | 32 | 32 | 170 | 16   | 32 |             |             |          |       |               |       |           | 37 |       |          |       |      |       |       |
|             | 2525-M15-3N | 25 | 25 | 150 | 12.5 | 25 | 37          | DN□□ 1504□□ |          |       |               |       |           |    |       |          |       |      |       |       |
|             | 3232-P15-3N | 32 | 32 | 170 | 16   | 32 | 37          |             |          |       |               |       |           |    | LV4BN | VHX0821N | SD43N | SP4N | HW30L | LSPS4 |

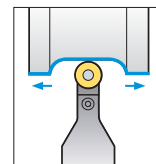
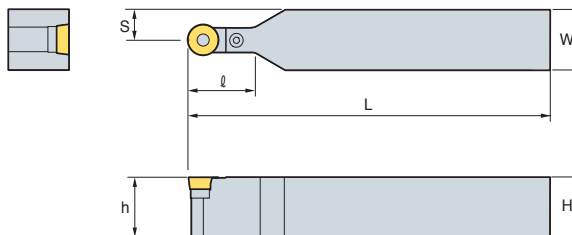
➔ Insertos Aplicables B36~B42



## PRDCN



RCMX



(mm)

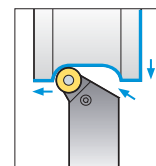
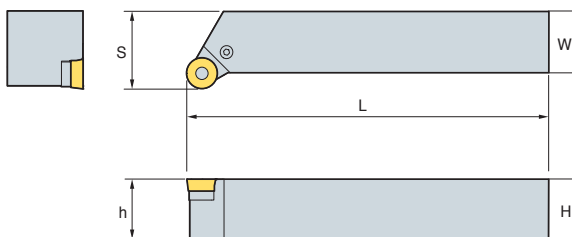
| Designación | H        | W  | L   | S   | h    | l  | Inserto    | Palanca    | Tornillo | Placa   | Candado laina | Llave | Pin Punch |       |
|-------------|----------|----|-----|-----|------|----|------------|------------|----------|---------|---------------|-------|-----------|-------|
| PRDCN       | 2020-M10 | 20 | 20  | 150 | 10   | 20 | 24         | RCMX1003M0 | LR10     | VHX0514 | SR10          | SP3   | HW20L     | LSPS3 |
|             | 2525-M10 | 25 | 25  | 150 | 12.5 | 25 | 24         |            |          |         |               |       |           |       |
|             | 2525-M12 | 25 | 25  | 150 | 12.5 | 25 | 24         |            |          |         |               |       |           |       |
|             | 2020-K12 | 20 | 20  | 125 | 10   | 20 | 24         | RCMX1204M0 | LR12     | VHX0617 | SR12          | SP3   | HW25L     | LSPS3 |
|             | 3225-Q12 | 32 | 25  | 180 | 12.5 | 32 | 24         |            |          |         |               |       |           |       |
|             | 2525-Q16 | 25 | 25  | 180 | 12.5 | 25 | 30         | RCMX1606M0 | LR16     | VHX0621 | SR16          | SP4   | HW25L     | LSPS4 |
|             | 3225-Q16 | 32 | 25  | 180 | 12.5 | 32 | 30         |            |          |         |               |       |           |       |
|             | 3232-Q16 | 32 | 32  | 180 | 16   | 32 | 35         |            |          |         |               |       |           |       |
|             | 3232-Q20 | 32 | 32  | 180 | 16   | 32 | 40         | RCMX2006M0 | LR20     | VHX0823 | SR20          | SP20  | HW30L     | LSPS5 |
|             | 4040-S25 | 40 | 40  | 250 | 20   | 40 | 42         | RCMX2507M0 | LR25     | VHX1030 | SR25          | SP6N  | HW40L     | LSPS6 |
| 4040-T25    | 40       | 40 | 300 | 20  | 40   | 42 |            |            |          |         |               |       |           |       |
| 5050-U32    | 50       | 50 | 350 | 25  | 50   | 52 | RCMX3209M0 | LR32       | VHX1236  | SR32    | SP8N          | HW50L | LSPS8     |       |

Insertos Aplicables B74

## PRGCR/L



RCMX



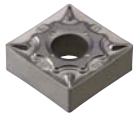
• Inserto tipo R  
(mm)

| Designación | H        | W  | L   | S   | h  | Inserto    | Palanca    | Tornillo | Placa   | Candado laina | Llave | Pin Punch |       |
|-------------|----------|----|-----|-----|----|------------|------------|----------|---------|---------------|-------|-----------|-------|
| PRGCR/L     | 2020-K10 | 20 | 20  | 125 | 25 | 20         | RCMX1003M0 | LR10     | VHX0514 | SR10          | SP3   | HW20L     | LSPS3 |
|             | 2525-M10 | 25 | 25  | 150 | 32 | 25         |            |          |         |               |       |           |       |
|             | 2020-K12 | 20 | 20  | 125 | 25 | 20         | RCMX1204M0 | LR12     | VHX0617 | SR12          | SP3   | HW25L     | LSPS3 |
|             | 2525-M12 | 25 | 25  | 150 | 32 | 25         |            |          |         |               |       |           |       |
|             | 3225-P12 | 32 | 25  | 170 | 32 | 32         | RCMX1606M0 | LR16     | VHX0621 | SR16          | SP4   | HW25L     | LSPS4 |
|             | 2525-M16 | 25 | 25  | 150 | 32 | 25         |            |          |         |               |       |           |       |
|             | 3225-P16 | 32 | 25  | 170 | 32 | 32         |            |          |         |               |       |           |       |
|             | 3232-P20 | 32 | 32  | 170 | 40 | 32         | RCMX2006M0 | LR20     | VHX0823 | SR20          | SP5-1 | HW30L     | LSPS5 |
| 4040-S25    | 40       | 40 | 250 | 50  | 40 | RCMX2507M0 | LR25       | VHX1030  | SR25    | SP6N          | HW40L | LSPS6     |       |

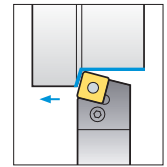
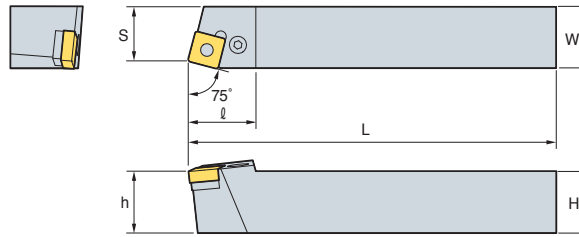
Insertos Aplicables B74



# PSBNR/L



SN□□



75°

• Inserto tipo R  
(mm)

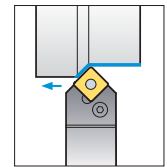
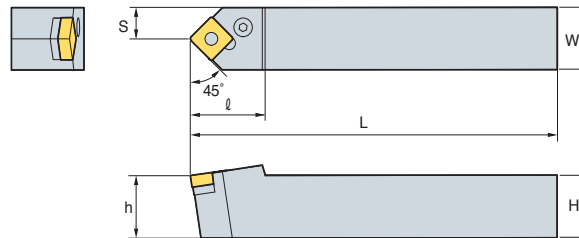
| Designación    | H                 | W  | L  | S   | h  | ℓ  | Inserto | Palanca    | Tornillo | Placa     | Candado laina | Llave | Pin Punch |       |
|----------------|-------------------|----|----|-----|----|----|---------|------------|----------|-----------|---------------|-------|-----------|-------|
| <b>PSBNR/L</b> | <b>1616-H09</b>   | 16 | 16 | 100 | 13 | 16 | 21      | SN□□0903□□ | LV3      | VHX0617   | SS32          | SP3   | HW25L     | LSPS3 |
|                | <b>2020-K09</b>   | 20 | 20 | 125 | 17 | 20 | 23      |            |          |           |               |       |           |       |
|                | <b>2020-K12</b>   | 20 | 20 | 125 | 17 | 20 | 28      | SN□□1204□□ | LV4      | VHX0821   | SS42          | SP4   | HW30L     | LSPS4 |
|                | <b>2525-M12</b>   | 25 | 25 | 150 | 22 | 25 | 28      |            |          |           |               |       |           |       |
|                | <b>3225-P12</b>   | 32 | 25 | 170 | 22 | 32 | 28      |            |          |           |               |       |           |       |
|                | <b>3232-P12</b>   | 32 | 32 | 170 | 27 | 32 | 28      | SN□□1506□□ | LV5      | VHX0825   | SS53          | SP5   | HW30L     | LSPS5 |
|                | <b>2525-M15</b>   | 25 | 25 | 150 | 22 | 25 | 35      |            |          |           |               |       |           |       |
|                | <b>3232-P15</b>   | 32 | 32 | 170 | 27 | 32 | 35      | SN□□1906□□ | LV6N     | VHX1027N  | SS63N         | SP6N  | HW40L     | LSPS6 |
|                | <b>3232-P19</b>   | 32 | 32 | 170 | 27 | 32 | 40      |            |          |           |               |       |           |       |
|                | <b>4040-S19</b>   | 40 | 40 | 250 | 35 | 40 | 40      | SN□□2507□□ | LV8N     | VHX1236N  | SS84N         | SP8N  | HW50L     | LSPS8 |
|                | <b>4040-S25</b>   | 40 | 40 | 250 | 35 | 40 | 50      |            |          |           |               |       |           |       |
|                | <b>4040-S25-6</b> | 40 | 40 | 250 | 35 | 40 | 50      | SN□□2509□□ | LV8N     | VHX1236N  | SS84N         | SP8N  | HW50L     | LSPS8 |
|                | <b>5050-T25</b>   | 50 | 50 | 300 | 43 | 50 | 50      | SN□□2507□□ |          |           |               |       |           |       |
|                | <b>5050-T25-6</b> | 50 | 50 | 300 | 43 | 50 | 46      | SN□□2509□□ |          |           |               |       |           |       |
| <b>PSBNR/L</b> | <b>1616-H09N</b>  | 16 | 16 | 100 | 13 | 16 | 21      | SN□□0903□□ | LV3N     | VHX0617N  | SS32N         | SP3   | HW25L     | LSPS3 |
|                | <b>2020-K09N</b>  | 20 | 20 | 125 | 17 | 20 | 23      |            |          |           |               |       |           |       |
|                | <b>2020-K12N</b>  | 20 | 20 | 125 | 17 | 20 | 28      | SN□□1204□□ | LV4N     | VHX0820N  | SS42N         | SP4N  | HW30L     | LSPS4 |
|                | <b>2525-M12N</b>  | 25 | 25 | 150 | 22 | 25 | 28      |            |          |           |               |       |           |       |
|                | <b>3225-P12N</b>  | 32 | 25 | 150 | 22 | 25 | 28      |            |          |           |               |       |           |       |
|                | <b>3232-P12N</b>  | 32 | 32 | 170 | 27 | 32 | 28      | SN□□1506□□ | LV5N     | VHX0820AN | SS53N         | SP5N  | HW30L     | LSPS5 |
|                | <b>2525-M15N</b>  | 25 | 25 | 150 | 22 | 25 | 35      |            |          |           |               |       |           |       |

➔ Insertos Aplicables B44~B52

# PSDNN



SN□□



45°

(mm)

| Designación      | H                 | W  | L   | S    | h    | ℓ  | Inserto    | Palanca    | Tornillo  | Placa    | Candado laina | Llave | Pin Punch |       |          |       |     |       |       |
|------------------|-------------------|----|-----|------|------|----|------------|------------|-----------|----------|---------------|-------|-----------|-------|----------|-------|-----|-------|-------|
| <b>PSDNN</b>     | <b>1616-H09</b>   | 16 | 16  | 100  | 8    | 16 | 23         | SN□□0903□□ | LV3       | VHX0617  | SS32          | SP3   | HW25L     | LSPS3 |          |       |     |       |       |
|                  | <b>2020-K12</b>   | 20 | 20  | 125  | 10   | 20 | 30         |            |           |          |               |       |           |       |          |       |     |       |       |
|                  | <b>2525-M12</b>   | 25 | 25  | 150  | 12.5 | 25 | 30         | SN□□1204□□ | LV4       | VHX0821  | SS42          | SP4   | HW30L     | LSPS4 |          |       |     |       |       |
|                  | <b>3225-P12</b>   | 32 | 25  | 170  | 12.5 | 32 | 30         |            |           |          |               |       |           |       |          |       |     |       |       |
|                  | <b>3232-P12</b>   | 32 | 32  | 170  | 16   | 32 | 40         |            |           |          |               |       |           |       |          |       |     |       |       |
|                  | <b>2525-M15</b>   | 25 | 25  | 150  | 12.5 | 25 | 40         | SN□□1506□□ | LV5       | VHX0825  | SS53          | SP5   | HW30L     | LSPS5 |          |       |     |       |       |
|                  | <b>3232-P15</b>   | 32 | 32  | 170  | 16   | 32 | 40         |            |           |          |               |       |           |       |          |       |     |       |       |
|                  | <b>3225-P19</b>   | 32 | 25  | 170  | 12.5 | 32 | 40         | SN□□1906□□ | LV6N      | VHX1027N | SS63N         | SP6N  | HW40L     | LSPS6 |          |       |     |       |       |
|                  | <b>3232-P19</b>   | 32 | 32  | 170  | 16   | 32 | 40         |            |           |          |               |       |           |       |          |       |     |       |       |
|                  | <b>4040-S19</b>   | 40 | 40  | 250  | 20   | 40 | 40         | SN□□2507□□ | LV8N      | VHX1236N | SS84N         | SP8N  | HW50L     | LSPS8 |          |       |     |       |       |
|                  | <b>4040-S25</b>   | 40 | 40  | 250  | 20   | 40 | 50         |            |           |          |               |       |           |       |          |       |     |       |       |
|                  | <b>5050-T25</b>   | 50 | 50  | 300  | 25   | 50 | 50         | SN□□2509□□ | LV8N      | VHX1236N | SS84N         | SP8N  | HW50L     | LSPS8 |          |       |     |       |       |
|                  | <b>4040-S25-6</b> | 40 | 40  | 250  | 20   | 40 | 50         |            |           |          |               |       |           |       |          |       |     |       |       |
|                  | <b>5050-T25-6</b> | 50 | 50  | 300  | 25   | 50 | 50         | SN□□2509□□ | LV8N      | VHX1236N | SS84N         | SP8N  | HW50L     | LSPS8 |          |       |     |       |       |
| <b>1616-H09N</b> | 16                | 16 | 100 | 8    | 16   | 23 | SN□□0903□□ | LV3N       |           |          |               |       |           |       | VHX0617N | SS32N | SP3 | HW25L | LSPS3 |
| <b>2020-K12N</b> | 20                | 20 | 125 | 10   | 20   | 30 |            |            |           |          |               |       |           |       |          |       |     |       |       |
| <b>2525-M12N</b> | 25                | 25 | 150 | 12.5 | 25   | 30 | SN□□1204□□ | LV4N       | VHX0820N  | SS42N    | SP4N          | HW30L | LSPS4     |       |          |       |     |       |       |
| <b>3225-P12N</b> | 32                | 25 | 170 | 12.5 | 32   | 30 |            |            |           |          |               |       |           |       |          |       |     |       |       |
| <b>3232-P12N</b> | 32                | 32 | 170 | 16   | 32   | 40 |            |            |           |          |               |       |           |       |          |       |     |       |       |
| <b>2525-M15N</b> | 25                | 25 | 150 | 12.5 | 25   | 40 | SN□□1506□□ | LV5N       | VHX0820AN | SS53N    | SP5N          | HW30L | LSPS5     |       |          |       |     |       |       |
| <b>3232-P15N</b> | 32                | 32 | 170 | 16   | 32   | 40 |            |            |           |          |               |       |           |       |          |       |     |       |       |

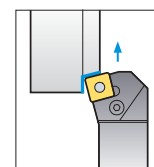
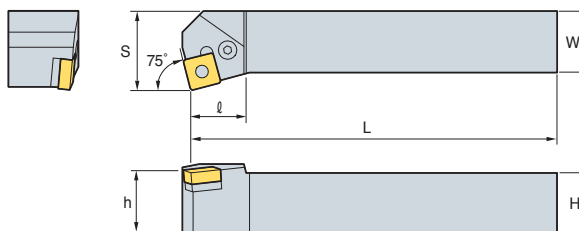
➔ Insertos Aplicables B44~B52



## PSKNR/L



SN□□



75°

• Inserto tipo R  
(mm)

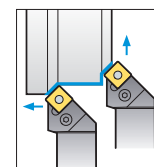
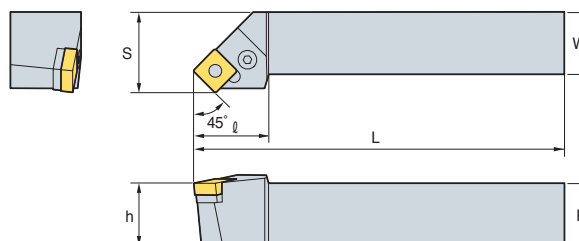
| Designación       | H                | W  | L   | S   | h  | l    | Inserto    | Palanca    | Tornillo | Placa     | Candado laina | Llave | Pin Punch |       |
|-------------------|------------------|----|-----|-----|----|------|------------|------------|----------|-----------|---------------|-------|-----------|-------|
| <b>PSKNR/L</b>    | <b>1616-H09</b>  | 16 | 16  | 100 | 20 | 16   | 17         | SN□□0903□□ | LV3      | VHX0617   | SS32          | SP3   | HW25L     | LSPS3 |
|                   | <b>2020-K09</b>  | 20 | 20  | 125 | 25 | 20   | 20         |            |          |           |               |       |           |       |
|                   | <b>2020-K12</b>  | 20 | 20  | 125 | 25 | 20   | 23         | SN□□1204□□ | LV4      | VHX0821   | SS42          | SP4   | HW30L     | LSPS4 |
|                   | <b>2525-M12</b>  | 25 | 25  | 150 | 32 | 25   | 23         |            |          |           |               |       |           |       |
|                   | <b>3232-P12</b>  | 32 | 32  | 170 | 40 | 32   | 23         | SN□□1506□□ | LV5      | VHX0825   | SS53          | SP5   | HW30L     | LSPS5 |
|                   | <b>2525-M15</b>  | 25 | 25  | 150 | 32 | 25   | 28         |            |          |           |               |       |           |       |
|                   | <b>3232-P15</b>  | 32 | 32  | 170 | 40 | 32   | 28         | SN□□1906□□ | LV6N     | VHX1027N  | SS63N         | SP6N  | HW40L     | LSPS6 |
|                   | <b>3232-P19</b>  | 32 | 32  | 170 | 40 | 32   | 41.5       |            |          |           |               |       |           |       |
|                   | <b>4040-S19</b>  | 40 | 40  | 250 | 50 | 40   | 41.5       | SN□□2507□□ | LV8N     | VHX1236N  | SS84N         | SP8N  | HW50L     | LSPS8 |
|                   | <b>4040-S25</b>  | 40 | 40  | 250 | 50 | 40   | 46         |            |          |           |               |       |           |       |
| <b>4040-S25-6</b> | 40               | 40 | 250 | 50  | 40 | 46   | SN□□2509□□ | LV8N       | VHX1236N | SS84N     | SP8N          | HW50L | LSPS8     |       |
| <b>5050-T25-6</b> | 50               | 50 | 300 | 60  | 50 | 37.5 | SN□□2509□□ |            |          |           |               |       |           |       |
| <b>PSKNR/L</b>    | <b>1616-H09N</b> | 16 | 16  | 100 | 20 | 16   | 17         | SN□□0903□□ | LV3N     | VHX0617N  | SS32N         | SP3   | HW25L     | LSPS3 |
|                   | <b>2020-K09N</b> | 20 | 20  | 125 | 25 | 20   | 20         |            |          |           |               |       |           |       |
|                   | <b>2020-K12N</b> | 20 | 20  | 125 | 25 | 20   | 26         | SN□□1204□□ | LV4N     | VHX0820N  | SS42N         | SP4N  | HW30L     | LSPS4 |
|                   | <b>2525-M12N</b> | 25 | 25  | 150 | 32 | 25   | 26         |            |          |           |               |       |           |       |
|                   | <b>3232-P12N</b> | 32 | 32  | 170 | 40 | 32   | 26         | SN□□1506□□ | LV5N     | VHX0820AN | SS53N         | SP5N  | HW30L     | LSPS5 |
|                   | <b>2525-M15N</b> | 25 | 25  | 150 | 32 | 25   | 32         |            |          |           |               |       |           |       |
|                   | <b>3232-P15N</b> | 32 | 32  | 170 | 40 | 32   | 32         |            |          |           |               |       |           |       |

↻ Insertos Aplicables B44~B52

## PSSNR/L



SN□□



45°

• Inserto tipo R  
(mm)

| Designación       | H                | W  | L   | S   | h  | l  | Inserto    | Palanca    | Tornillo | Placa     | Candado laina | Llave | Pin Punch |       |
|-------------------|------------------|----|-----|-----|----|----|------------|------------|----------|-----------|---------------|-------|-----------|-------|
| <b>PSSNR/L</b>    | <b>1616-H09</b>  | 16 | 16  | 100 | 20 | 16 | 25         | SN□□0903□□ | LV3      | VHX0617   | SS32          | SP3   | HW25L     | LSPS3 |
|                   | <b>2020-K12</b>  | 20 | 20  | 125 | 25 | 20 | 30         |            |          |           |               |       |           |       |
|                   | <b>2525-M12</b>  | 25 | 25  | 150 | 32 | 25 | 36         | SN□□1204□□ | LV4      | VHX0821   | SS42          | SP4   | HW30L     | LSPS4 |
|                   | <b>3225-P12</b>  | 32 | 25  | 170 | 32 | 32 | 36         |            |          |           |               |       |           |       |
|                   | <b>3232-P12</b>  | 32 | 32  | 170 | 40 | 32 | 40         | SN□□1506□□ | LV5      | VHX0825   | SS53          | SP5   | HW30L     | LSPS5 |
|                   | <b>2525-M15</b>  | 25 | 25  | 150 | 32 | 25 | 36         |            |          |           |               |       |           |       |
|                   | <b>3232-P15</b>  | 32 | 32  | 170 | 40 | 32 | 45         | SN□□1906□□ | LV6N     | VHX1027N  | SS63N         | SP6N  | HW40L     | LSPS6 |
|                   | <b>3232-P19</b>  | 32 | 32  | 170 | 40 | 32 | 41.5       |            |          |           |               |       |           |       |
|                   | <b>4040-R19</b>  | 40 | 40  | 200 | 50 | 40 | 41.5       | SN□□2507□□ | LV8N     | VHX1236N  | SS84N         | SP8N  | HW50L     | LSPS8 |
|                   | <b>4040-S19</b>  | 40 | 40  | 250 | 50 | 40 | 41.5       |            |          |           |               |       |           |       |
| <b>4040-S25</b>   | 40               | 40 | 250 | 50  | 40 | 48 | SN□□2509□□ | LV8N       | VHX1236N | SS84N     | SP8N          | HW50L | LSPS8     |       |
| <b>4040-S25-6</b> | 40               | 40 | 250 | 50  | 40 | 48 | SN□□2509□□ |            |          |           |               |       |           |       |
| <b>PSSNR/L</b>    | <b>1616-H09N</b> | 16 | 16  | 100 | 20 | 16 | 25         | SN□□0903□□ | LV3N     | VHX0617N  | SS32N         | SP3   | HW25L     | LSPS3 |
|                   | <b>2020-K12N</b> | 20 | 20  | 125 | 25 | 20 | 30         |            |          |           |               |       |           |       |
|                   | <b>2525-M12N</b> | 25 | 25  | 150 | 32 | 25 | 36         | SN□□1204□□ | LV4N     | VHX0821N  | SS42N         | SP4N  | HW30L     | LSPS4 |
|                   | <b>3225-P12N</b> | 32 | 25  | 170 | 32 | 32 | 45         |            |          |           |               |       |           |       |
|                   | <b>3232-P12N</b> | 32 | 32  | 170 | 40 | 32 | 40         | SN□□1506□□ | LV5N     | VHX08209N | SS53N         | SP5N  | HW30L     | LSPS5 |
|                   | <b>2525-M15N</b> | 25 | 25  | 150 | 32 | 25 | 36         |            |          |           |               |       |           |       |
|                   | <b>3232-P15N</b> | 32 | 32  | 170 | 40 | 32 | 45         |            |          |           |               |       |           |       |

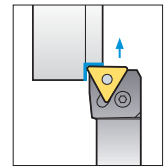
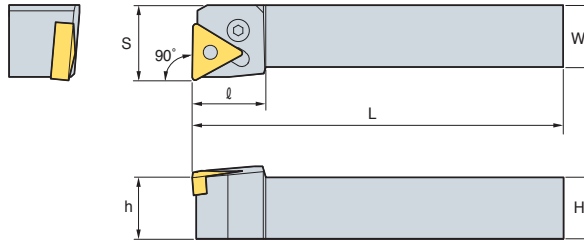
↻ Insertos Aplicables B44~B52



# PTFNR/L



TN□□



90°

• Inserto tipo R (mm)

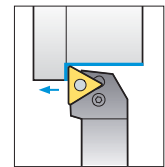
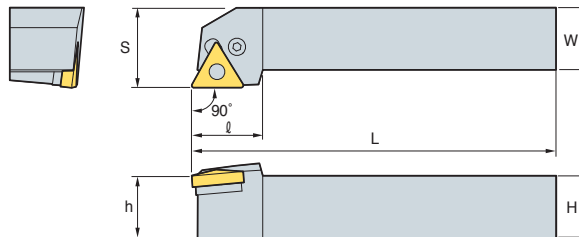
| Designación     | H                | W  | L   | S   | h  | l  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |
|-----------------|------------------|----|-----|-----|----|----|------------|---------|----------|-------|---------------|-------|-----------|
| <b>PTFNR/L</b>  | <b>1616-H16</b>  | 16 | 16  | 100 | 20 | 16 | TN□□1604□□ | LV3     | VHX0617  | ST317 | SP3           | HW25L | LSPS3     |
|                 | <b>2020-K16</b>  | 20 | 20  | 125 | 25 | 20 |            |         |          |       |               |       |           |
|                 | <b>2525-M16</b>  | 25 | 25  | 150 | 32 | 25 |            |         |          |       |               |       |           |
|                 | <b>2525-M22</b>  | 25 | 25  | 150 | 32 | 25 | TN□□2204□□ | LV4     | VHX0821  | ST42  | SP4           | HW30L | LSPS4     |
|                 | <b>3232-P22</b>  | 32 | 32  | 170 | 40 | 32 |            |         |          |       |               |       |           |
|                 | <b>3232-P27</b>  | 32 | 32  | 170 | 40 | 32 | TN□□2706□□ | LV5     | VHX0825  | ST53  | SP5           | HW30L | LSPS5     |
| <b>4040-S27</b> | 40               | 40 | 250 | 50  | 40 |    |            |         |          |       |               |       |           |
| <b>PTFNR/L</b>  | <b>2525-M22N</b> | 25 | 25  | 150 | 32 | 25 | TN□□2204□□ | LV4N    | VHX0820N | ST42N | SP4N          | HW30L | LSPS4     |
|                 | <b>3232-P22N</b> | 32 | 32  | 170 | 40 | 32 | TN□□2204□□ | LV4N    | VHX0820N | ST42N | SP4N          | HW30L | LSPS4     |
|                 | <b>3232-P27N</b> | 32 | 32  | 170 | 40 | 32 | TN□□2706□□ | LV5AN   | VHX0823N | ST53N | SP5N          | HW30L | LSPS5     |
|                 | <b>4040-S27N</b> | 40 | 40  | 250 | 50 | 40 | TN□□2706□□ | LV5AN   | VHX0823N | ST53N | SP5N          | HW30L | LSPS5     |

➔ Insertos Aplicables B53~B59

# PTGNR/L



TN□□



90°

• Inserto tipo R (mm)

| Designación     | H                | W  | L   | S   | h  | l  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Llave | Pin Punch |
|-----------------|------------------|----|-----|-----|----|----|------------|---------|----------|-------|---------------|-------|-----------|
| <b>PTGNR/L</b>  | <b>1212-F11</b>  | 12 | 12  | 80  | 16 | 12 | TN□□1103□□ | LV2     | VHX0509B | -     | -             | HW20L | -         |
|                 | <b>1616-H11</b>  | 16 | 16  | 100 | 20 | 16 |            |         |          |       |               |       |           |
|                 | <b>2020-K11</b>  | 20 | 20  | 125 | 25 | 20 |            |         |          |       |               |       |           |
|                 | <b>2525-M11</b>  | 25 | 25  | 150 | 32 | 25 | TN□□1604□□ | LV3     | VHX0617  | ST317 | SP3           | HW25L | LSPS3     |
|                 | <b>1616-H16</b>  | 16 | 16  | 100 | 20 | 16 |            |         |          |       |               |       |           |
|                 | <b>2020-K16</b>  | 20 | 20  | 125 | 25 | 20 |            |         |          |       |               |       |           |
|                 | <b>2525-M16</b>  | 25 | 25  | 150 | 32 | 25 |            |         |          |       |               |       |           |
|                 | <b>2525-M22</b>  | 25 | 25  | 150 | 32 | 25 | TN□□2204□□ | LV4     | VHX0821  | ST42  | SP4           | HW30L | LSPS4     |
|                 | <b>3232-P16</b>  | 32 | 32  | 170 | 40 | 32 |            |         |          |       |               |       |           |
|                 | <b>3232-P22</b>  | 32 | 32  | 170 | 40 | 32 | TN□□2706□□ | LV5     | VHX0825  | ST53  | SP5           | HW30L | LSPS5     |
| <b>3232-P27</b> | 32               | 32 | 170 | 40  | 32 |    |            |         |          |       |               |       |           |
| <b>4040-S27</b> | 40               | 40 | 250 | 50  | 40 |    |            |         |          |       |               |       |           |
| <b>PTGNR/L</b>  | <b>2525-M22N</b> | 25 | 25  | 150 | 32 | 25 | TN□□2204□□ | LV4N    | VHX0820N | ST42N | SP4N          | HW30L | LSPS4     |
|                 | <b>3232-P22N</b> | 32 | 32  | 170 | 40 | 32 | TN□□2204□□ | LV4N    | VHX0820N | ST42N | SP4N          | HW30L | LSPS4     |
|                 | <b>3232-P27N</b> | 32 | 32  | 170 | 40 | 32 | TN□□2706□□ | LV5AN   | VHX0823N | ST53N | SP5N          | HW30L | LSPS5     |
|                 | <b>4040-S27N</b> | 40 | 40  | 250 | 50 | 40 | TN□□2706□□ | LV5AN   | VHX0823N | ST53N | SP5N          | HW30L | LSPS5     |

➔ Insertos Aplicables B53~B59

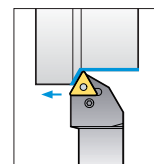
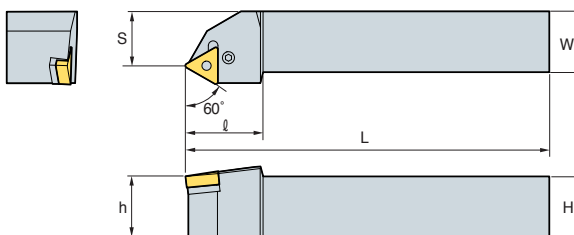


# B Sistema de Palanca

## PTTNR/L



TN□□



60°

• Inserto tipo R (mm)

| Designación              | H  | W  | L   | S  | h  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado lana | Llave | Pin Punch |
|--------------------------|----|----|-----|----|----|----|------------|---------|----------|-------|--------------|-------|-----------|
| <b>PTTNR/L 1616-H16</b>  | 16 | 16 | 100 | 13 | 16 | 25 | TN□□1604□□ |         |          |       |              |       |           |
| <b>2020-K16</b>          | 20 | 20 | 125 | 17 | 20 | 25 |            |         |          |       |              |       |           |
| <b>2525-M16</b>          | 25 | 25 | 150 | 22 | 25 | 32 |            |         |          |       |              |       |           |
| <b>2525-M22</b>          | 25 | 25 | 150 | 22 | 25 | 32 | TN□□2204□□ | LV4     | VHX0821  | ST42  | SP4          | HW30L | LSPS4     |
| <b>PTTNR/L 2525-M22N</b> | 25 | 25 | 150 | 22 | 25 | 32 | TN□□2204□□ | LV4N    | VHX0820N | ST42N | SP4N         | HW30L | LSPS4     |

➤ Insertos Aplicables B53~B59

## PWLNR/L



WN□□

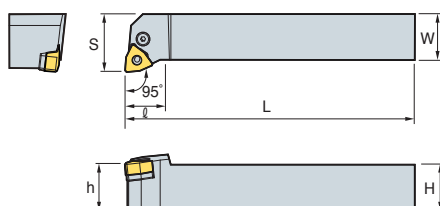


Fig.1

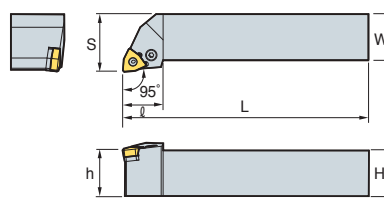
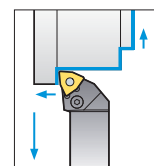


Fig.2



95°

• Inserto tipo R (mm)

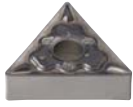
| Designación              | H  | W  | L   | S  | h  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado lana | Llave | Pin Punch | Fig. |
|--------------------------|----|----|-----|----|----|----|------------|---------|----------|-------|--------------|-------|-----------|------|
| <b>PWLNR/L 1616-H06</b>  | 16 | 16 | 100 | 20 | 16 | 20 | WN□□0604□□ |         |          |       |              |       |           | 1    |
| <b>2020-K06</b>          | 20 | 20 | 125 | 25 | 20 | 20 |            |         |          |       |              |       |           |      |
| <b>2525-M06</b>          | 25 | 25 | 150 | 32 | 25 | 20 |            |         |          |       |              |       |           |      |
| <b>2020-K08</b>          | 20 | 20 | 125 | 25 | 20 | 26 | WN□□0804□□ | LV4     | VHX0821  | SW42  | SP4          | HW30L | LSPS4     | 2    |
| <b>2525-M08</b>          | 25 | 25 | 150 | 32 | 25 | 26 |            |         |          |       |              |       |           |      |
| <b>PWLNR/L 1616-H06N</b> | 16 | 16 | 100 | 20 | 16 | 20 | WN□□0604□□ |         |          |       |              |       |           | 1    |
| <b>2020-K06N</b>         | 20 | 20 | 125 | 25 | 20 | 20 |            |         |          |       |              |       |           |      |
| <b>2525-M06N</b>         | 25 | 25 | 150 | 32 | 25 | 20 |            |         |          |       |              |       |           |      |
| <b>2020-K08N</b>         | 20 | 20 | 125 | 25 | 20 | 26 | WN□□0804□□ | LV4N    | VHX0820N | SW42N | SP4N         | HW30L | LSPS4     | 2    |
| <b>2525-N08N</b>         | 25 | 25 | 150 | 32 | 25 | 26 |            |         |          |       |              |       |           |      |

➤ Insertos Aplicables B62~B65

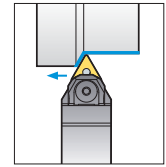
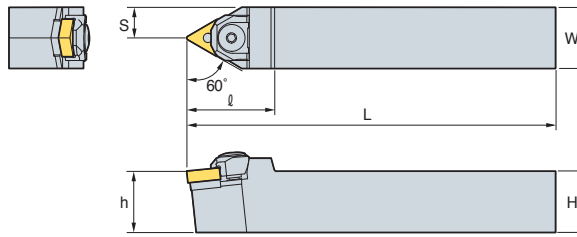




# WTENN



TN□□



60°

• Inserto tipo R (mm)

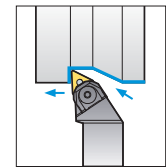
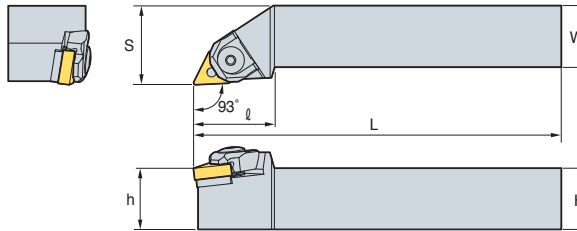
| Designación | H        | W  | L   | S   | h    | ℓ          | Inserto        | Brida Ancha | Tornillo | Candado C | Placa | Candado lana | Nut | Llave |                |      |       |        |       |       |
|-------------|----------|----|-----|-----|------|------------|----------------|-------------|----------|-----------|-------|--------------|-----|-------|----------------|------|-------|--------|-------|-------|
| WTENN       | 2020-K16 | 20 | 20  | 125 | 10   | 20         | TN□□1604□□     |             |          |           |       |              |     |       |                |      |       |        |       |       |
|             | 2525-M16 | 25 | 25  | 150 | 12.5 | 25         |                |             |          |           |       |              |     |       | CMH6R6 MHX0626 | ER04 | ST32M | SP3M-1 | N0407 | HW30L |
|             | 2525-M22 | 25 | 25  | 150 | 12.5 | 25         |                |             |          |           |       |              |     |       | SP3M           |      |       |        |       |       |
| 3232-P22    | 32       | 32 | 170 | 16  | 32   | TN□□2204□□ | CMH6R1 MHX0626 | ER04        | ST43M    | SP4M      | N0508 | HW30L        |     |       |                |      |       |        |       |       |

➡ Insertos Aplicables B53~B59

# WTJNR/L



TN□□



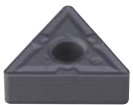
93°

• Inserto tipo R (mm)

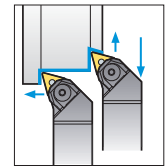
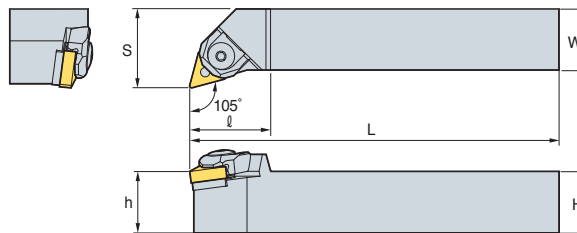
| Designación | H        | W  | L   | S   | h  | ℓ  | Inserto    | Brida Ancha    | Tornillo | Candado C | Placa | Candado lana | Nut   | Llave |                |      |       |        |       |       |
|-------------|----------|----|-----|-----|----|----|------------|----------------|----------|-----------|-------|--------------|-------|-------|----------------|------|-------|--------|-------|-------|
| WTJNR/L     | 2020-K16 | 20 | 20  | 125 | 25 | 20 | TN□□1604□□ |                |          |           |       |              |       |       |                |      |       |        |       |       |
|             | 2525-M16 | 25 | 25  | 150 | 32 | 25 |            |                |          |           |       |              |       |       | CMH6R6 MHX0626 | ER04 | ST32M | SP3M-1 | N0407 | HW30L |
|             | 3232-P16 | 32 | 32  | 170 | 40 | 32 |            |                |          |           |       |              |       |       | SP3M           |      |       |        |       |       |
| 2525-M22    | 25       | 25 | 150 | 32  | 25 | 35 | TN□□2204□□ | CMH6R1 MHX0626 | ER04     | ST43M     | SP4M  | N0508        | HW30L |       |                |      |       |        |       |       |
| 3232-P22    | 32       | 32 | 170 | 40  | 32 | 35 |            |                |          |           |       |              |       |       |                |      |       |        |       |       |

➡ Insertos Aplicables B53~B59

# WTXNR/L



TN□□



105°

• Inserto tipo R (mm)

| Designación | H        | W  | L  | S   | h  | ℓ  | Inserto    | Brida Ancha | Tornillo | Candado C | Placa | Candado lana | Nut | Llave |                |      |       |        |       |       |
|-------------|----------|----|----|-----|----|----|------------|-------------|----------|-----------|-------|--------------|-----|-------|----------------|------|-------|--------|-------|-------|
| WTXNR/L     | 2020-K16 | 20 | 20 | 125 | 25 | 20 | TN□□1604□□ |             |          |           |       |              |     |       |                |      |       |        |       |       |
|             | 2525-M16 | 25 | 25 | 150 | 32 | 25 |            |             |          |           |       |              |     |       | CMH6R6 MHX0626 | ER04 | ST32M | SP3M-1 | N0407 | HW25L |
|             | 3232-P16 | 32 | 32 | 170 | 40 | 32 |            |             |          |           |       |              |     |       | 33             | SP3M |       |        |       | HW30L |

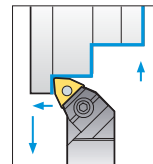
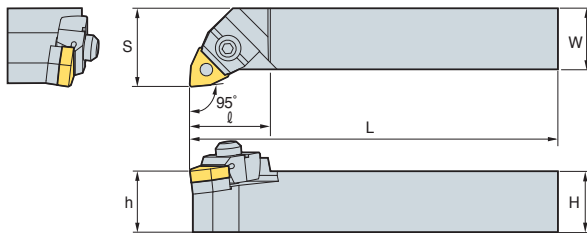
➡ Insertos Aplicables B53~B59

# B Sistema Brida Amplia

## WWLNR/L



WN□□



95°

• Inserto tipo R (mm)

| Designación             | H  | W  | L   | S  | h  | l  | Inserto    | Brida Amplia | Tornillo | Candado C | Placa | Candado laina | Nut   | Llave |        |         |      |       |      |       |       |
|-------------------------|----|----|-----|----|----|----|------------|--------------|----------|-----------|-------|---------------|-------|-------|--------|---------|------|-------|------|-------|-------|
| <b>WWLNR/L 2020-K08</b> | 20 | 20 | 125 | 25 | 20 | 32 | WN□□0804□□ | CMH6R/L3     |          | CR05      | SW43M | SP2M          | N0508 | HW30L |        |         |      |       |      |       |       |
| <b>2525-M08</b>         | 25 | 25 | 150 | 32 | 25 | 33 |            |              |          |           |       |               |       |       | CMH6R2 | MHX0630 | CR05 | SW43M | SP4M | N0508 | HW40L |
| <b>3232-P08</b>         | 32 | 32 | 170 | 40 | 32 | 33 |            |              |          |           |       |               |       |       | CMH6R2 |         |      |       |      |       |       |

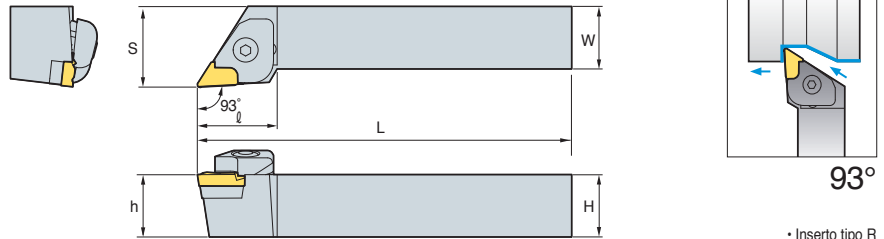
➔ Insertos Aplicables B62~B65



# CKJNR/L



KN□□



• Inserto tipo R (mm)

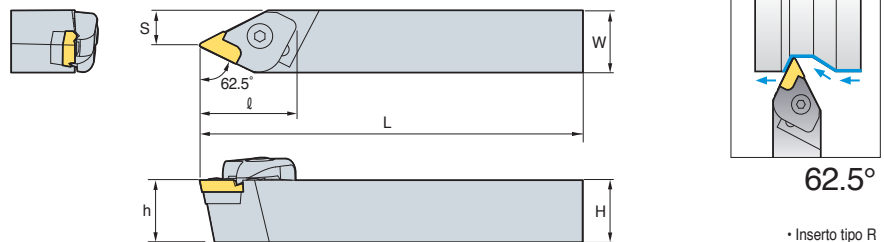
| Designación |          | H  | W   | L   | S  | h  | ℓ  | Inserto     | Brida  | Tornillo Brida | Resorte | Placa  | Perno+Resorte | Tornillo Placa | Llave          |
|-------------|----------|----|-----|-----|----|----|----|-------------|--------|----------------|---------|--------|---------------|----------------|----------------|
| CKJNR       | 2020-K16 | 20 | 20  | 125 | 25 | 20 | 32 | KN□□1604□□R | CTH6R1 | CHX0625        | SR3     | SK33C  | PN0515<br>SR4 | SHX0310        | HW20L<br>HW40L |
|             | 2525-M16 | 25 | 25  | 150 | 32 | 25 | 32 |             |        |                |         |        |               |                |                |
|             | 3225-M16 | 32 | 25  | 150 | 32 | 32 | 32 |             |        |                |         |        |               |                |                |
|             | 3225-P16 | 32 | 25  | 170 | 32 | 32 | 32 |             |        |                |         |        |               |                |                |
|             | 3232-P16 | 32 | 32  | 170 | 40 | 32 | 32 |             |        |                |         |        |               |                |                |
| 4040-R16    | 40       | 40 | 200 | 50  | 40 | 32 |    |             |        |                |         |        |               |                |                |
| CKJNL       | 2020-K16 | 20 | 20  | 125 | 25 | 20 | 32 | KN□□1604□□L | CTH6L1 | CHX0625        | SR3     | SK33CL | PN0515<br>SR4 | SHX0310        | HW20L<br>HW40L |
|             | 2525-M16 | 25 | 25  | 150 | 32 | 25 | 32 |             |        |                |         |        |               |                |                |
|             | 3232-P16 | 32 | 32  | 170 | 40 | 32 | 32 |             |        |                |         |        |               |                |                |
|             | 4040-R16 | 40 | 40  | 200 | 50 | 40 | 32 |             |        |                |         |        |               |                |                |

➔ Insertos Aplicables B43

# CKNNR/L



KN□□

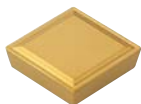


• Inserto tipo R (mm)

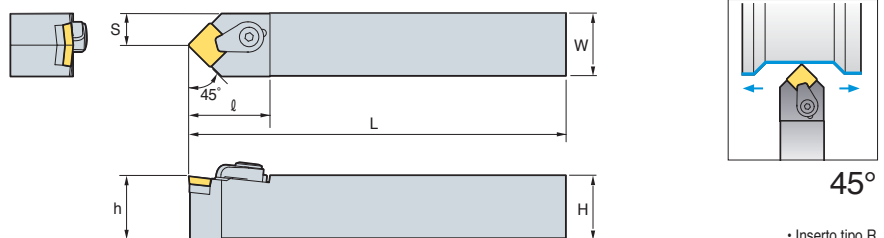
| Designación |          | H  | W  | L   | S    | h  | ℓ  | Inserto      | Brida  | Tornillo Brida | Resorte | Placa  | Perno+Resorte | Tornillo Placa | Llave          |
|-------------|----------|----|----|-----|------|----|----|--------------|--------|----------------|---------|--------|---------------|----------------|----------------|
| CKNNR       | 2525-M16 | 25 | 25 | 150 | 14.3 | 25 | 37 | KN□□ 1604□□R | CTH6R1 | CHX0625        | SR3     | SK33C  | PN0515<br>SR4 | SHX0310        | HW20L<br>HW40L |
|             | 3232-P16 | 32 | 32 | 170 | 16.8 | 32 | 37 |              |        |                |         |        |               |                |                |
| CKNNL       | 2525-M16 | 25 | 25 | 150 | 14.3 | 25 | 37 | KN□□ 1604□□L | CTH6L1 | CHX0625        | SR3     | SK33CL | PN0515<br>SR4 | SHX0310        | HW20L<br>HW40L |
|             | 3232-P16 | 32 | 32 | 170 | 16.8 | 32 | 37 |              |        |                |         |        |               |                |                |

➔ Insertos Aplicables B43

# CSDPN



SP□R



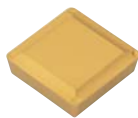
• Inserto tipo R (mm)

| Designación |          | H  | W  | L   | S    | h  | ℓ  | Inserto     | Brida  | Tornillo Brida | Placa | Candado laina | Candado C | Llave |
|-------------|----------|----|----|-----|------|----|----|-------------|--------|----------------|-------|---------------|-----------|-------|
| CSDPN       | 1616-H09 | 16 | 16 | 100 | 8    | 16 | 30 | SP□R 0903□□ | CH53R1 | CH0515C        | SS32C | SP3C          | CR03C     | HW25L |
|             | 2525-M12 | 25 | 25 | 150 | 12.5 | 25 | 35 | SP□R 1203□□ | CH6R5  | CHX0622C       | SS42C | SP3C          | CR04C     | HW30L |

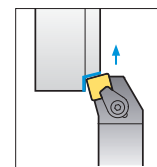
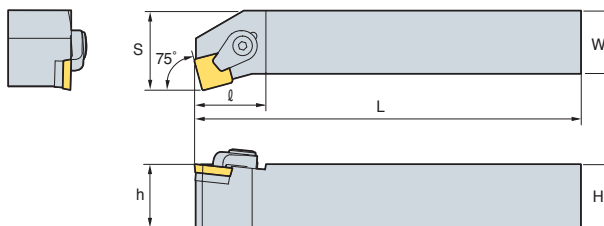
➔ Insertos Aplicables B76~77

# B Sistema de Brida

## CSKPR/L



SP□R



75°

• Inserto tipo R (mm)

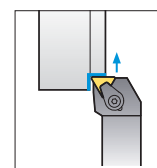
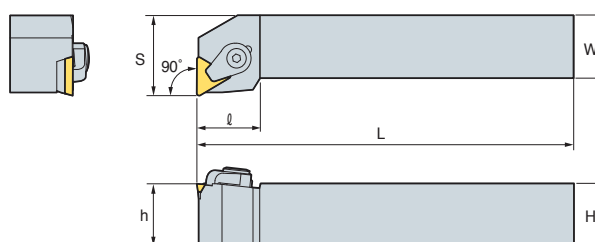
| Designación      | H  | W  | L   | S  | h  | l  | Inserto     | Brida | Tornillo Brida | Placa | Candado Iaina | Candado C | Llave |
|------------------|----|----|-----|----|----|----|-------------|-------|----------------|-------|---------------|-----------|-------|
| CSKPR/L 2525-M12 | 25 | 25 | 150 | 32 | 20 | 32 | SP□R 1203□□ | CH6R5 | CHX0414C       | SS42C | SP3C          | CR04C     | HW30L |

➔ Insertos Aplicables B76~B77

## CTFPR/L



TP□R



90°

• Inserto tipo R (mm)

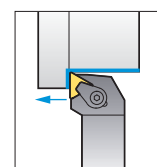
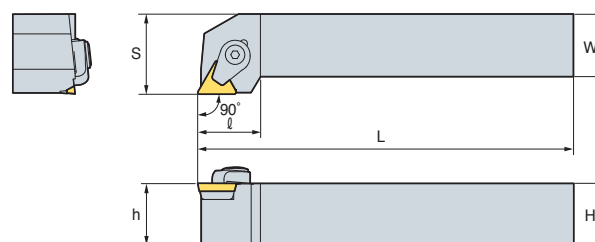
| Designación      | H  | W  | L   | S  | h  | l  | Inserto     | Brida | Tornillo Brida | Placa | Candado Iaina | Candado C | Llave |
|------------------|----|----|-----|----|----|----|-------------|-------|----------------|-------|---------------|-----------|-------|
| CTFPR/L 2020-K16 | 25 | 25 | 125 | 25 | 20 | 32 | TP□R 1603□□ | CH6R5 | CHX0622C       | ST32C | SP3C          | CR04C     | HW30L |
| 2525-M16         | 25 | 25 | 150 | 32 | 25 | 32 |             |       |                |       |               |           |       |

➔ Insertos Aplicables B81~B83

## CTGPR/L



TP□R



90°

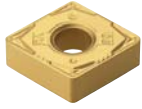
• Inserto tipo R (mm)

| Designación      | H  | W  | L   | S  | h  | l  | Inserto     | Brida  | Tornillo Brida | Placa | Candado Iaina | Candado C | Llave |
|------------------|----|----|-----|----|----|----|-------------|--------|----------------|-------|---------------|-----------|-------|
| CTGPR/L 1212-F11 | 12 | 12 | 80  | 16 | 12 | 20 | TP□R 1103□□ | CH53R1 | CHX0515C       | -     | -             | CR03C     | HW25L |
| 1616-H11         | 16 | 16 | 100 | 20 | 16 | 20 |             |        |                |       |               |           |       |
| 2020-K11         | 20 | 20 | 125 | 25 | 20 | 20 |             |        |                |       |               |           |       |
| 2020-K16         | 20 | 20 | 125 | 25 | 20 | 25 | TP□R 1603□□ | CH6R5  | CHX0622C       | ST32C | SP3C          | CR04C     | HW30L |
| 2525-M16         | 25 | 25 | 150 | 32 | 25 | 25 |             |        |                |       |               |           |       |
| 2525-M22         | 25 | 25 | 150 | 32 | 25 | 32 | TP□R 2204□□ | CH83R1 | CHX0823C       | ST43C | SP4C          | CR05C     | HW40L |
| 3232-P22         | 32 | 32 | 170 | 40 | 32 | 32 |             |        |                |       |               |           |       |

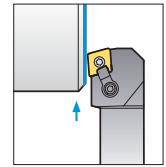
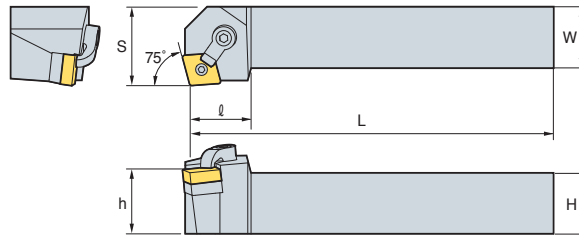
➔ Insertos Aplicables B81~B83



# MCKNR/L



CN□□



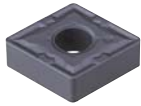
75°

• Inserto tipo R  
(mm)

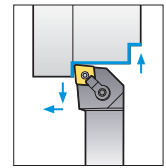
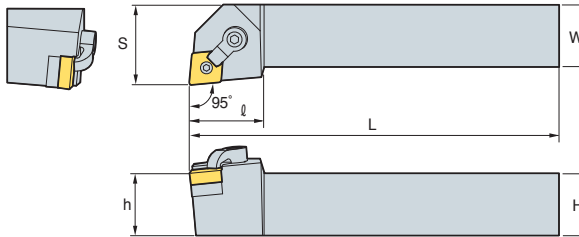
| Designación      | H  | W  | L   | S  | h  | l  | Inserto    | Brida | Tornillo Brida | Placa | Candado laina | Llave              |
|------------------|----|----|-----|----|----|----|------------|-------|----------------|-------|---------------|--------------------|
| MCKNR/L 2020-K12 | 20 | 20 | 125 | 25 | 20 | 32 | CN□□1204□□ | CDH6N | DHA1/4-25      | SC43D | SP4D          | HW31.8L<br>HW23.8L |
| 2525-M12         | 25 | 25 | 150 | 32 | 25 | 32 |            |       |                |       |               |                    |
| 3232-P12         | 32 | 32 | 170 | 40 | 32 | 32 |            |       |                |       |               |                    |

➔ Insertos Aplicables B28~B35

# MCLNR/L



CN□□



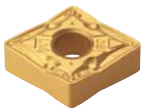
95°

• Inserto tipo R  
(mm)

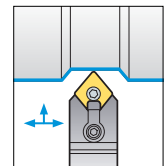
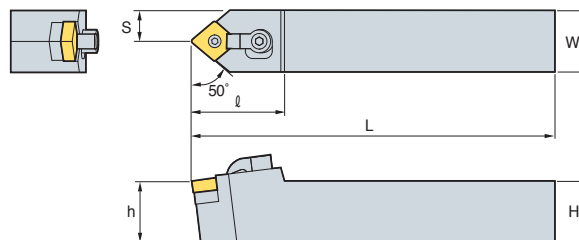
| Designación      | H  | W  | L   | S  | h  | l  | Inserto    | Brida  | Tornillo Brida | Placa | Candado laina | Llave              |
|------------------|----|----|-----|----|----|----|------------|--------|----------------|-------|---------------|--------------------|
| MCLNR/L 1616-H09 | 16 | 16 | 100 | 20 | 16 | 25 | CN□□0903□□ | CDH7N  | DHA10-32-19    | SC32D | SP3DS         | HW23.8L<br>HW19.8L |
| 2020-K09         | 20 | 20 | 125 | 25 | 20 | 25 |            |        |                |       |               |                    |
| 2525-M09         | 25 | 25 | 150 | 32 | 25 | 25 |            |        |                |       |               |                    |
| 2020-K12         | 20 | 20 | 125 | 25 | 20 | 32 | CN□□1204□□ | CDH6N  | DHA1/4-25      | SC43D | SP4D          | HW31.8L<br>HW23.8L |
| 2525-M12         | 25 | 25 | 150 | 32 | 25 | 32 |            |        |                |       |               |                    |
| 3225-P12         | 32 | 25 | 170 | 32 | 32 | 32 |            |        |                |       |               |                    |
| 3232-P12         | 32 | 32 | 170 | 40 | 32 | 32 | CN□□1606□□ | CDH8N  | DHA5/16-32     | SC53D | SP5D          | HW39.7L<br>HW31.8L |
| 2525-M16         | 25 | 25 | 150 | 32 | 25 | 33 |            |        |                |       |               |                    |
| 3232-P16         | 32 | 32 | 170 | 40 | 32 | 33 |            |        |                |       |               |                    |
| 4040-S16         | 40 | 40 | 250 | 50 | 40 | 33 | CN□□1906□□ | CDH8N  | DHA5/16-32     | SC63D | SP6D          | HW39.7L<br>HW35.7L |
| 2525-M19         | 25 | 25 | 150 | 32 | 25 | 38 |            |        |                |       |               |                    |
| 3232-P19         | 32 | 32 | 170 | 40 | 32 | 38 |            |        |                |       |               |                    |
| 4040-S19         | 40 | 40 | 250 | 50 | 40 | 38 | CN□□2507□□ | CDH8N3 | DHA3/8-35      | SC84D | SP8D          | HW39.7L<br>HW47.6L |
| 4040-S25         | 40 | 40 | 250 | 50 | 40 | 38 |            |        |                |       |               |                    |

➔ Insertos Aplicables B28~B35

# MCMNN



CN□□



50°

• Inserto tipo R  
(mm)

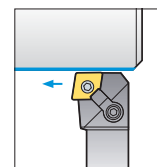
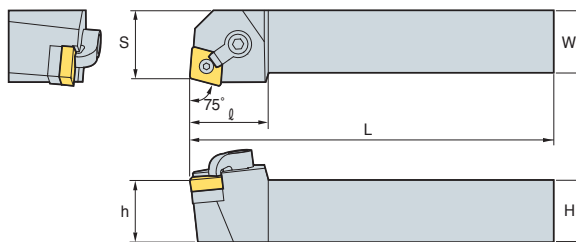
| Designación    | H  | W  | L   | S    | h  | l  | Inserto    | Brida | Tornillo Brida | Placa | Candado laina | Llave              |
|----------------|----|----|-----|------|----|----|------------|-------|----------------|-------|---------------|--------------------|
| MCMNN 2020-K12 | 20 | 20 | 125 | 10   | 20 | 32 | CN□□1204□□ | CDH6N | DHA1/4-25      | SC43D | SP4D          | HW31.8L<br>HW23.8L |
| 2525-M12       | 25 | 25 | 150 | 12.5 | 25 | 32 |            |       |                |       |               |                    |
| 3232-P12       | 32 | 32 | 170 | 16   | 32 | 32 |            |       |                |       |               |                    |
| 2525-M16       | 25 | 25 | 150 | 12.5 | 25 | 40 | CN□□1606□□ | CDH8N | DHA5/16-32     | SC53D | SP5D          | HW39.7L<br>HW31.8L |
| 3232-P16       | 32 | 32 | 170 | 16   | 32 | 40 |            |       |                |       |               |                    |
| 3232-P19       | 32 | 32 | 170 | 16   | 32 | 40 |            |       |                |       |               |                    |
| 4040-S19       | 40 | 40 | 250 | 20   | 40 | 32 | CN□□1906□□ | CDH8N | DHA5/16-32     | SD63D | SP6D          | HW39.7L<br>HW35.7L |

➔ Insertos Aplicables B28~B35

## MCRNR/L



CN□□



75°

• Inserto tipo R (mm)

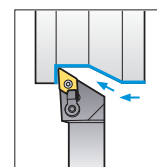
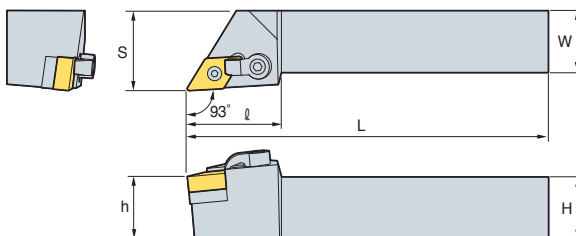
| Designación             | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Candado laina | Llave |
|-------------------------|----|----|-----|----|----|----|------------|-------|----------------|-------|---------------|-------|
| <b>MCRNR/L</b> 2020-K12 | 20 | 20 | 125 | 22 | 20 | 32 | CN□□1204□□ |       |                |       |               |       |
| 2525-M12                | 25 | 25 | 150 | 27 | 25 | 32 |            |       |                |       |               |       |
| 2525-M16                | 25 | 25 | 150 | 27 | 25 | 33 | CN□□1606□□ |       |                |       |               |       |
| 3232-P16                | 32 | 32 | 170 | 35 | 32 | 33 |            |       |                |       |               |       |
| 3232-P19                | 32 | 32 | 170 | 35 | 32 | 38 | CN□□1906□□ |       |                |       |               |       |
| 4040-S19                | 40 | 40 | 250 | 43 | 40 | 38 |            |       |                |       |               |       |

➔ Insertos Aplicables B28~B35

## MDJNR/L



DN□□



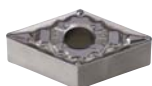
93°

• Inserto tipo R (mm)

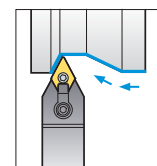
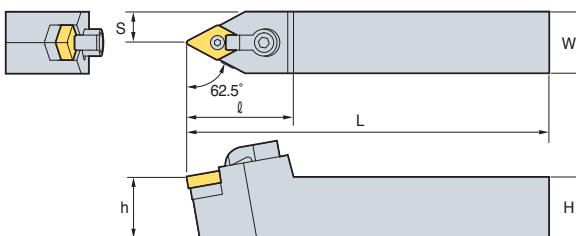
| Designación             | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Candado laina | Llave |       |           |       |       |                    |
|-------------------------|----|----|-----|----|----|----|------------|-------|----------------|-------|---------------|-------|-------|-----------|-------|-------|--------------------|
| <b>MDJNR/L</b> 2020-K11 | 20 | 20 | 125 | 25 | 20 | 32 | DN□□1104□□ |       |                |       |               |       |       |           |       |       |                    |
| 2525-M11                | 25 | 25 | 150 | 32 | 25 | 32 |            |       |                |       |               |       | CDH6N | DHA1/4-19 | SD32D | SP3D  | HW31.8L<br>HW19.8L |
| 2020-K15-3              | 20 | 20 | 125 | 25 | 20 | 36 | DN□□1504□□ |       |                |       |               |       |       |           |       |       |                    |
| 2525-M15-3              | 25 | 25 | 150 | 32 | 25 | 36 |            |       |                |       |               |       | CDH6N | DHA1/4-25 | SD43D | SP4D  | HW31.8L<br>HW23.8L |
| 3232-P15-3              | 32 | 32 | 170 | 40 | 32 | 36 | DN□□1506□□ |       |                |       |               |       |       |           |       |       |                    |
| 2020-K15                | 20 | 20 | 125 | 25 | 20 | 36 |            |       |                |       |               |       | CDH6N | DHA1/4-25 | SD43D | SP4DL | HW31.8L<br>HW23.8L |
| 2525-M15                | 25 | 25 | 150 | 32 | 25 | 36 |            |       |                |       |               |       | CDH6N | DHA1/4-25 | SD43D | SP4DL | HW31.8L<br>HW23.8L |
| 3232-P15                | 32 | 32 | 170 | 40 | 32 | 36 |            |       |                |       |               |       | CDH6N | DHA1/4-25 | SD43D | SP4DL | HW31.8L<br>HW23.8L |

➔ Insertos Aplicables B36~B42

## MDNNN



DN□□



62.5°

(mm)

| Designación             | H  | W  | L   | S    | h  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Candado laina | Llave |
|-------------------------|----|----|-----|------|----|----|------------|-------|----------------|-------|---------------|-------|
| <b>MDNNN</b> 2525-M15-3 | 25 | 25 | 150 | 12.5 | 25 | 41 | DN□□1504□□ |       |                |       |               |       |
| 2525-M15                | 25 | 25 | 150 | 12.5 | 25 | 41 | DN□□1506□□ |       |                |       |               |       |

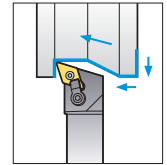
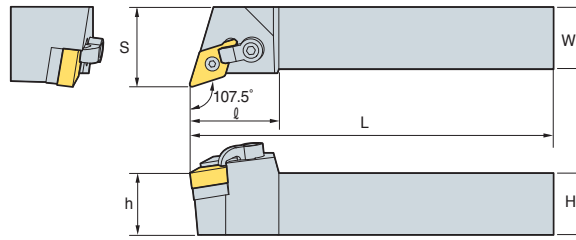
➔ Insertos Aplicables B36~B42



# MDQNR/L



DN□□



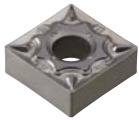
107.5°

• Inserto tipo R (mm)

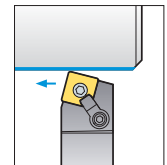
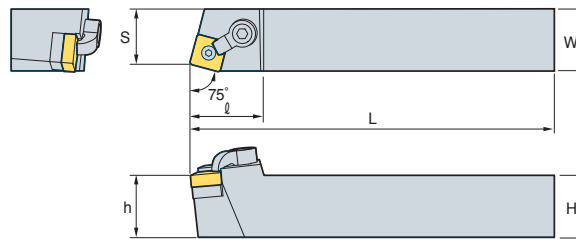
| Designación        | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Candado laina | Llave              |
|--------------------|----|----|-----|----|----|----|------------|-------|----------------|-------|---------------|--------------------|
| MDQNR/L 2525-M15-3 | 25 | 25 | 150 | 32 | 25 | 36 | DN□□1504□□ | CDH6N | DHA1/4-25      | SD43D | SP4D          | HW31.8L<br>HW23.8L |
| 3232-P15-3         | 32 | 32 | 170 | 40 | 32 | 36 |            |       |                |       |               |                    |
| 2525-M15           | 25 | 25 | 150 | 32 | 25 | 36 | DN□□1506□□ | CDH6N | DHA1/4-25      | SD43D | SP4DL         | HW31.8L<br>HW23.8L |
| 3232-M15           | 32 | 32 | 170 | 40 | 32 | 36 |            |       |                |       |               |                    |

➔ Insertos Aplicables B36~B42

# MSBNR/L



SN□□



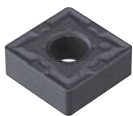
75°

• Inserto tipo R (mm)

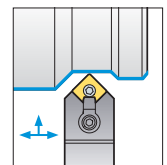
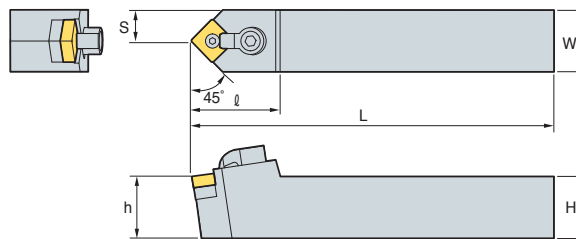
| Designación      | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado laina | Llave              |
|------------------|----|----|-----|----|----|----|------------|--------|----------------|-------|---------------|--------------------|
| MSBNR/L 2020-K12 | 20 | 20 | 125 | 17 | 20 | 32 | SN□□1204□□ | CDH8N1 | DHA5/16-32     | SS43D | SP4D          | HW39.7L<br>HW23.8L |
| 2525-M12         | 25 | 25 | 150 | 22 | 25 | 32 |            |        |                |       |               |                    |
| 2525-M15         | 25 | 25 | 150 | 22 | 25 | 35 | SN□□1506□□ | CDH8N  | DHA5/16-32     | SS53D | SP5D          | HW39.7L<br>HW31.8L |
| 3232-P15         | 32 | 32 | 170 | 22 | 32 | 35 |            |        |                |       |               |                    |
| 3232-P19         | 32 | 32 | 170 | 27 | 32 | 40 | SN□□1906□□ | CDH8N  | DHA5/16-32     | SS63D | SP6D          | HW39.7L<br>HW35.7L |
| 4040-S19         | 40 | 40 | 250 | 35 | 40 | 40 |            |        |                |       |               |                    |

➔ Insertos Aplicables B44~B52

# MSDNN



SN□□



45°

(mm)

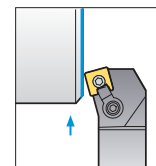
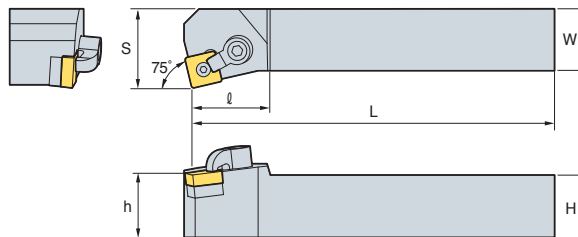
| Designación    | H  | W  | L   | S    | h  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado laina | Llave              |
|----------------|----|----|-----|------|----|----|------------|--------|----------------|-------|---------------|--------------------|
| MSDNN 1616-H09 | 16 | 16 | 100 | 8    | 16 | 28 | SN□□0903□□ | CDH7N  | DHA10-32-19    | SS32D | SP3DS         | HW19.8L<br>HW23.8L |
| 2020-K09       | 20 | 20 | 125 | 10   | 20 | 28 |            |        |                |       |               |                    |
| 2020-K12       | 20 | 20 | 125 | 10   | 20 | 32 |            |        |                |       |               |                    |
| 2525-M12       | 25 | 25 | 150 | 12.5 | 25 | 32 | SN□□1204□□ | CDH8N1 | DHA5/16-32     | SS43D | SP4D          | HW39.7L<br>HW23.8L |
| 3225-P12       | 32 | 25 | 170 | 12.5 | 32 | 32 |            |        |                |       |               |                    |
| 2525-M15       | 25 | 25 | 150 | 12.5 | 25 | 35 | SN□□1506□□ | CDH8N  | DHA5/16-32     | SS53D | SP5D          | HW39.7L<br>HW31.8L |
| 3225-P15       | 32 | 25 | 170 | 12.5 | 32 | 35 |            |        |                |       |               |                    |
| 3232-P15       | 32 | 32 | 170 | 16   | 32 | 35 |            |        |                |       |               |                    |
| 4040-S15       | 40 | 40 | 250 | 20   | 40 | 35 | SN□□1906□□ | CDH8N  | DHA5/16-32     | SS63D | SP6D          | HW39.7L<br>HW35.7L |
| 3232-P19       | 32 | 32 | 170 | 16   | 32 | 42 |            |        |                |       |               |                    |
| 4040-S19       | 40 | 40 | 250 | 20   | 40 | 42 |            |        |                |       |               |                    |

➔ Insertos Aplicables B44~B52

## MSKNR/L



SN□□



75°

• Inserto tipo R (mm)

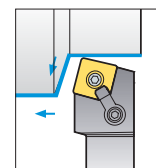
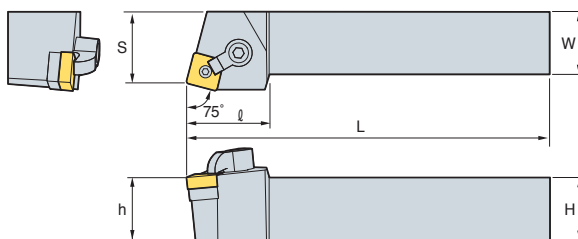
| Designación             | H  | W  | L   | S  | h  | l  | Inserto    | Brida  | Tornillo Brida | Placa | Candado laina | Llave              |
|-------------------------|----|----|-----|----|----|----|------------|--------|----------------|-------|---------------|--------------------|
| <b>MSKNR/L 1616-H09</b> | 16 | 16 | 100 | 20 | 16 | 28 | SN□□0903□□ | CDH7N  | DHA10-32-19    | SS32D | SP3DS         | HW19.8L<br>HW23.8L |
| <b>2020-K09</b>         | 20 | 20 | 125 | 22 | 20 | 28 |            |        |                |       |               |                    |
| <b>2020-K12</b>         | 20 | 20 | 125 | 25 | 20 | 32 | SN□□1204□□ | CDH8N1 | DHA5/16-32     | SS43D | SP4D          | HW39.7L<br>HW23.8L |
| <b>2525-M12</b>         | 25 | 25 | 150 | 32 | 25 | 32 |            |        |                |       |               |                    |
| <b>3225-P12</b>         | 32 | 25 | 170 | 32 | 32 | 32 | SN□□1506□□ | CDH8N  | DHA5/16-32     | SS53D | SP5D          | HW39.7L<br>HW31.8L |
| <b>2525-M15</b>         | 25 | 25 | 150 | 32 | 25 | 35 |            |        |                |       |               |                    |
| <b>3232-P15</b>         | 32 | 32 | 170 | 40 | 32 | 35 | SN□□1906□□ | CDH8N  | DHA5/16-32     | SS63D | SP6D          | HW39.7L<br>HW35.7L |
| <b>3232-P19</b>         | 32 | 32 | 170 | 40 | 32 | 40 |            |        |                |       |               |                    |
| <b>4040-S19</b>         | 40 | 40 | 250 | 50 | 40 | 40 | SN□□2507□□ | CDH8N3 | DHA3/8-35      | SS84D | SP8D          | HW47.6L<br>HW39.7L |
| <b>4040-S25</b>         | 40 | 40 | 250 | 50 | 40 | 40 |            |        |                |       |               |                    |

➔ Insertos Aplicables B44~B52

## MSRNR/L



SN□□



75°

• Inserto tipo R (mm)

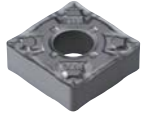
| Designación             | H  | W  | L   | S  | h  | l  | Inserto    | Brida  | Tornillo Brida | Placa | Candado laina | Llave              |
|-------------------------|----|----|-----|----|----|----|------------|--------|----------------|-------|---------------|--------------------|
| <b>MSRNR/L 1616-H09</b> | 16 | 16 | 100 | 17 | 16 | 28 | SN□□0903□□ | CDH7N  | DHA10-32-19    | SS32D | SP3DS         | HW19.8L<br>HW23.8L |
| <b>2020-K09</b>         | 20 | 20 | 125 | 22 | 20 | 28 |            |        |                |       |               |                    |
| <b>2020-K12</b>         | 20 | 20 | 125 | 22 | 20 | 32 | SN□□1204□□ | CDH8N1 | DHA5/16-32     | SS43D | SP4D          | HW39.7L<br>HW23.8L |
| <b>2525-M12</b>         | 25 | 25 | 150 | 27 | 25 | 32 |            |        |                |       |               |                    |
| <b>2525-M15</b>         | 25 | 25 | 150 | 27 | 25 | 35 | SN□□1506□□ | CDH8N  | DHA5/16-32     | SS53D | SP5D          | HW39.7L<br>HW31.8L |
| <b>3232-P15</b>         | 32 | 32 | 170 | 35 | 32 | 35 |            |        |                |       |               |                    |
| <b>3225-P19</b>         | 32 | 25 | 170 | 27 | 32 | 40 | SN□□1906□□ | CDH8N  | DHA5/16-32     | SS63D | SP6D          | HW39.7L<br>HW35.7L |
| <b>3232-P19</b>         | 32 | 32 | 170 | 35 | 32 | 40 |            |        |                |       |               |                    |
| <b>4040-S19</b>         | 40 | 40 | 250 | 43 | 40 | 40 | SN□□2507□□ | CDH8N3 | DHA3/8-35      | SS84D | SP8D          | HW47.6L<br>HW39.7L |
| <b>4040-S25</b>         | 40 | 40 | 250 | 43 | 40 | 40 |            |        |                |       |               |                    |

➔ Insertos Aplicables B44~B52

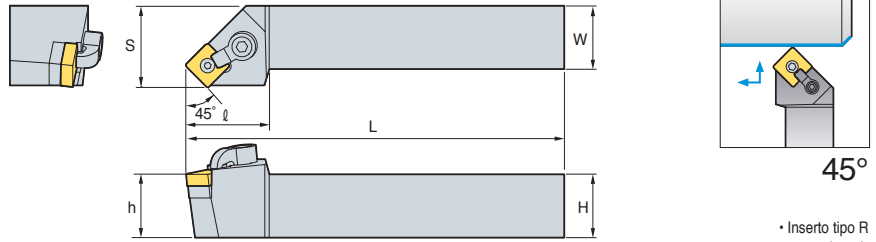




# MSSNR/L



SN□□



• Inseto tipo R (mm)

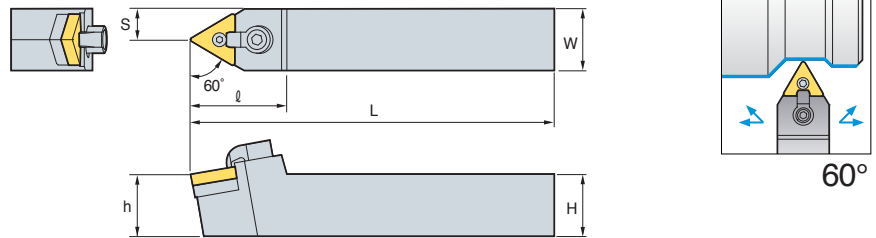
| Designación      | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado laina | Llave              |
|------------------|----|----|-----|----|----|----|------------|--------|----------------|-------|---------------|--------------------|
| MSSNR/L 1616-H09 | 16 | 16 | 100 | 20 | 16 | 28 | SN□□0903□□ | CDH7N  | DHA10-32-19    | SS32D | SP3DS         | HW19.8L<br>HW23.8L |
| 2020-K09         | 20 | 20 | 125 | 25 | 20 | 28 |            |        |                |       |               |                    |
| 2020-K12         | 20 | 20 | 125 | 25 | 20 | 32 | SN□□1204□□ | CDH8N1 | DHA5/16-32     | SS43D | SP4D          | HW39.7L<br>HW23.8L |
| 2525-M12         | 25 | 25 | 150 | 32 | 25 | 32 |            |        |                |       |               |                    |
| 2525-M15         | 25 | 25 | 150 | 32 | 25 | 35 | SN□□1506□□ | CDH8N1 | DHA5/16-32     | SS53D | SP5D          | HW39.7L<br>HW31.8L |
| 3232-P15         | 32 | 32 | 170 | 40 | 32 | 35 |            |        |                |       |               |                    |
| 3232-P19         | 32 | 32 | 170 | 40 | 32 | 40 | SN□□1906□□ | CDH8N1 | DHA5/16-32     | SS63D | SP6D          | HW39.7L<br>HW35.7L |
| 4040-S19         | 40 | 40 | 250 | 50 | 40 | 40 |            |        |                |       |               |                    |

➔ Insetos Aplicables B44~B52

# MTENN



TN□□



(mm)

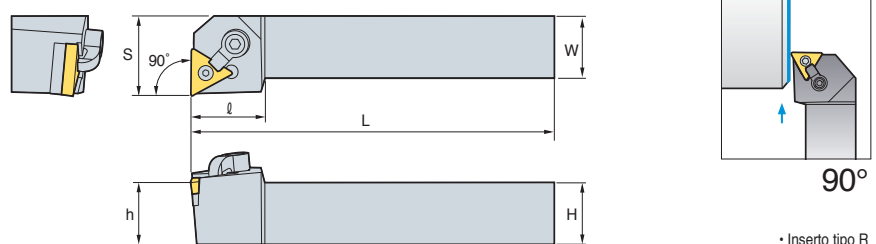
| Designación    | H  | W  | L   | S    | h  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado laina | Llave              |
|----------------|----|----|-----|------|----|----|------------|--------|----------------|-------|---------------|--------------------|
| MTENN 2020-K16 | 20 | 20 | 125 | 10   | 20 | 32 | TN□□1604□□ | CDH7N  | DHA10-32-19    | ST32D | SP3D          | HW23.8L<br>HW19.8L |
| 2525-M16       | 25 | 25 | 150 | 12.5 | 25 | 32 |            |        |                |       |               |                    |
| 2525-M22       | 25 | 25 | 150 | 12.5 | 25 | 35 | TN□□2204□□ | CDH8N1 | DHA5/16-32     | ST43D | SP4D          | HW39.7L<br>HW23.8L |
| 3232-P27       | 32 | 32 | 170 | 16   | 32 | 35 | TN□□2706□□ | CDH8N1 | DHA5/16-32     | ST53D | SP5D          | HW39.7L<br>HW31.8L |
| 4040-S33       | 40 | 40 | 250 | 20   | 40 | 40 | TN□□3307□□ | CDH8N  | DHA5/16-32     | ST63D | SP6DL         | HW39.7L<br>HW35.7L |

➔ Insetos Aplicables B53~B59

# MTFNR/L



TN□□



• Inseto tipo R (mm)

| Designación      | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado laina | Llave              |
|------------------|----|----|-----|----|----|----|------------|--------|----------------|-------|---------------|--------------------|
| MTFNR/L 1616-H16 | 16 | 16 | 100 | 20 | 16 | 32 | TN□□1604□□ | CDH7N  | DHA10-32-19    | ST32D | SP3D          | HW23.8L<br>HW19.8L |
| 2020-K16         | 20 | 20 | 125 | 25 | 20 | 32 |            |        |                |       |               |                    |
| 2525-M16         | 25 | 25 | 150 | 32 | 25 | 32 | TN□□2204□□ | CDH8N1 | DHA5/16-32     | ST43D | SP4D          | HW39.7L<br>HW23.8L |
| 2525-M22         | 25 | 25 | 150 | 32 | 25 | 32 |            |        |                |       |               |                    |
| 3232-P22         | 32 | 32 | 170 | 40 | 32 | 32 | TN□□2706□□ | CDH8N1 | DHA5/16-32     | ST53D | SP5D          | HW39.7L<br>HW31.8L |
| 4040-S22         | 40 | 40 | 250 | 50 | 40 | 32 |            |        |                |       |               |                    |
| 3232-P27         | 32 | 32 | 170 | 40 | 32 | 35 | TN□□2706□□ | CDH8N1 | DHA5/16-32     | ST53D | SP5D          | HW39.7L<br>HW31.8L |
| 4040-S27         | 40 | 40 | 250 | 50 | 40 | 35 |            |        |                |       |               |                    |
| 4040-S33         | 40 | 40 | 250 | 50 | 40 | 40 | TN□□3307□□ | CDH8N  | DHA5/16-32     | ST63D | SP6DL         | HW39.7L<br>HW35.7L |

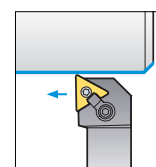
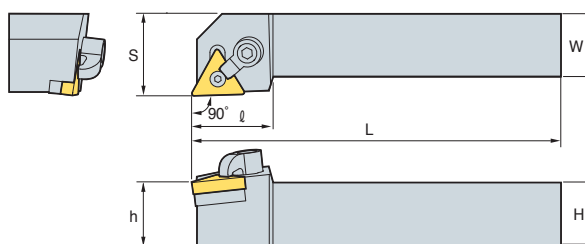
➔ Insetos Aplicables B53~B59



## MTGNR/L



TN□□



90°

• Inserto tipo R (mm)

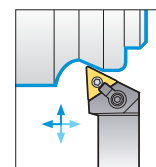
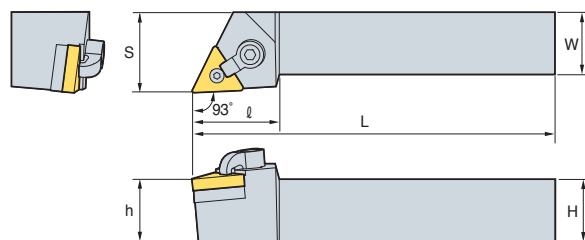
| Designación             | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado Iaina | Llave              |
|-------------------------|----|----|-----|----|----|----|------------|--------|----------------|-------|---------------|--------------------|
| <b>MTGNR/L 1616-H16</b> | 16 | 16 | 100 | 20 | 16 | 32 | TN□□1604□□ | CDH7N  | DHA10-32-19    | ST32D | SP3D          | HW23.8L<br>HW19.8L |
| <b>2020-K16</b>         | 20 | 20 | 125 | 25 | 20 | 32 |            |        |                |       |               |                    |
| <b>2525-M16</b>         | 25 | 25 | 150 | 32 | 25 | 32 |            |        |                |       |               |                    |
| <b>2525-M22</b>         | 25 | 25 | 150 | 32 | 25 | 32 | TN□□2204□□ | CDH8N1 | DHA5/16-32     | ST43D | SP4D          | HW39.7L<br>HW23.8L |
| <b>3232-P22</b>         | 32 | 32 | 170 | 40 | 32 | 32 | TN□□2706□□ | CDH8N1 | DHA5/16-32     | ST53D | SP5D          | HW39.7L<br>HW31.8L |
| <b>3232-P27</b>         | 32 | 32 | 170 | 40 | 32 | 35 |            |        |                |       |               |                    |
| <b>4040-S27</b>         | 40 | 40 | 250 | 50 | 40 | 35 | TN□□3307□□ | CDH8N  | DHA5/16-32     | ST63D | SP6DL         | HW39.7L<br>HW35.7L |
| <b>4040-S33</b>         | 40 | 40 | 250 | 50 | 40 | 40 |            |        |                |       |               |                    |

➔ Insertos Aplicables B53~B59

## MTJNR/L



TN□□



93°

• Inserto tipo R (mm)

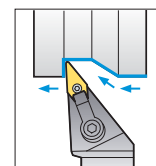
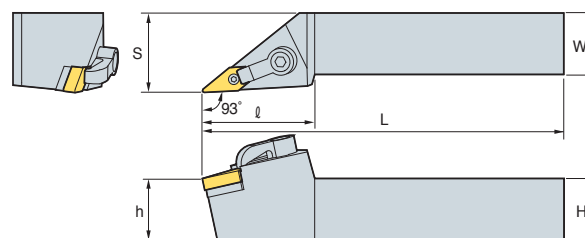
| Designación             | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado Iaina | Llave              |
|-------------------------|----|----|-----|----|----|----|------------|--------|----------------|-------|---------------|--------------------|
| <b>MTJNR/L 2020-K16</b> | 20 | 20 | 125 | 25 | 20 | 32 | TN□□1604□□ | CDH7N  | DHA10-32-19    | ST32D | SP3D          | HW23.8L<br>HW19.8L |
| <b>2525-M16</b>         | 25 | 25 | 150 | 32 | 25 | 32 |            |        |                |       |               |                    |
| <b>2525-M22</b>         | 25 | 25 | 150 | 32 | 25 | 32 |            |        |                |       |               |                    |
| <b>3232-P22</b>         | 32 | 32 | 170 | 40 | 32 | 32 | TN□□2204□□ | CDH8N1 | DHA5/16-32     | ST43D | SP4D          | HW39.7L<br>HW23.8L |
| <b>3232-P27</b>         | 32 | 32 | 170 | 40 | 32 | 35 | TN□□2706□□ | CDH8N1 | DHA5/16-32     | ST53D | SP5D          | HW39.7L<br>HW31.8L |
| <b>4040-S27</b>         | 40 | 40 | 250 | 50 | 40 | 35 |            |        |                |       |               |                    |
| <b>4040-S33</b>         | 40 | 40 | 250 | 50 | 40 | 40 | TN□□3307□□ | CDH8N  | DHA5/16-32     | ST63D | SP6DL         | HW39.7L<br>HW35.7L |

➔ Insertos Aplicables B53~B59

## MVJNR/L



VN□□



93°

• Inserto tipo R (mm)

| Designación             | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado Iaina | Llave              |
|-------------------------|----|----|-----|----|----|----|------------|--------|----------------|-------|---------------|--------------------|
| <b>MVJNR/L 2020-K16</b> | 20 | 20 | 125 | 25 | 20 | 37 | VN□□1604□□ | CDH8N2 | DHA5/16-32     | SV32D | SP3D          | HW39.7L<br>HW19.8L |
| <b>2525-M16</b>         | 25 | 25 | 150 | 32 | 25 | 37 |            |        |                |       |               |                    |
| <b>3232-P16</b>         | 32 | 32 | 170 | 40 | 32 | 37 |            |        |                |       |               |                    |
| <b>2525-M22</b>         | 25 | 25 | 150 | 32 | 25 | 50 | VN□□2204□□ | CDH8N2 | DHA5/16-32     | SV43D | SP4D          | HW39.7L<br>HW23.8L |
| <b>3232-P22</b>         | 32 | 32 | 170 | 40 | 32 | 50 |            |        |                |       |               |                    |
| <b>4040-S22</b>         | 40 | 40 | 250 | 50 | 40 | 50 |            |        |                |       |               |                    |

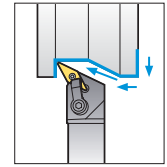
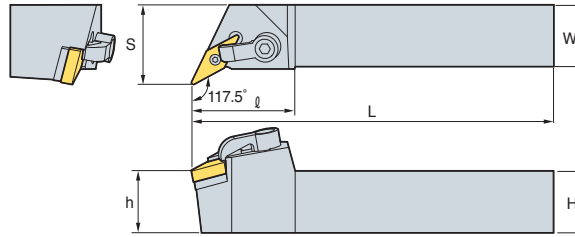
➔ Insertos Aplicables B60~B61



# MVQNR/L



VN□□



117.5°

• Inserto tipo R (mm)

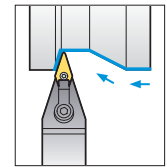
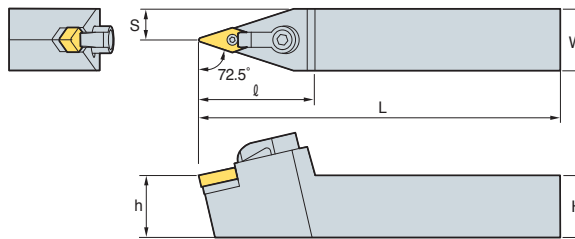
| Designación      | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado laina | Llave              |
|------------------|----|----|-----|----|----|----|------------|--------|----------------|-------|---------------|--------------------|
| MVQNR/L 2020-K16 | 20 | 20 | 125 | 25 | 20 | 42 | VN□□1604□□ |        |                |       |               |                    |
| 2525-M16         | 25 | 25 | 150 | 32 | 25 | 42 |            |        |                |       |               |                    |
| 3232-P16         | 32 | 32 | 170 | 40 | 32 | 37 |            |        |                |       |               |                    |
|                  |    |    |     |    |    |    |            | CDH8N2 | DHA5/16-32     | SV32D | SP3D          | HW39.7L<br>HW19.8L |

➔ Insertos Aplicables B60~B61

# MVVNN



VN□□



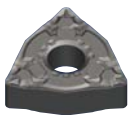
72.5°

(mm)

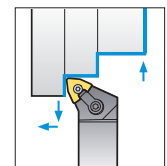
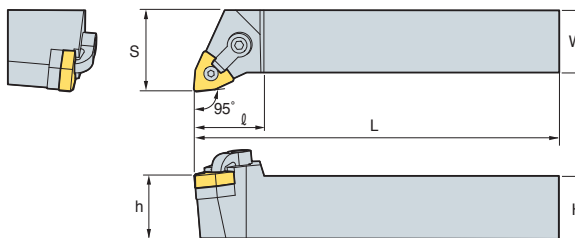
| Designación    | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado laina | Llave              |
|----------------|----|----|-----|----|----|----|------------|--------|----------------|-------|---------------|--------------------|
| MVVNN 2020-K16 | 20 | 20 | 125 | 25 | 20 | 42 | VN□□1604□□ |        |                |       |               |                    |
| 2525-M16       | 25 | 25 | 150 | 32 | 25 | 42 |            |        |                |       |               |                    |
|                |    |    |     |    |    |    |            | CDH8N2 | DHA5/16-32     | SV32D | SP3D          | HW39.7L<br>HW19.8L |

➔ Insertos Aplicables B60~B61

# MWLNR/L



WN□□



95°

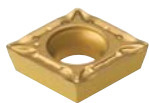
• Inserto tipo R (mm)

| Designación      | H  | W  | L   | S  | h  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Candado laina | Llave              |
|------------------|----|----|-----|----|----|----|------------|-------|----------------|-------|---------------|--------------------|
| MWLNR/L 2020-K06 | 20 | 20 | 125 | 25 | 20 | 32 | WN□□0604□□ |       |                |       |               |                    |
| 2525-M06         | 25 | 25 | 150 | 32 | 25 | 32 |            |       |                |       |               |                    |
| 3232-P06         | 32 | 32 | 170 | 40 | 32 | 32 |            |       |                |       |               |                    |
| 2020-K08         | 20 | 20 | 125 | 25 | 20 | 32 | WN□□0804□□ |       |                |       |               |                    |
| 2525-M08         | 25 | 25 | 150 | 32 | 25 | 32 |            |       |                |       |               |                    |
| 3232-P08         | 32 | 32 | 170 | 40 | 32 | 32 |            |       |                |       |               |                    |
|                  |    |    |     |    |    |    |            | CDH7N | DHA10-32-19    | SW32D | SP3D          | HW19.8L<br>HW23.8L |
|                  |    |    |     |    |    |    |            | CDH6N | DHA1/4-21      | SW43D | SP4D          | HW31.8L<br>HW23.8L |

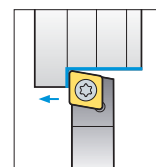
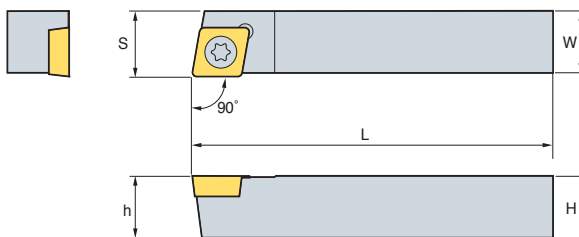
➔ Insertos Aplicables B62~B65

# B Sistema con Tornillo

## SCACR/L



CC□□



90°

• Inserto tipo R (mm)

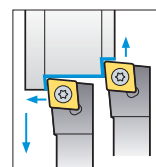
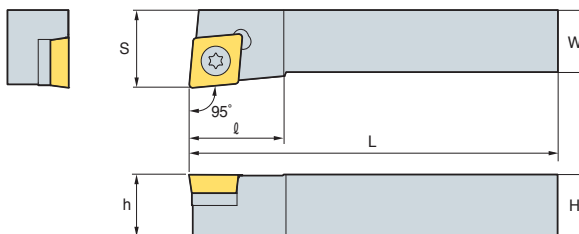
| Designación      | H  | W  | L  | S    | h  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave |
|------------------|----|----|----|------|----|------------|-----------|-------|----------------|-------|
| SCACR/L 1010-E06 | 10 | 10 | 70 | 10.5 | 10 | CC□□0602□□ | FTKA02565 | -     | -              | TW07P |
| 1212-F09         | 12 | 12 | 80 | 12.5 | 12 | CC□□09T3□□ | FTKA03508 | -     | -              | TW15P |

➔ Insertos Aplicables B66~B69, B91

## SCLCR/L



CC□□



95°

• Inserto tipo R (mm)

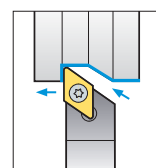
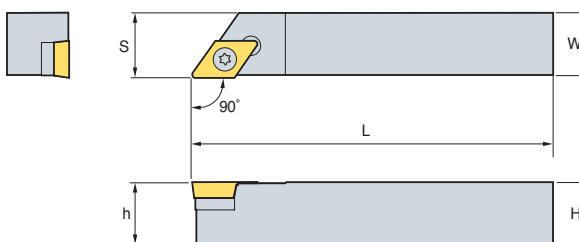
| Designación      | H  | W  | L   | S  | h  | l  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|------------------|----|----|-----|----|----|----|------------|-----------|-------|----------------|--------------|
| SCLCR/L 0808-D06 | 08 | 08 | 60  | 10 | 08 | 10 | CC□□0602□□ | FTKA02565 | -     | -              | TW07P        |
| 1010-E06         | 10 | 10 | 70  | 16 | 10 | 10 |            |           |       |                |              |
| 1212-F09         | 12 | 12 | 80  | 20 | 12 | 16 |            |           |       |                |              |
| 1616-H09         | 16 | 16 | 100 | 20 | 16 | 16 | CC□□09T3□□ | CDH7N     | -     | -              | TW15P        |
| 2020-K09         | 20 | 20 | 125 | 25 | 20 | 16 | CC□□1204□□ | FTGA0411F | SC42S | SHXN0610F      | TW15P, HW40L |
| 2020-K12         | 20 | 20 | 125 | 25 | 20 | 25 | CC□□09T3□□ | FTGA03508 | -     | -              | TW15P        |
| 2525-M09         | 25 | 25 | 150 | 32 | 25 | 26 | CC□□1204□□ | FTGA0411F | SC42S | SHXN0610F      | TW15P, HW40L |
| 2525-M12         | 25 | 25 | 150 | 32 | 25 | 26 | CC□□1204□□ | FTGA0411F | SC42S | SHXN0610F      | TW15P, HW40L |

➔ Insertos Aplicables B66~B69, B91

## SDACR/L



DC□□



90°

• Inserto tipo R (mm)

| Designación      | H  | W  | L   | S    | h  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|------------------|----|----|-----|------|----|------------|-----------|-------|----------------|--------------|
| SDACR/L 1010-E07 | 10 | 10 | 70  | 10.5 | 10 | DC□□0702□□ | FTKA02565 | -     | -              | TW07P        |
| 1212-F11         | 12 | 12 | 80  | 12.5 | 12 | DC□□11T3□□ | FTKA03508 | -     | -              | TW15P        |
| 1616-H11         | 16 | 16 | 100 | 16.5 | 16 |            | FTGA03512 | SD32S | SHXN0509F      | TW15P, HW35L |

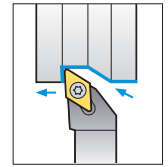
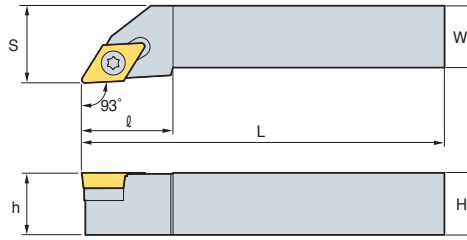
➔ Insertos Aplicables B71~B73, B92



# SDJCR/L



DC□□



93°

• Inseto tipo R  
(mm)

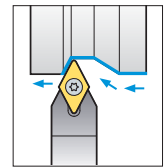
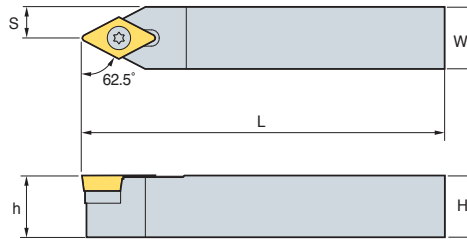
| Designación | H        | W  | L  | S   | h  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|-------------|----------|----|----|-----|----|----|------------|-----------|-------|----------------|--------------|
| SDJCR/L     | 1010-E07 | 10 | 10 | 70  | 12 | 10 | DC□□0702□□ | FTKA02565 | -     | -              | TW07P        |
|             | 1212-F07 | 12 | 12 | 80  | 16 | 12 |            |           |       |                |              |
|             | 1616-H07 | 16 | 16 | 100 | 20 | 16 |            |           |       |                |              |
|             | 2020-K07 | 20 | 20 | 125 | 25 | 20 |            |           |       |                |              |
|             | 1212-F11 | 12 | 12 | 80  | 16 | 12 | DC□□11T3□□ | FTGA03512 | -     | -              | TW15P, HW35L |
|             | 1616-H11 | 16 | 16 | 100 | 20 | 16 |            |           |       |                |              |
|             | 2020-K11 | 20 | 20 | 125 | 25 | 20 |            |           |       |                |              |
|             | 2525-M11 | 25 | 25 | 150 | 32 | 25 |            |           |       |                |              |

➔ Insetos Aplicables B71~B73, B92

# SDNCN



DC□□



62.5°

(mm)

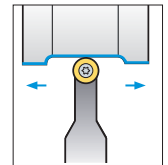
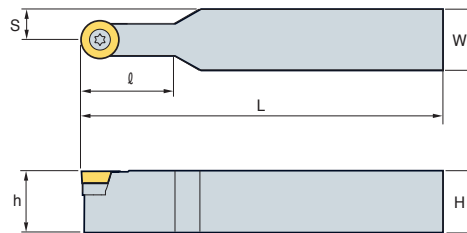
| Designación | H        | W  | L   | S    | h  | Inserto      | Tornillo   | Placa     | Tornillo Placa | Llave        |              |
|-------------|----------|----|-----|------|----|--------------|------------|-----------|----------------|--------------|--------------|
| SDNCN       | 1010-E07 | 10 | 10  | 70   | 5  | 10           | DC□□0702□□ | FTKA02565 | -              | -            | TW07P        |
|             | 1212-F07 | 12 | 12  | 80   | 6  | 12           |            |           |                |              |              |
|             | 1212-H11 | 12 | 12  | 100  | 6  | 12           | DC□□11T3□□ | FTGA03508 | -              | -            | TW15P        |
|             | 1616-H11 | 16 | 16  | 100  | 8  | 16           | DC□□11T3□□ | FTGA03512 | SD32S          | SHXN0509F    | TW15P, HW35L |
|             | 2020-K11 | 20 | 20  | 125  | 10 | 20           | DC□□11T3□□ | FTGA03512 | SD32S          | SHXN0509F    | TW25P, HW35L |
| 2020-M11    | 25       | 25 | 150 | 12.5 | 25 | DCMT□□11T3□□ | FTGA03512  | SD32S     | SHXN0509F      | TW25P, HW35L |              |

➔ Insetos Aplicables B71~B73, B92

# SRDCN



RCGT



(mm)

| Designación | H        | W  | L  | S   | h    | ℓ  | Inserto    | Tornillo   | Placa      | Tornillo Placa | Llave     |                |
|-------------|----------|----|----|-----|------|----|------------|------------|------------|----------------|-----------|----------------|
| SRDCN       | 1010-E06 | 10 | 10 | 70  | 5    | 10 | RCGT0602M0 | FTKA02565  | -          | -              | TW07P     |                |
|             | 1212-F06 | 12 | 12 | 80  | 6    | 12 |            |            |            |                |           |                |
|             | 1616-H06 | 16 | 16 | 100 | 8    | 16 |            |            |            |                |           |                |
|             | 2525-M06 | 25 | 25 | 150 | 12.5 | 25 | 20         | RCGT0803M0 | FTNA0307   | -              | -         | TW09P          |
|             | 1616-H08 | 16 | 16 | 100 | 8    | 16 |            |            |            |                |           |                |
|             | 2020-K08 | 20 | 20 | 125 | 10   | 20 |            |            |            |                |           |                |
|             | 2525-M08 | 25 | 25 | 150 | 12.5 | 25 | 20         | RCGT1003M0 | FTKA03511A | SR10S          | SHXN0509F | TW15P<br>HW35L |
|             | 1616-H10 | 16 | 16 | 100 | 8    | 16 |            |            |            |                |           |                |
|             | 2020-K10 | 20 | 20 | 125 | 10   | 20 |            |            |            |                |           |                |
|             | 2525-M10 | 25 | 25 | 150 | 12.5 | 25 | 25         | RCGT1204M0 | FTGA03512  | SR12S          | SHXN0509F | TW15P<br>HW35L |
|             | 2020-K12 | 20 | 20 | 125 | 10   | 20 |            |            |            |                |           |                |
|             | 2525-M12 | 25 | 25 | 150 | 12.5 | 25 |            |            |            |                |           |                |

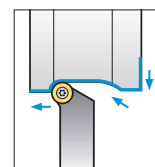
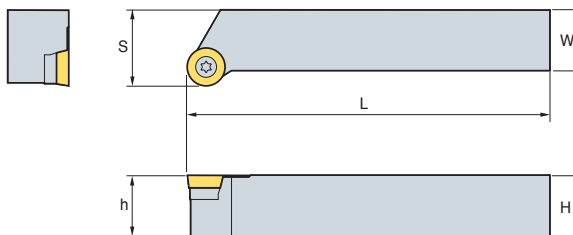
➔ Insetos Aplicables B93

# B Sistema con Tornillo

## SRGCR/L



RCGT

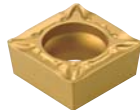


• Inserto tipo R  
(mm)

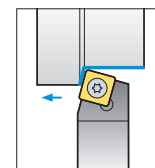
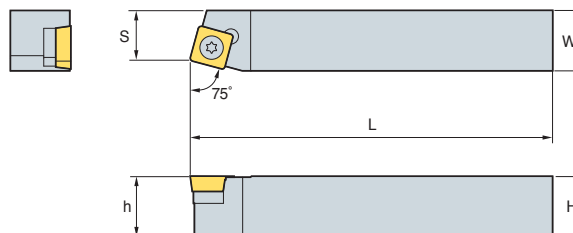
| Designación | H        | W  | L  | S   | h  | Inserto    | Tornillo   | Placa | Tornillo Placa | Llave          |
|-------------|----------|----|----|-----|----|------------|------------|-------|----------------|----------------|
| SRGCR/L     | 1010-E06 | 10 | 10 | 70  | 12 | RCGT0602M0 | FTKA02565  | -     | -              | TW07P          |
|             | 1212-F06 | 12 | 12 | 80  | 16 |            |            |       |                |                |
|             | 1616-H06 | 16 | 16 | 100 | 20 |            |            |       |                |                |
| SRGCR/L     | 1616-H08 | 16 | 16 | 100 | 20 | RCGT0803M0 | FTNA0307   | -     | -              | TW09P          |
|             | 2020-K08 | 20 | 20 | 125 | 25 |            |            |       |                |                |
|             | 2525-M08 | 25 | 25 | 150 | 32 |            |            |       |                |                |
| SRGCR/L     | 1616-H10 | 16 | 16 | 100 | 20 | RCGT1003M0 | FTKA03511A | SR10S | SHXN0509F      | TW15P<br>HW35L |
|             | 2020-K10 | 20 | 20 | 125 | 25 |            |            |       |                |                |
|             | 2525-M10 | 25 | 25 | 150 | 32 |            |            |       |                |                |
| SRGCR/L     | 2020-K12 | 20 | 20 | 125 | 25 | RCGT1204M0 | FTGA03512  | SR12S | SHXN0509F      | TW15P<br>HW35L |
|             | 2525-M12 | 25 | 25 | 150 | 32 |            |            |       |                |                |

➔ Insertos Aplicables B93

## SSBCR/L



SC□□



75°

• Inserto tipo R  
(mm)

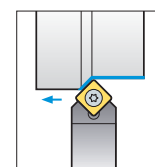
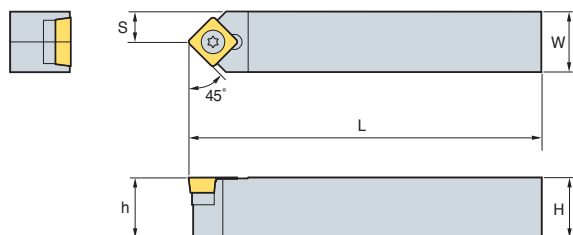
| Designación | H        | W  | L  | S   | h  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|-------------|----------|----|----|-----|----|------------|-----------|-------|----------------|--------------|
| SSBCR/L     | 1212-F09 | 12 | 12 | 80  | 11 | SC□□09T3□□ | FTGA03508 | -     | -              | TW15P        |
|             | 1616-H09 | 16 | 16 | 100 | 13 |            | FTGA03512 | SS32S | SHXN0509F      | TW15P, HW35L |
|             | 2020-K12 | 20 | 20 | 125 | 17 |            | FTGA0411F | SS42S | SHXN0610F      | TW15P, HW40L |

➔ Insertos Aplicables B74~B75, B94

## SSDCN



SC□□



45°

(mm)

| Designación | H        | W  | L  | S   | h | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|-------------|----------|----|----|-----|---|------------|-----------|-------|----------------|--------------|
| SSDCN       | 1212-F09 | 12 | 12 | 80  | 6 | SC□□09T3□□ | FTGA03508 | -     | -              | TW15P        |
|             | 1616-H09 | 16 | 16 | 100 | 8 |            | FTGA03512 | SS32S | SHXN0509F      | TW15P, HW35L |

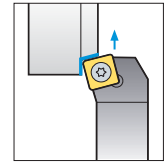
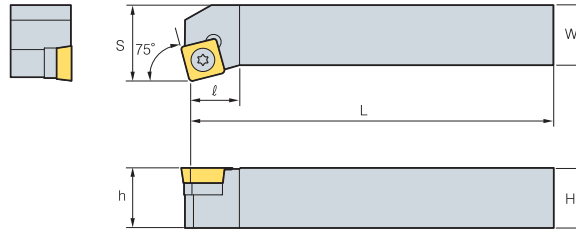
➔ Insertos Aplicables B74~B75, B94



# SSKCR/L



SC□□



75°

• Inserto tipo R (mm)

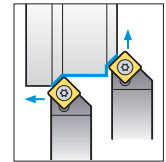
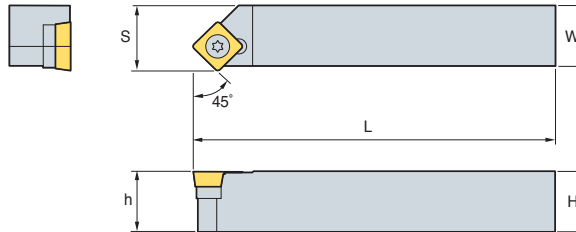
| Designación             | H  | W  | L   | S  | h  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|-------------------------|----|----|-----|----|----|----|------------|-----------|-------|----------------|--------------|
| <b>SSKCR/L 1616-H09</b> | 16 | 16 | 100 | 20 | 16 | 13 | SC□□09T3□□ | FTGA03512 | SS32S | SHXN0509F      | TW15P, HW35L |

➔ Insertos Aplicables B74~B75, B94

# SSSCR/L



SC□□



45°

• Inserto tipo R (mm)

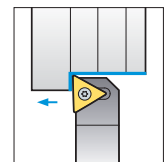
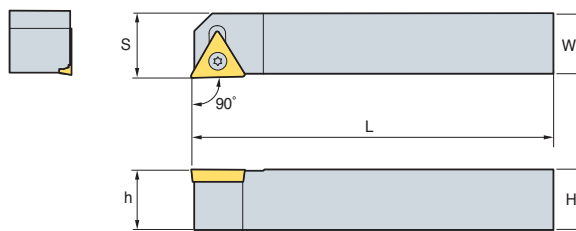
| Designación             | H  | W  | L   | S  | h  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|-------------------------|----|----|-----|----|----|------------|-----------|-------|----------------|--------------|
| <b>SSSCR/L 1616-H09</b> | 16 | 16 | 100 | 17 | 16 | SC□□09T3□□ | FTGA03512 | SS32S | SHXN0509F      | TW15P, HW35L |
| <b>2020-K12</b>         | 20 | 20 | 125 | 21 | 20 | SC□□1204□□ | FTGA0411F | SS42S | SHXN0610F      | TW15P, HW40L |
| <b>2525-M12</b>         | 25 | 25 | 150 | 26 | 25 | SC□□1204□□ | FTGA0411F | SS42S | SHXN0610F      | TW15P, HW40L |

➔ Insertos Aplicables B74~B75, B94

# STACR/L



TC□□



90°

• Inserto tipo R (mm)

| Designación             | H  | W  | L  | S    | h  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave |
|-------------------------|----|----|----|------|----|------------|-----------|-------|----------------|-------|
| <b>STACR/L 1010-E09</b> | 10 | 10 | 70 | 10.5 | 10 | TC□□0902□□ | FTKA02206 | -     | -              | TW06P |
| <b>1212-F11</b>         | 12 | 12 | 80 | 12.5 | 12 | TC□□1102□□ | FTKA02565 | -     | -              | TW07P |

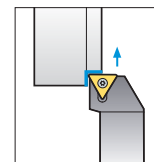
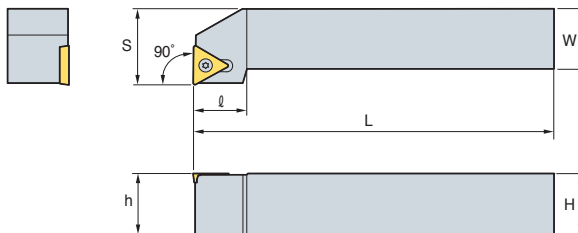
➔ Insertos Aplicables B79~B80, B95

# B Sistema con Tornillo

## STFCR/L



TC□□



90°

• Inserto tipo R (mm)

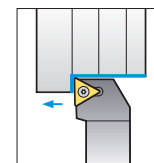
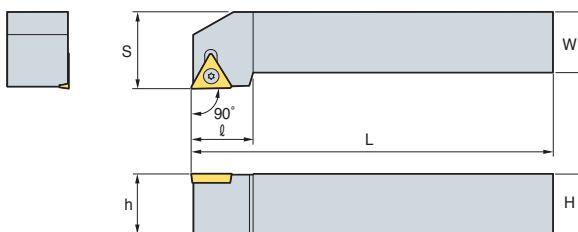
| Designación      | H  | W  | L   | S  | h  | ℓ    | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|------------------|----|----|-----|----|----|------|------------|-----------|-------|----------------|--------------|
| STFCR/L 1010-E09 | 10 | 10 | 70  | 12 | 10 | 10   | TC□□0902□□ | FTKA02206 | -     | -              | TW06P        |
|                  | 12 | 12 | 80  | 16 | 12 | 14   | TC□□1102□□ | FTKA02565 | -     | -              | TW07P        |
| 1616-H11         | 16 | 16 | 100 | 20 | 16 | 14   | TC□□16T3□□ | FTGA03512 | ST32S | SHXN0509F      | TW15P, HW35L |
| 1616-H16         | 16 | 16 | 100 | 20 | 16 | 19   |            |           |       |                |              |
| 2020-K16         | 20 | 20 | 125 | 25 | 20 | 19   |            |           |       |                |              |
| 2525-M16         | 25 | 25 | 150 | 32 | 25 | 25.2 | TC□□16T3□□ | FTGA03512 | ST32S | SHXN0509F      | TW15P, HW35L |

➔ Insertos Aplicables B79~B80, B95

## STGCR/L



TC□□



90°

• Inserto tipo R (mm)

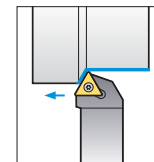
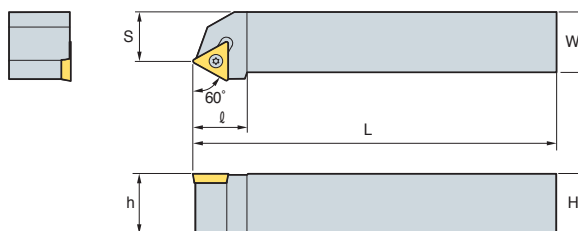
| Designación      | H  | W  | L   | S  | h  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|------------------|----|----|-----|----|----|----|------------|-----------|-------|----------------|--------------|
| STGCR/L 0808-D09 | 08 | 08 | 60  | 10 | 08 | 11 | TC□□0902□□ | FTKA02206 | -     | -              | TW06P        |
|                  | 10 | 10 | 70  | 12 | 10 | 11 | TC□□1102□□ | FTKA02565 | -     | -              | TW07P        |
| 1212-F11         | 12 | 12 | 80  | 16 | 12 | 14 | TC□□16T3□□ | FTGA03512 | ST32S | SHXN0509F      | TW15P, HW35L |
| 1616-H11         | 16 | 16 | 100 | 20 | 16 | 16 |            |           |       |                |              |
| 1616-H16         | 16 | 16 | 100 | 20 | 16 | 21 |            |           |       |                |              |
| 2020-K16         | 20 | 20 | 125 | 25 | 20 | 21 | TC□□16T3□□ | FTGA03512 | ST32S | SHXN0509F      | TW15P, HW35L |
| 2525-M16         | 25 | 25 | 150 | 32 | 25 | 21 | TC□□16T3□□ | FTGA03512 | ST32S | SHXN0509F      | TW15P, HW35L |

➔ Insertos Aplicables B79~B80, B95

## STTCR/L



TC□□



60°

• Inserto tipo R (mm)

| Designación      | H  | W  | L   | S  | h  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|------------------|----|----|-----|----|----|----|------------|-----------|-------|----------------|--------------|
| STTCR/L 1616-H11 | 16 | 16 | 100 | 13 | 16 | 14 | TC□□1102□□ | FTKA02565 | -     | -              | TW07P        |
|                  | 16 | 16 | 100 | 13 | 16 | 19 | TC□□16T3□□ | FTGA03512 | ST32S | SHXN0509F      | TW15P, HW35L |
| 2020-K16         | 20 | 20 | 125 | 17 | 20 | 19 | TC□□16T3□□ | FTGA03512 | ST32S | SHXN0509F      | TW15P, HW35L |

➔ Insertos Aplicables B79~B80, B95



B

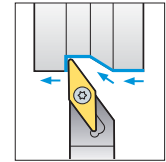
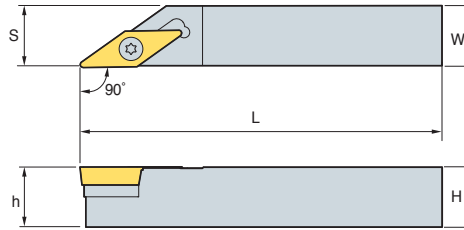
Torneado



# SVABR/L



VB□□



90°

• Inserto tipo R (mm)

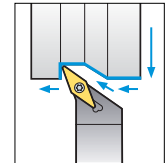
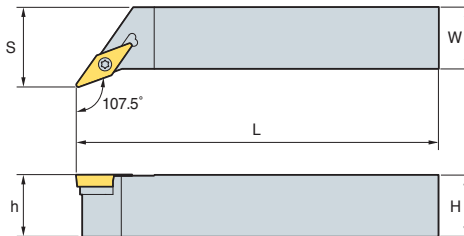
| Designación      | H  | W  | L   | S    | h  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|------------------|----|----|-----|------|----|------------|-----------|-------|----------------|--------------|
| SVABR/L 1616-H16 | 16 | 16 | 100 | 16.5 | 16 | VB□□1604□□ | FTGA03512 | SV32S | SHXN0509F      | TW15P, HW35L |
| 2020-K16         | 20 | 20 | 125 | 20.5 | 20 |            |           |       |                |              |

➔ Insertos Aplicables B84~B85, B96

# SVHBR/L



VB□□



107.5°

• Inserto tipo R (mm)

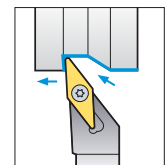
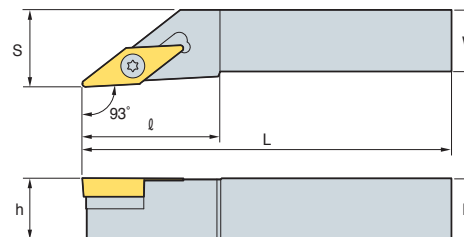
| Designación      | H  | W  | L   | S  | h  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|------------------|----|----|-----|----|----|------------|-----------|-------|----------------|--------------|
| SVHBR/L 2525-M16 | 25 | 25 | 150 | 32 | 25 | VB□□1604□□ | FTGA03512 | SV32S | SHXN0509F      | TW15P, HW35L |
| 3225-P16         | 32 | 25 | 170 | 32 | 32 |            |           |       |                |              |

➔ Insertos Aplicables B84~B85, B96

# SVJBR/L



VB□□



93°

• Inserto tipo R (mm)

| Designación      | H  | W  | L   | S  | h  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|------------------|----|----|-----|----|----|----|------------|-----------|-------|----------------|--------------|
| SVJBR/L 1212-F11 | 12 | 12 | 80  | 16 | 12 | 27 | VB□□1102□□ | FTKA02565 | -     | -              | TW07P        |
| 1616-H11         | 16 | 16 | 100 | 20 | 16 | 27 |            |           |       |                |              |
| 2020-K11         | 20 | 20 | 125 | 25 | 20 | 27 |            |           |       |                |              |
| 1616-H16         | 16 | 16 | 100 | 20 | 16 | 36 | VB□□1604□□ | FTGA03512 | SV32S | SHXN0509F      | TW15P, HW35L |
| 2020-K16         | 20 | 20 | 125 | 25 | 20 | 41 |            |           |       |                |              |
| 2525-M16         | 25 | 25 | 150 | 32 | 25 | 41 | VB□□1604□□ | FTGA03512 | SV32S | SHXN0509F      | TW15P, HW35L |
| 3225-P16         | 32 | 25 | 170 | 32 | 32 | 55 |            |           |       |                |              |
| 3232-P16         | 32 | 32 | 170 | 40 | 33 | 55 |            |           |       |                |              |

➔ Insertos Aplicables B84~B85, B96

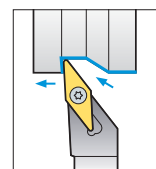
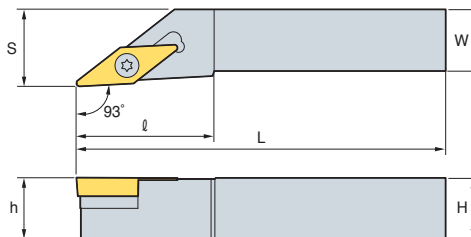


# B Sistema con Tornillo

## SVJCR/L



VC□□



93°

• Inserto tipo R (mm)

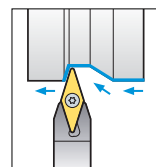
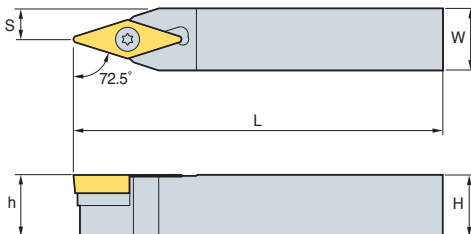
| Designación | H        | W  | L  | S   | h  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        |
|-------------|----------|----|----|-----|----|----|------------|-----------|-------|----------------|--------------|
| SVJCR/L     | 1212-F11 | 12 | 12 | 80  | 16 | 12 | VC□□1103□□ | FTKA02565 | -     | -              | TW07P        |
|             | 1616-H11 | 16 | 16 | 100 | 20 | 16 |            |           |       |                |              |
|             | 2020-K11 | 20 | 20 | 125 | 25 | 20 |            |           |       |                |              |
|             | 1212-F13 | 12 | 12 | 80  | 16 | 12 | VC□□1303□□ | FTKA0307  | -     | -              | TW09P        |
|             | 1616-H13 | 16 | 16 | 100 | 20 | 16 |            |           |       |                |              |
|             | 2020-K13 | 20 | 20 | 125 | 25 | 20 |            |           |       |                |              |
|             | 1616-H16 | 16 | 16 | 100 | 20 | 16 | VC□□1604□□ | FTGA03512 | SV32S | SHXN0509F      | TW15P, HW35L |
|             | 2020-K16 | 20 | 20 | 125 | 25 | 20 |            |           |       |                |              |
|             | 2525-M16 | 25 | 25 | 150 | 32 | 25 |            |           |       |                |              |

➔ Insertos Aplicables B86~B87, B97

## SVVBN



VB□□



72.5°

(mm)

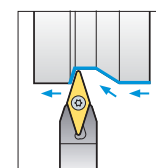
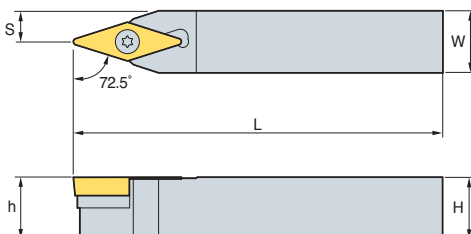
| Designación | H        | W  | L  | S   | h    | Inserto | Tornillo   | Placa     | Tornillo Placa | Llave     |              |
|-------------|----------|----|----|-----|------|---------|------------|-----------|----------------|-----------|--------------|
| SVVBN       | 1212-F11 | 12 | 12 | 80  | 6    | 12      | VB□□1102□□ | FTKA02565 | -              | -         | TW07P        |
|             | 1616-H11 | 16 | 16 | 100 | 8    | 16      |            |           |                |           |              |
|             | 2020-K11 | 20 | 20 | 125 | 10   | 20      |            |           |                |           |              |
|             | 1616-H16 | 16 | 16 | 100 | 8    | 16      | VB□□1604□□ | FTGA03512 | SV32S          | SHXN0509F | TW15P, HW35L |
|             | 2020-K16 | 20 | 20 | 125 | 10   | 20      |            |           |                |           |              |
|             | 2525-M16 | 25 | 25 | 150 | 12.5 | 25      |            |           |                |           |              |
|             | 3225-P16 | 32 | 25 | 170 | 12.5 | 32      |            |           |                |           |              |

➔ Insertos Aplicables B84~B85, B96

## SVVCN



VC□□



72.5°

(mm)

| Designación | H        | W  | L  | S   | h    | Inserto | Tornillo   | Placa     | Tornillo Placa | Llave     |              |
|-------------|----------|----|----|-----|------|---------|------------|-----------|----------------|-----------|--------------|
| SVVCN       | 1212-F11 | 12 | 12 | 80  | 6    | 12      | VC□□1103□□ | FTKA02565 | -              | -         | TW07P        |
|             | 1616-H11 | 16 | 16 | 100 | 8    | 16      |            |           |                |           |              |
|             | 2020-K11 | 20 | 20 | 125 | 10   | 20      |            |           |                |           |              |
|             | 1212-F13 | 12 | 12 | 80  | 6    | 12      | VC□□1303□□ | FTNA0307  | -              | -         | TW09P        |
|             | 1616-H13 | 16 | 16 | 100 | 8    | 16      |            |           |                |           |              |
|             | 2020-K13 | 20 | 20 | 125 | 10   | 20      |            |           |                |           |              |
|             | 1616-H16 | 16 | 16 | 100 | 8    | 16      | VC□□1604□□ | FTGA03512 | SV32S          | SHXN0509F | TW15P, HW35L |
|             | 2020-K16 | 20 | 20 | 125 | 10   | 20      |            |           |                |           |              |
|             | 2525-M16 | 25 | 25 | 150 | 12.5 | 25      |            |           |                |           |              |

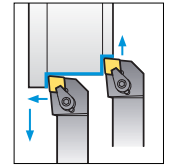
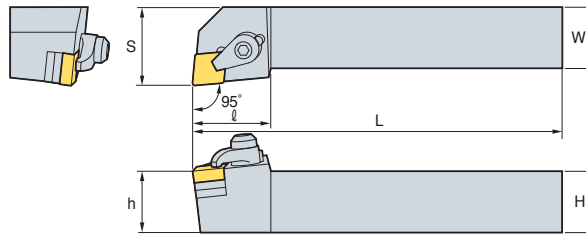
➔ Insertos Aplicables B86~B87, B97



# CCLNR/L



CN□N



95°

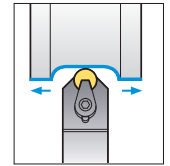
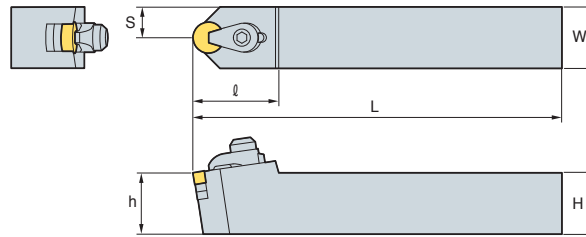
• Inserto tipo R  
(mm)

| Designación       | H  | W  | L   | S  | h  | ℓ  | Inserto              | Brida | Tornillo           | Placa  | Resorte | Llave          |
|-------------------|----|----|-----|----|----|----|----------------------|-------|--------------------|--------|---------|----------------|
| CCLNR/L 2525-M12C | 25 | 25 | 150 | 32 | 25 | 32 | CN□N1204□□<br>1207□□ | CH6R3 | MHX0630<br>SHX0310 | SC42CC | SR3     | HW40L<br>HW20L |

# CRDNN



RN□N



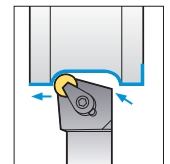
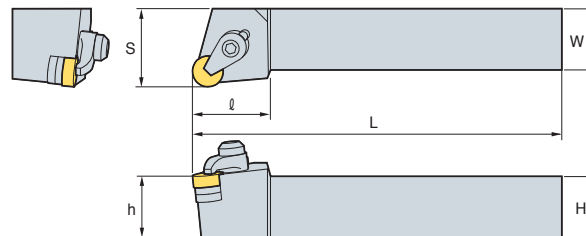
(mm)

| Designación     | H  | W  | L   | S    | h  | ℓ  | Inserto              | Brida | Tornillo           | Placa  | Resorte | Llave          |
|-----------------|----|----|-----|------|----|----|----------------------|-------|--------------------|--------|---------|----------------|
| CRDNN 2525-M12C | 25 | 25 | 150 | 12.5 | 25 | 35 | RN□N1204□□<br>1207□□ | CH6R3 | MHX0630<br>SHX0310 | SC42CC | SR3     | HW40L<br>HW20L |

# CRGNR/L



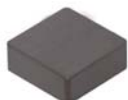
RN□N



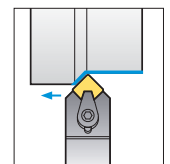
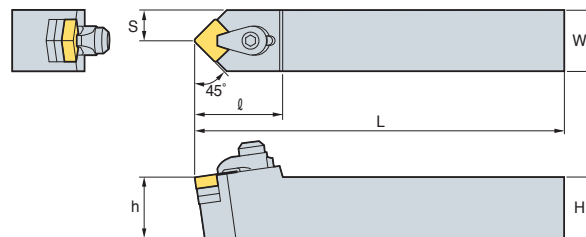
• Inserto tipo R  
(mm)

| Designación       | H  | W  | L   | S  | h  | ℓ  | Inserto              | Brida | Tornillo           | Placa  | Resorte | Llave          |
|-------------------|----|----|-----|----|----|----|----------------------|-------|--------------------|--------|---------|----------------|
| CRGNR/L 2525-M12C | 25 | 25 | 150 | 32 | 25 | 32 | RN□N1204□□<br>1207□□ | CH6R3 | MHX0630<br>SHX0310 | SC42CC | SR3     | HW40L<br>HW20L |

# CSDNN



SN□N



45°

(mm)

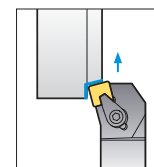
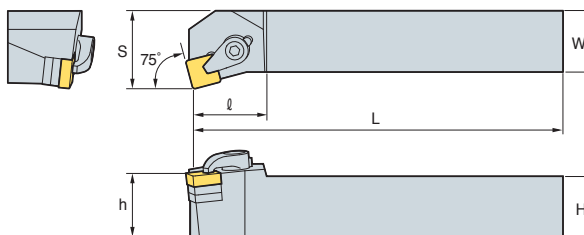
| Designación     | H  | W  | L   | S    | h  | ℓ  | Inserto              | Brida | Tornillo           | Placa  | Resorte | Llave          |
|-----------------|----|----|-----|------|----|----|----------------------|-------|--------------------|--------|---------|----------------|
| CSDNN 2525-M12C | 25 | 25 | 125 | 12.5 | 25 | 35 | SN□N1204□□<br>1207□□ | CH6R3 | MHX0630<br>SHX0310 | SS42CC | SR3     | HW40L<br>HW20L |

# B Portaherramientas insertos de cerámica

## CSKNR/L



SN□N



75°

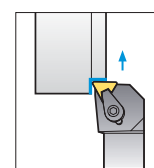
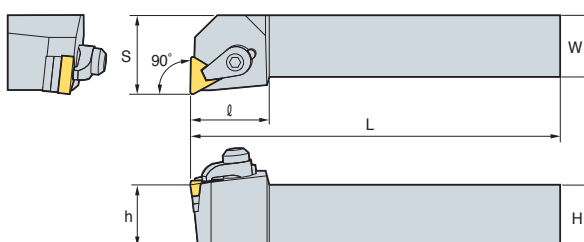
• Inserto tipo R (mm)

| Designación       | H  | W  | L   | S  | h  | l  | Inserto              | Brida | Tornillo           | Placa  | Resorte | Llave          |
|-------------------|----|----|-----|----|----|----|----------------------|-------|--------------------|--------|---------|----------------|
| CSKNR/L 2525-M12C | 25 | 25 | 150 | 32 | 25 | 28 | SN□N1204□□<br>1207□□ | CH6R3 | MHX0630<br>SHX0310 | SS42CC | SR3     | HW40L<br>HW20L |

## CTFNR/L



TN□N



90°

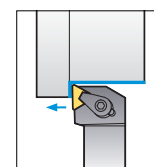
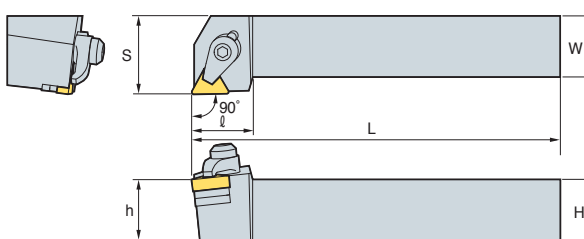
• Inserto tipo R (mm)

| Designación       | H  | W  | L   | S  | h  | l  | Inserto              | Brida | Tornillo           | Placa  | Resorte | Llave          |
|-------------------|----|----|-----|----|----|----|----------------------|-------|--------------------|--------|---------|----------------|
| CTFNR/L 2525-M16C | 25 | 25 | 150 | 32 | 25 | 32 | TN□N1604□□<br>1607□□ | CH6R3 | MHX0630<br>SHX0310 | ST32CC | SR3     | HW40L<br>HW20L |

## CTGNR/L



TN□N



90°

• Inserto tipo R (mm)

| Designación       | H  | W  | L   | S  | h  | l  | Inserto              | Brida | Tornillo           | Placa  | Resorte | Llave          |
|-------------------|----|----|-----|----|----|----|----------------------|-------|--------------------|--------|---------|----------------|
| CTGNR/L 2525-M16C | 25 | 25 | 150 | 32 | 25 | 32 | TN□N1604□□<br>1607□□ | CH6R3 | MHX0630<br>SHX0310 | ST32CC | SR3     | HW40L<br>HW20L |



**Nota)** Generalmente, dos placas son sujetado por la portainsero cerámica. Sin embargo, sólo una placa es usado para sujetar en los Insertos 1207□□ y 1607□□.



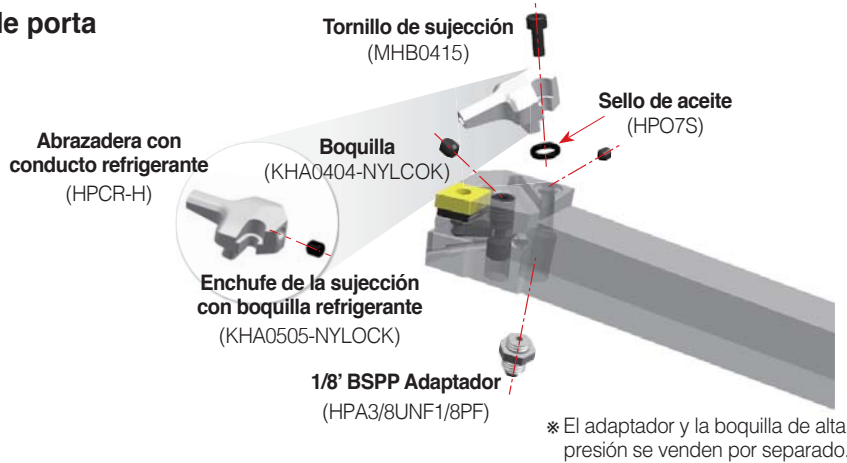
Porta provisto de refrigerante a alta presión para mecanizado de inconel

# KHP Coolant **new**

## Porta provisto de refrigerante a alta presión de KORLOY

- Aumento de la productividad en un 300% en el mecanizado de Inconel comparado al sistema de refrigerante de baja presión
- El enfriamiento, la vida útil de la herramienta y el control de viruta son mejorados con el sistema de inyección multidireccional de refrigerante a alta presión

### 🔧 Estructura de porta

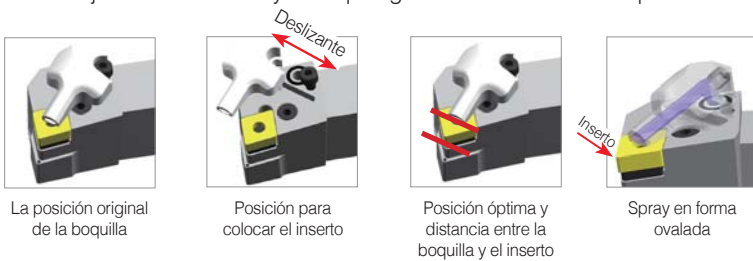


### 🔧 Características

- Diseñado para mantener una distancia óptima entre el inserto y el orificio de la boquilla y el lugar ideal del orificio del chorro
- Presión de pérdida maximizada de la presión del refrigerante debido al diseño aerodinámico de la ruta interna
- Fácil sujeción del inserto y la boquilla gracias al sistema de acoplamiento deslizante

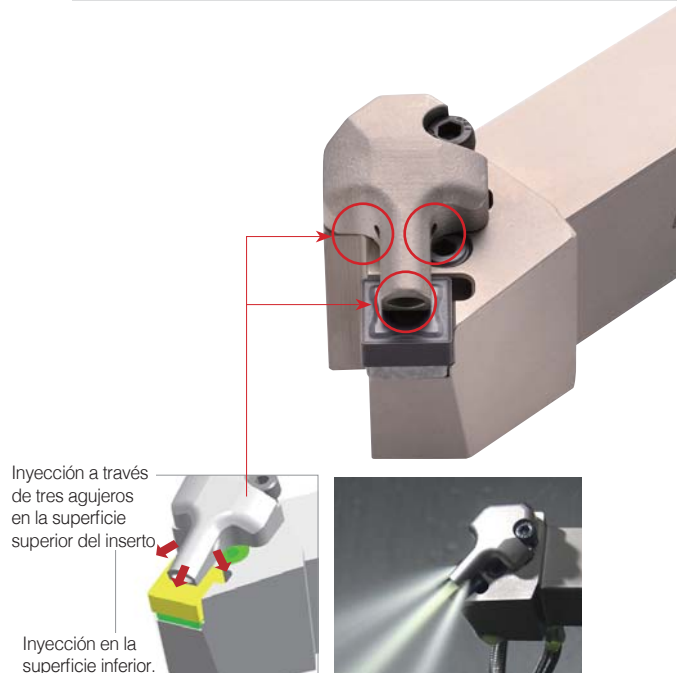
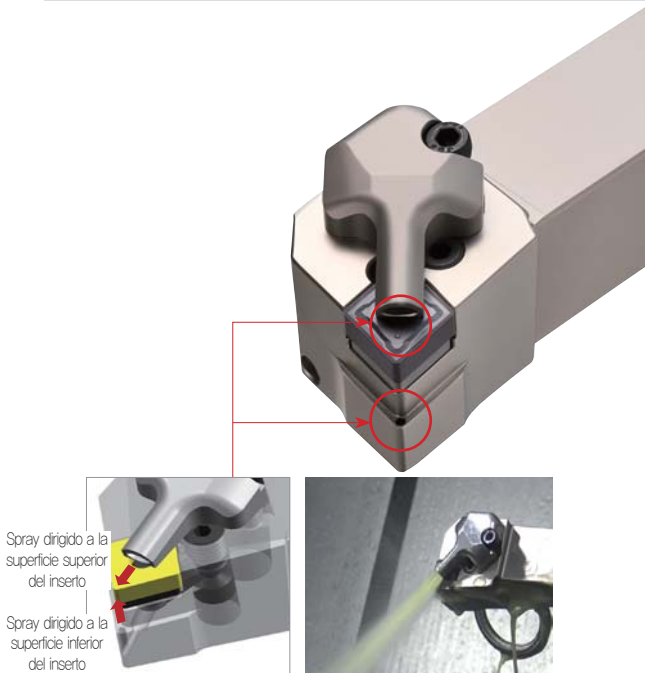
### La máxima barra 300

| Pieza de trabajo | Presión mínima | Presión máxima |
|------------------|----------------|----------------|
| P                | 50             | 300            |
| M                | 70             |                |
| K                | 60             |                |
| N                | 50             |                |
| S                | 70             |                |



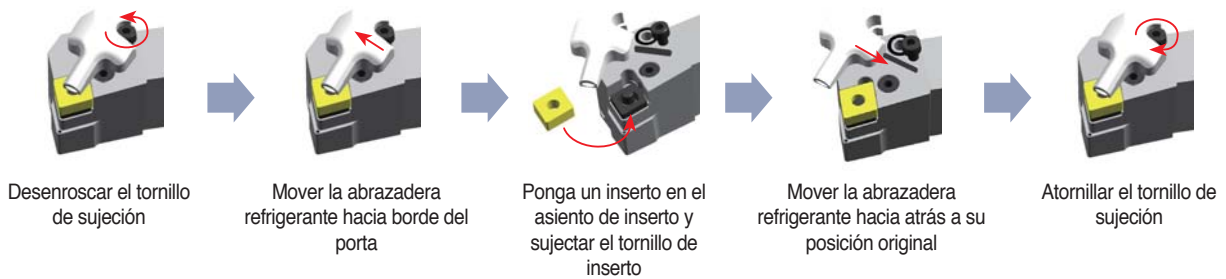
### Abrazadera con boquilla refrigerante

### Abrazadera refrigerante con tres conductos de refrigeración



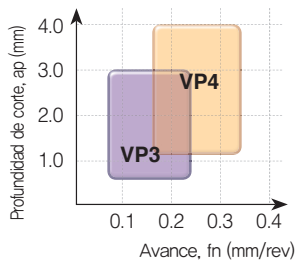
# B Información técnica para KHP Coolant

## La manera de usar la abrazadera refrigerante

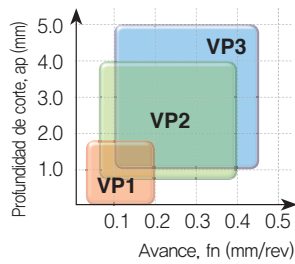


## Rango de aplicación

Aleaciones termorrresistentes, Inconel

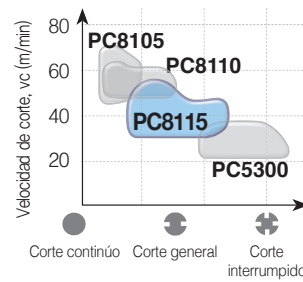


Aleaciones termorrresistentes, Titanio

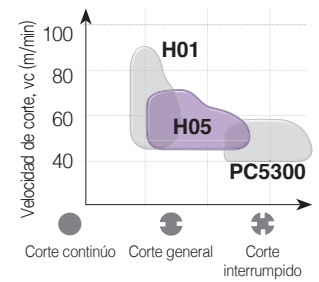


## Gama de grados

Aleaciones termorrresistentes, Inconel



Aleaciones termorrresistentes, Titanio



## Cómo sujetar el KHP

- 3 tipos de sistemas de instalación facilitan la sujeción
- La manguera tipo doblado proporciona un área más amplia para el mecanizado que otros tipos



※ Se incluye un sello de aceite que proporciona una sujeción fácil

※ La sujeción banjo facilitan la sujeción y permiten una variada sujeción del porta a la máquina de torneado

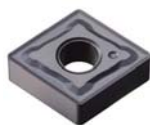
## Componentes de KHP

- Los componentes del refrigerante a alta presión se venden por separado
- Varios componentes están disponibles de acuerdo con los diferentes sitios de mecanizado y utiliza mecanizado con refrigerante a alta presión

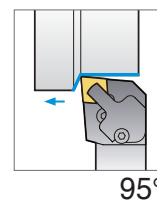
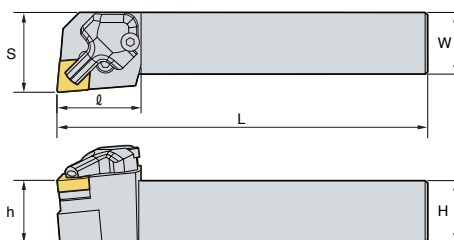
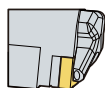
| Designación            | Forma | Longitud del conducto refrigerante | Manguera de alta presión | Blanco | Adaptador | Tornillo "banjo" | Arandela de cobre | Pic. |
|------------------------|-------|------------------------------------|--------------------------|--------|-----------|------------------|-------------------|------|
| HPH3/8UNF-200-SET      | S S   | 200mm                              | 1 EA                     | 1 EA   | 2 EA      | -                | -                 | 1    |
| HPH3/8UNF-250-SET      |       | 250mm                              |                          |        |           |                  |                   |      |
| HPH3/8UNF1/8PF-200-SET | S B   | 200mm                              | 1 EA                     | 1 EA   | 1 EA      | 1 EA             | 3EA               | 2    |
| HPH3/8UNF1/8PF-250-SET |       | 250mm                              |                          |        |           |                  |                   |      |
| HPH1/8PF-200-SET       | B B   | 200mm                              | -                        | -      | -         | 2 EA             | 5EA               | 3    |
| HPH1/8PF-250-SET       |       | 250mm                              |                          |        |           |                  |                   |      |



# PCLNR/L



CN□□



95°

• Inserto tipo R  
(mm)

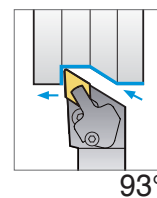
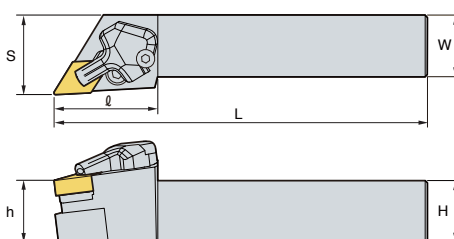
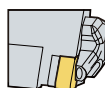
| Designación                 | H  | W  | L   | S  | h  | l  | Inserto    | Palanca | Tornillo | Placa | Candado<br>lana | Pin Punch | Brida | Tornillo de<br>sujeción | Sello de<br>aceite | Boquilla | Llave |
|-----------------------------|----|----|-----|----|----|----|------------|---------|----------|-------|-----------------|-----------|-------|-------------------------|--------------------|----------|-------|
| <b>PCLNR/L 2525-M12-KHP</b> | 25 | 25 | 150 | 32 | 25 | 34 | CN□□1204□□ |         |          |       |                 |           |       |                         |                    |          |       |
| <b>3232-P12-KHP</b>         | 32 | 32 | 170 | 40 | 32 | 34 |            |         |          |       |                 |           |       |                         |                    |          |       |

➔ Insertos Aplicables B28~B35

# PDJNR/L



DN□□



93°

• Inserto tipo R  
(mm)

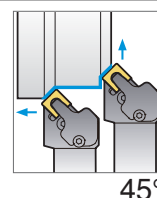
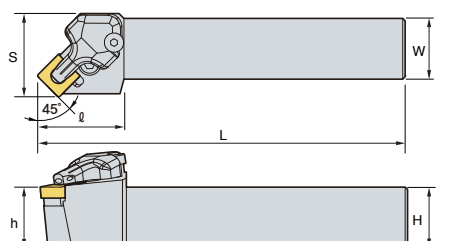
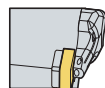
| Designación                 | H  | W  | L   | S     | h  | l  | Inserto    | Palanca | Tornillo | Placa | Candado<br>lana | Pin Punch | Brida | Tornillo de<br>sujeción | Sello de<br>aceite | Boquilla | Llave |       |          |       |      |       |          |         |       |                    |                         |
|-----------------------------|----|----|-----|-------|----|----|------------|---------|----------|-------|-----------------|-----------|-------|-------------------------|--------------------|----------|-------|-------|----------|-------|------|-------|----------|---------|-------|--------------------|-------------------------|
| <b>PDJNR/L 2525-M11-KHP</b> | 25 | 25 | 150 | 32.25 | 25 | 42 | DN□□1104□□ |         |          |       |                 |           |       |                         |                    |          |       |       |          |       |      |       |          |         |       |                    |                         |
| <b>2525-M1504-KHP</b>       | 25 | 25 | 150 | 32.25 | 25 | 42 | DN□□1504□□ |         |          |       |                 |           |       |                         |                    |          |       | LV3AN | VHX0617N | SD32N | SP3  | LSPS3 | HPCR/L-H | MHB0415 | HPO7S | KHA0404-<br>NYLOCK | HW20L<br>HW25L<br>HW30L |
| <b>2525-M1506-KHP</b>       | 25 | 25 | 150 | 32.25 | 25 | 42 | DN□□1506□□ |         |          |       |                 |           |       |                         |                    |          |       | LV4BN | VHX0821N | SD43N | SP4N | LSPS4 | HPCR/L-H | MHB0415 | HPO7S | KHA0404-<br>NYLOCK | HW20L<br>HW30L          |

➔ Insertos Aplicables B36~B42

# PSSNR/L



SN□□



45°

• Inserto tipo R  
(mm)

| Designación                 | H  | W  | L   | S     | h  | l  | Inserto    | Palanca | Tornillo | Placa | Candado<br>lana | Pin Punch | Brida     | Tornillo de<br>sujeción | Sello de<br>aceite | Boquilla           | Llave          |
|-----------------------------|----|----|-----|-------|----|----|------------|---------|----------|-------|-----------------|-----------|-----------|-------------------------|--------------------|--------------------|----------------|
| <b>PSSNR/L 2525-M12-KHP</b> | 25 | 25 | 150 | 34.25 | 25 | 34 | SN□□1204□□ |         |          |       |                 |           |           |                         |                    |                    |                |
|                             |    |    |     |       |    |    |            | LV4N    | VHX0821  | SS42N | SP4N            | LSPS4     | HPCR/L-3H | MHB0415                 | HPO7S              | KHA0404-<br>NYLOCK | HW20L<br>HW30L |

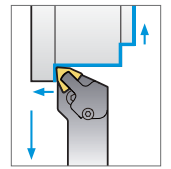
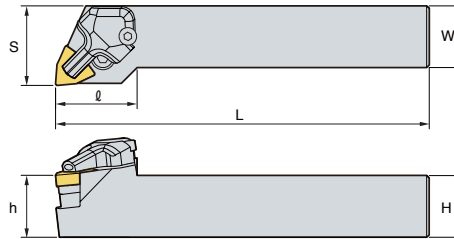
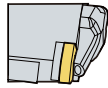
➔ Insertos Aplicables B44~B52



## PWLNR/L



WN□□



95°

• Inserto tipo R (mm)

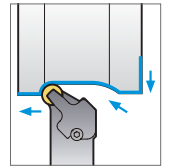
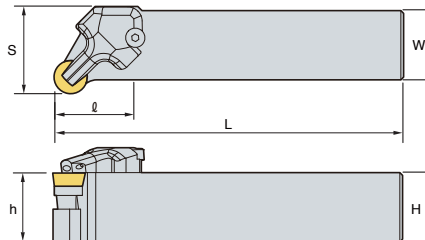
| Designación                 | H  | W  | L   | S     | h  | l  | Inserto    | Palanca | Tornillo | Placa | Candado<br>lana | Pin Punch | Brida | Tornillo de<br>sujeción | Sello de<br>aceite | Boquilla | Llave |
|-----------------------------|----|----|-----|-------|----|----|------------|---------|----------|-------|-----------------|-----------|-------|-------------------------|--------------------|----------|-------|
| <b>PWLNR/L 2525-M08-KHP</b> | 25 | 25 | 150 | 32.25 | 25 | 33 | WN□□0804□□ |         |          |       |                 |           |       |                         |                    |          |       |
| <b>3232-P08-KHP</b>         | 32 | 32 | 170 | 39.25 | 32 | 33 |            |         |          |       |                 |           |       |                         |                    |          |       |

➔ Insertos Aplicables B62~B65

## SRGCR/L



RCGT



• Inserto tipo R (mm)

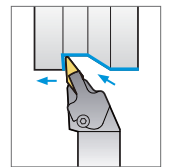
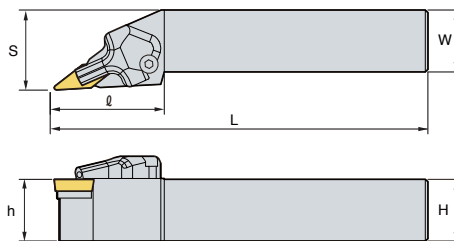
| Designación                 | H  | W  | L   | S    | h  | l | Inserto    | Tornillo  | Placa | Tornillo Placa | Brida     | Tornillo de<br>sujeción | Sello de aceite | Llave                   |
|-----------------------------|----|----|-----|------|----|---|------------|-----------|-------|----------------|-----------|-------------------------|-----------------|-------------------------|
| <b>SRGCR/L 2525-M12-KHP</b> | 25 | 25 | 150 | 31.5 | 25 | - | RCGT1204M0 |           |       |                |           |                         |                 |                         |
|                             |    |    |     |      |    |   |            | FTGA03512 | SR12S | SHXN0509F      | HPCR/L-3H | MHB0415                 | HPO7S           | HW15P<br>HW30L<br>HW35L |

➔ Insertos Aplicables B93

## SVJBR/L



VB□□



93°

• Inserto tipo R (mm)

| Designación                 | H  | W  | L   | S    | h  | l    | Inserto    | Tornillo  | Tornillo Placa | Placa | Brida    | Tornillo de<br>sujeción | Sello de aceite | Llave                   |
|-----------------------------|----|----|-----|------|----|------|------------|-----------|----------------|-------|----------|-------------------------|-----------------|-------------------------|
| <b>SVJBR/L 2525-M16-KHP</b> | 25 | 25 | 150 | 32.5 | 25 | 46.5 | VB□□1604□□ |           |                |       |          |                         |                 |                         |
|                             |    |    |     |      |    |      |            | FTGA03512 | SHXN0509F      | SV32S | HPCR/L-H | MHB0415                 | HPO7S           | TW15P<br>HW30L<br>HW35L |

➔ Insertos Aplicables B84~B85, B96





S 12 M - S T F P R - 11



**1 Tipo de Barra**  
 S 12 M - S T F P R - 11

- "A" Aerocon Orificio de Refrigeración
- "E" Barra de carburo con cabeza de acero y refrigeración interna
- "C" Barra de carburo
- "C" Barra de acero
- "X" Tipo Especial

**2 Diametro de la Barra**  
 S 12 M - S T F P R - 11

**3 Longitud de Barra**  
 S 12 M - S T F P R - 11

| Symbol(L) | Longitud(mm) |
|-----------|--------------|
| H         | 100          |
| J         | 110          |
| K         | 125          |
| M         | 150          |
| N         | 160          |
| Q         | 180          |
| R         | 200          |
| S         | 250          |
| T         | 300          |
| U         | 350          |
| V         | 400          |
| W         | 450          |
| Y         | 500          |

**4 Sistema sujeción del inserto**  
 S 12 M - S T F P R - 11

**5 Forma del Inserto**  
 S 12 M - S T F P R - 11

**6 Ángulo de entrada de la barra**  
 S 12 M - S T F P R - 11

**7 Angulo de Incidencia**  
 S 12 M - S T F P R - 11

**8 Mano de la Barra**  
 S 12 M - S T F P R - 11

**9 Longitud del filo del Inserto**  
 S 12 M - S T F P R - 11



## Sistema de Brida Doble

|                 |         |         |         |         |         |  |  |  |
|-----------------|---------|---------|---------|---------|---------|--|--|--|
| Operacion       |         |         |         |         |         |  |  |  |
| Designación     | DCLNR/L | DDUNR/L | DSKNR/L | DTFNR/L | DWLNR/L |  |  |  |
| Angulo de Corte | 95°     | 93°     | 75°     | 90°     | 95°     |  |  |  |
| Pag.            | B195    | B195    | B195    | B196    | B196    |  |  |  |
| Copiado         |         | ●       |         |         |         |  |  |  |
| Careado         | ●       |         |         |         | ●       |  |  |  |
| Tornreado Tras. |         | ●       |         |         |         |  |  |  |
| Torneado        | ●       | ●       | ●       | ●       | ●       |  |  |  |

## Sistema de Palanca

|                 |         |         |         |         |         |         |  |  |
|-----------------|---------|---------|---------|---------|---------|---------|--|--|
| Operacion       |         |         |         |         |         |         |  |  |
| Designación     | PCLNR/L | PDSNR/L | PDUNR/L | PSKNR/L | PTFNR/L | PWLNR/L |  |  |
| Angulo de Corte | 95°     | 62.5°   | 93°     | 75°     | 90°     | 95°     |  |  |
| Pag.            | B197    | B197    | B198    | B199    | B199    | B200    |  |  |
| Copiado         |         | ●       | ●       |         |         |         |  |  |
| Careado         | ●       |         |         |         |         | ●       |  |  |
| Tornreado Tras. |         | ●       | ●       |         |         | ●       |  |  |
| Torneado        | ●       | ●       | ●       | ●       | ●       | ●       |  |  |

## Sistema con Tornillo

|                 |         |         |         |  |  |  |  |  |
|-----------------|---------|---------|---------|--|--|--|--|--|
| Operacion       |         |         |         |  |  |  |  |  |
| Designación     | CKUNR/L | CSKPR/L | CTFPR/L |  |  |  |  |  |
| Angulo de Corte | 93°     | 75°     | 90°     |  |  |  |  |  |
| Pag.            | B201    | B201    | B201    |  |  |  |  |  |
| Copiado         |         |         |         |  |  |  |  |  |
| Careado         |         |         |         |  |  |  |  |  |
| Tornreado Tras. | ●       |         |         |  |  |  |  |  |
| Torneado        | ●       | ●       | ●       |  |  |  |  |  |

## Sistema Multi-trabe

|                 |         |         |         |         |         |         |  |  |
|-----------------|---------|---------|---------|---------|---------|---------|--|--|
| Operacion       |         |         |         |         |         |         |  |  |
| Designación     | MCLNR/L | MDUNR/L | MSKNR/L | MTFNR/L | MVUNR/L | MWLNR/L |  |  |
| Angulo de Corte | 95°     | 93°     | 75°     | 90°     | 93°     | 95°     |  |  |
| Pag.            | B202    | B202    | B202    | B203    | B203    | B203    |  |  |
| Copiado         |         | ●       |         |         | ●       |         |  |  |
| Careado         | ●       |         |         |         |         | ●       |  |  |
| Tornreado Tras. |         | ●       |         |         | ●       |         |  |  |
| Torneado        | ●       | ●       | ●       | ●       | ●       | ●       |  |  |



### Sistema con Tornillo

|                 |         |         |         |         |         |         |         |         |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Operacion       |         |         |         |         |         |         |         |         |
| Designación     | SCLCR/L | SCLPR/L | SDQCR/L | SDUCR/L | SDZCR/L | SSKCR/L | SSKPR/L | STFCR/L |
| Angulo de Corte | 95°     | 95°     | 107.5°  | 93°     | 93°     | 75°     | 75°     | 90°     |
| Pag.            | B204    | B205    | B206    | B207    | B208    | B208    | B208    | B209    |
| Copiado         |         |         | ●       | ●       |         |         |         |         |
| Careado         | ●       | ●       |         |         |         |         |         |         |
| Tornreado Tras. |         |         | ●       | ●       | ●       |         |         |         |
| Torneado        | ●       | ●       | ●       | ●       | ●       | ●       | ●       | ●       |

|                 |         |         |         |         |         |         |         |         |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Operacion       |         |         |         |         |         |         |         |         |
| Designación     | STFPR/L | STWPR/L | SVJCR/L | SVQBR/L | SVQCR/L | SVUBR/L | SVUCR/L | SWLCR/L |
| Angulo de Corte | 90°     | 60°     | 142°    | 108°    | 108°    | 93°     | 93°     | 95°     |
| Pag.            | B210    | B211    | B211    | B211    | B212    | B212    | B212    | B213    |
| Copiado         |         |         | ●       | ●       | ●       | ●       | ●       | ●       |
| Careado         |         |         |         |         |         |         |         |         |
| Tornreado Tras. |         |         |         | ●       | ●       | ●       | ●       | ●       |
| Torneado        | ●       | ●       | ●       | ●       | ●       | ●       | ●       | ●       |

### Compact Mini

|                 |         |         |         |         |  |  |  |  |
|-----------------|---------|---------|---------|---------|--|--|--|--|
| Operacion       |         |         |         |         |  |  |  |  |
| Designación     | SCLCR/L | STUBR/L | STUPR/L | SWUBR/L |  |  |  |  |
| Angulo de Corte | 95°     | 93°     | 93°     | 93°     |  |  |  |  |
| Pag.            | B214    | B214    | B215    | B216    |  |  |  |  |
| Copiado         |         |         |         |         |  |  |  |  |
| Careado         | ●       | ●       |         |         |  |  |  |  |
| Tornreado Tras. |         |         | ●       |         |  |  |  |  |
| Torneado        | ●       | ●       | ●       | ●       |  |  |  |  |

### “C” Barra de torneado interior de carburo

|                 |         |         |         |         |         |
|-----------------|---------|---------|---------|---------|---------|
| Designación     | SCLCR/L | SCLPR/L | SDQCR/L | SDUCR/L | STFCR/L |
| Angulo de Corte | 95°     | 95°     | 107.5°  | 93°     | 90°     |
| Pag.            | B204    | B205    | B206    | B207    | B209    |

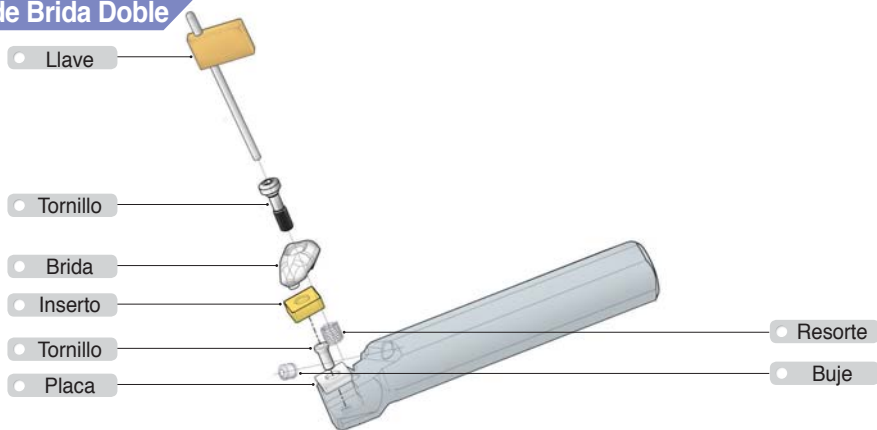
|                 |         |         |         |         |   |
|-----------------|---------|---------|---------|---------|---|
| Designación     | STFPR/L | STUBR/L | STUPR/L | SWUBR/L | - |
| Angulo de Corte | 90°     | 93°     | 93°     | 93°     | - |
| Pag.            | B210    | B214    | B215    | B216    | - |

### Sleeve

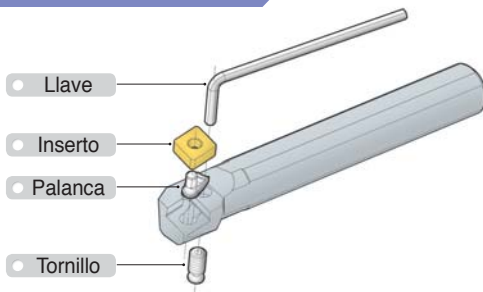
|             |      |
|-------------|------|
| Forma       |      |
| Designación | SL   |
| Pag.        | B136 |

## Instrucciones Ensamblado Barras Interior

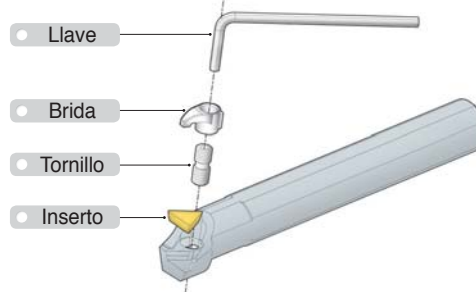
### Sistema de Brida Doble



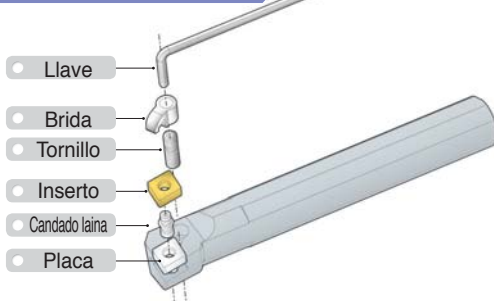
### Sistema de Palanca



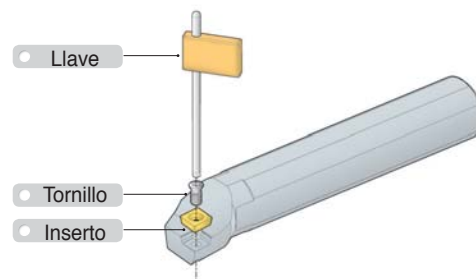
### Sistema de Brida



### Sistema Multi-trabe



### Sistema con Tornillo



## Barra de carburo

- Excelente rendimiento de corte incluso en el mecanizado interno con vibración
- Disponible para diversas piezas, como acero, acero inoxidable, hierro fundido, etc.
- Mejora la vida de la herramienta y la rugosidad de la superficie

### Características



Mayor resistencia y durabilidad que el vástago de acero, tratamiento de superficie especial aplicado

### Comparación de astillamiento

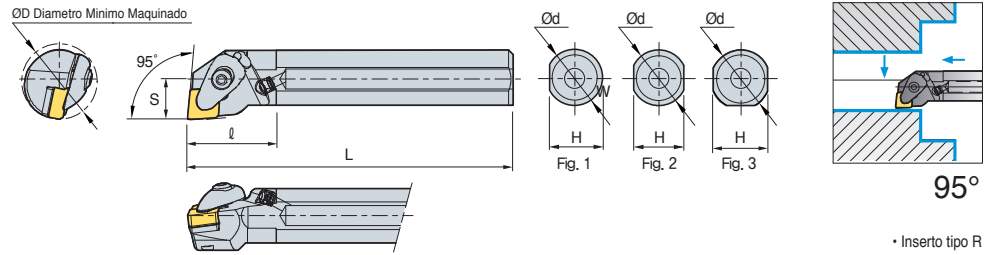
| Especificaciones           | Barra de acero      |      |      | Barra de carburo |      |      |
|----------------------------|---------------------|------|------|------------------|------|------|
|                            | Mayor astillamiento |      |      | Vida estable     |      |      |
| • SCM440                   |                     |      |      |                  |      |      |
| • $v_c$ : 200 m/min        |                     |      |      |                  |      |      |
| • $a_p$ : 0.4 mm           |                     |      |      |                  |      |      |
| • $f_n$ : 0.15 mm/rev      |                     |      |      |                  |      |      |
| • Profundidad de corte: 5D |                     |      |      |                  |      |      |
|                            | Rmax                | Rz   | Ra   | Rmax             | Rz   | Ra   |
|                            | 4.67                | 3.68 | 0.62 | 3.07             | 2.76 | 0.53 |



# DCLNR/L



CN□□



• Inserto tipo R (mm)

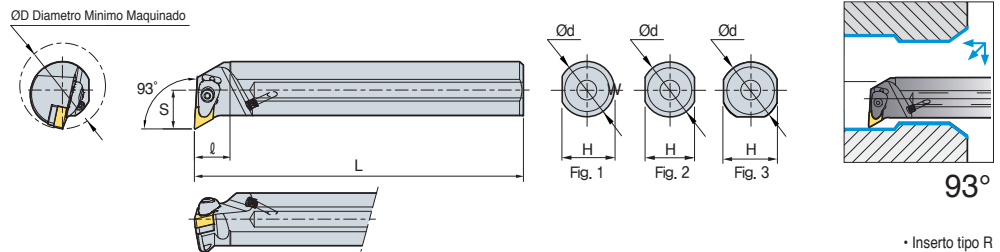
| Designación     | ØD | Ød | H  | L   | S  | l  | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Buje Ref. | Llave | Fig. |
|-----------------|----|----|----|-----|----|----|------------|-------|----------------|-------|----------------|---------|-----------|-------|------|
| A25R-DCLNR/L-09 | 32 | 25 | 24 | 200 | 17 | 40 | CN□□0903□□ | CVH3  | CHX0415        | SC32V | FTKA0307       | SPR0510 | CN0605    | HW25P | 1    |
| A25R-DCLNR/L-12 | 32 | 25 | 24 | 200 | 17 | 40 | CN□□1204□□ | CVH4  | CHX0518        | SC42V | FTKA0410       | SPR0714 | CN0605    | HW30P | 1    |
| A32S-DCLNR/L-12 | 40 | 32 | 30 | 250 | 22 | 50 |            |       |                |       |                |         |           |       | 3    |
| A40T-DCLNR/L-12 | 50 | 40 | 38 | 300 | 27 | 60 |            |       |                |       |                |         |           |       |      |
| A50U-DCLNR/L-16 | 63 | 50 | 48 | 350 | 35 | 70 | CN□□1606□□ | CVH5  | CHX0622        | SC54V | FTNA0511       | SPR0811 | CN0605    | HW40L | 3    |

➤ Insertos Aplicables B28~B35

# DDUNR/L



DN□□



• Inserto tipo R (mm)

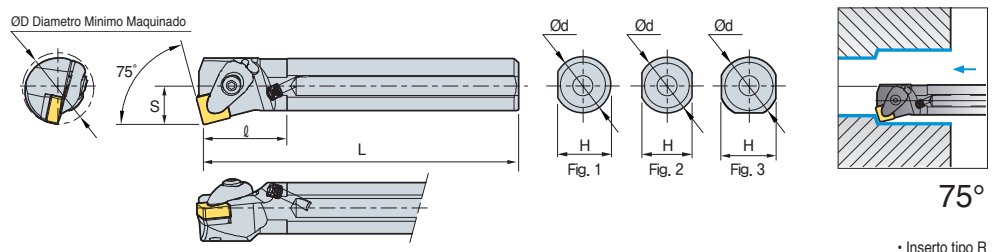
| Designación        | ØD | Ød | H  | L   | S  | l  | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Buje Ref. | Llave | Fig. |
|--------------------|----|----|----|-----|----|----|------------|-------|----------------|-------|----------------|---------|-----------|-------|------|
| A40T-DDUNR/L-15    | 50 | 40 | 38 | 300 | 27 | 60 | DN□□1506□□ | CVH4  | CHX0518        | SD43V | FTKA0410       | SPR0714 | CN0605    | HW30P | 3    |
| A50U-DDUNR/L-15    | 63 | 50 | 47 | 350 | 35 | 70 |            |       |                |       |                |         |           |       |      |
| A40T-DDUNR/L-15 -3 | 50 | 40 | 38 | 300 | 27 | 60 | DN□□1504□□ | CVH4  | CHX0518        | SD44V | FTKA0410       | SPR0714 | CN0605    | HW30P | 3    |
| A50U-DDUNR/L-15 -3 | 63 | 50 | 47 | 350 | 35 | 70 |            |       |                |       |                |         |           |       |      |

➤ Insertos Aplicables B36~B42

# DSKNR/L



SN□□



• Inserto tipo R (mm)

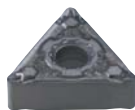
| Designación     | ØD | Ød | H  | L   | S  | l  | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Buje Ref. | Llave | Fig. |
|-----------------|----|----|----|-----|----|----|------------|-------|----------------|-------|----------------|---------|-----------|-------|------|
| A25R-DSKNR/L-09 | 32 | 25 | 24 | 200 | 17 | 40 | SN□□0903□□ | CVH3  | CHX0415        | SS32V | FTKA0307       | SPR0510 | CN0605    | HW25P | 1    |
| A25R-DSKNR/L-12 | 32 | 25 | 24 | 200 | 17 | 40 | SN□□1204□□ | CVH4  | CHX0518        | SS42V | FTKA0410       | SPR0714 | CN0605    | HW30P | 1    |
| A32S-DSKNR/L-12 | 40 | 32 | 30 | 250 | 22 | 50 |            |       |                |       |                |         |           |       | 3    |
| A40T-DSKNR/L-12 | 50 | 40 | 38 | 300 | 27 | 60 |            |       |                |       |                |         |           |       |      |

➤ Insertos Aplicables B44~B52

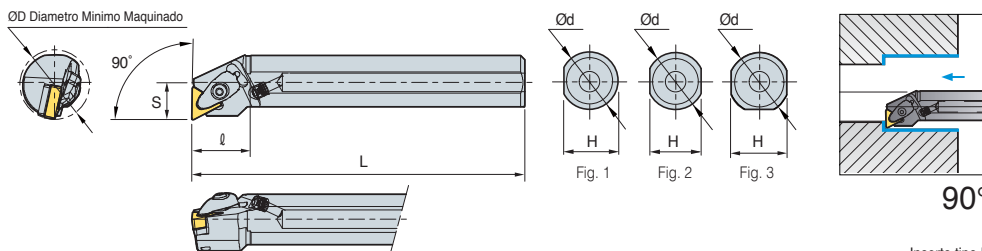


# B Sistema de Brida Doble

## DTFNR/L



TN□□



• Inserto tipo R (mm)

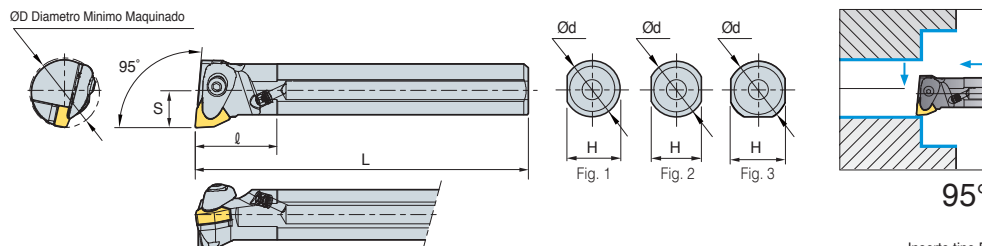
| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Buje Ref. | Llave | Fig. |
|-----------------|----|----|----|-----|----|----|------------|-------|----------------|-------|----------------|---------|-----------|-------|------|
| A25R-DTFNR/L-16 | 32 | 25 | 24 | 200 | 17 | 40 | TN□□1604□□ | CVH3  | CHX0415        | ST32V | FTKA0307       | SPR0510 | CN0605    | HW25P | 1    |
| A32S-DTFNR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 |            |       |                |       |                |         |           |       | 3    |
| A40T-DTFNR/L-22 | 50 | 40 | 38 | 300 | 27 | 60 |            |       |                |       |                |         |           |       |      |
| A50U-DTFNR/L-22 | 63 | 50 | 47 | 350 | 35 | 70 | TN□□2204□□ | CVH4  | CHX0518        | ST44V | FTKA0410       | SPR0714 | CN0605    | HW30P | 3    |

↻ Insertos Aplicables B53~B59

## DWLNR/L



WN□□



• Inserto tipo R (mm)

| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Tornillo Placa | Resorte | Buje Ref. | Llave | Fig. |
|-----------------|----|----|----|-----|----|----|------------|-------|----------------|-------|----------------|---------|-----------|-------|------|
| A25R-DWLNR/L-06 | 32 | 25 | 24 | 200 | 17 | 40 | WN□□0604□□ | CVH3  | CHX0415        | SW32V | FTKA0307       | SPR0510 | CN0605    | HW25P | 1    |
| A32S-DWLNR/L-06 | 40 | 32 | 30 | 250 | 22 | 50 |            |       |                |       |                |         |           |       | 3    |
| A40T-DWLNR/L-06 | 50 | 40 | 38 | 300 | 27 | 60 |            |       |                |       |                |         |           |       |      |
| A25R-DWLNR/L-08 | 32 | 25 | 24 | 200 | 17 | 40 | WN□□0804□□ | CVH4  | CHX0518        | SW42V | FTKA0410       | SPR0714 | CN0605    | HW30P | 1    |
| A32S-DWLNR/L-08 | 40 | 32 | 30 | 250 | 22 | 50 |            |       |                |       |                |         |           |       |      |
| A40T-DWLNR/L-08 | 50 | 40 | 38 | 300 | 27 | 60 |            |       |                |       |                |         |           |       |      |
| A50U-DWLNR/L-08 | 63 | 50 | 47 | 350 | 35 | 70 |            |       |                |       |                |         |           |       |      |

↻ Insertos Aplicables B62~B65



### Características del Sistema de Brida Doble (Barra para Interior)

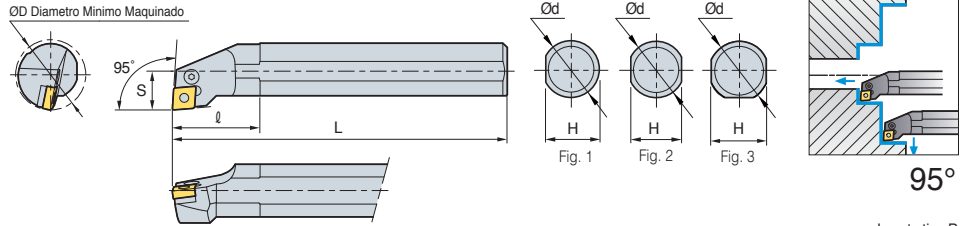
Alargamiento de tiempo de uso de la herramienta, debido al orificio de refrigeración ajustable en la herramienta.



# PCLNR/L



CN□□



• Inserto tipo R (mm)

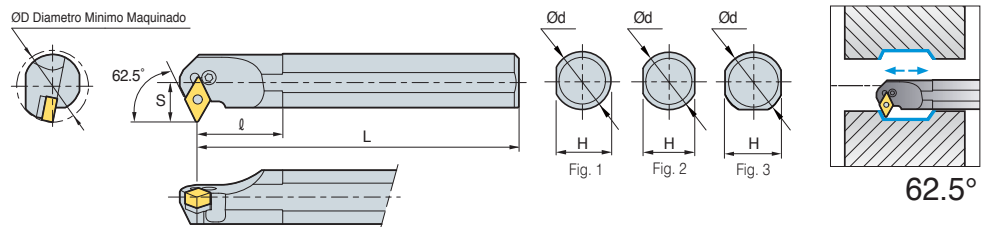
| Designación      | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Palanca | Tornillo  | Placa | Candado Iaina | Pin Punch | Llave | Fig. |          |       |      |       |       |
|------------------|----|----|----|-----|----|----|------------|---------|-----------|-------|---------------|-----------|-------|------|----------|-------|------|-------|-------|
| S16R-PCLNR/L-09  | 20 | 16 | 14 | 200 | 11 | 25 | CN□□0903□□ | LV3C    | VHX0509B  | -     | -             | -         | HW20L | 2    |          |       |      |       |       |
| S20S-PCLNR/L-09  | 25 | 20 | 18 | 250 | 13 | 32 |            |         |           |       |               |           |       | 3    |          |       |      |       |       |
| S25R-PCLNR/L-09  | 32 | 25 | 23 | 200 | 17 | 40 | CN□□1204□□ | LV4A    | VHX0613A  | -     | -             | -         | HW25L | 3    |          |       |      |       |       |
| S25T-PCLNR/L-12  | 32 | 25 | 23 | 300 | 17 | 40 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S32S-PCLNR/L-12  | 40 | 32 | 30 | 250 | 22 | 50 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S32U-PCLNR/L-12  | 40 | 32 | 30 | 350 | 22 | 50 |            |         |           |       |               |           |       | LV4  | VHX0821  | SC42B | SP4  | LSPS4 | HW30L |
| S40T-PCLNR/L-12  | 50 | 40 | 38 | 300 | 27 | 60 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S50U-PCLNR/L-12  | 63 | 50 | 47 | 350 | 35 | 70 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S50U-PCLNR/L-19  | 63 | 50 | 47 | 350 | 35 | 70 | CN□□1906□□ | LV6     | VHX1027   | SC63  | SP6           | LSPS6     | HW40L | 3    |          |       |      |       |       |
| A25R-PCLNR/L-12  | 32 | 25 | 24 | 200 | 17 | 40 | CN□□1204□□ | LV4A    | VHX0613A  | -     | -             | -         | HW25L | 1    |          |       |      |       |       |
| A32S-PCLNR/L-12  | 40 | 32 | 30 | 250 | 22 | 50 |            |         |           |       |               |           |       | 3    |          |       |      |       |       |
| A40T-PCLNR/L-12  | 50 | 40 | 38 | 300 | 27 | 60 | CN□□1204□□ | LV4N    | VHX0820N  | SC42N | SP4N          | LSPS4     | HW30L | 3    |          |       |      |       |       |
| S16R-PCLNR/L-09N | 20 | 16 | 14 | 200 | 11 | 25 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S20S-PCLNR/L-09N | 25 | 20 | 18 | 250 | 13 | 32 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S25R-PCLNR/L-09N | 32 | 25 | 23 | 200 | 17 | 40 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S25R-PCLNR/L-12N | 32 | 25 | 23 | 200 | 17 | 40 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S25T-PCLNR/L-12N | 32 | 25 | 23 | 300 | 17 | 40 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S32S-PCLNR/L-12N | 40 | 32 | 30 | 250 | 22 | 50 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S32U-PCLNR/L-12N | 40 | 32 | 30 | 350 | 22 | 50 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S40T-PCLNR/L-12N | 50 | 40 | 38 | 300 | 27 | 60 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S50U-PCLNR/L-12N | 63 | 50 | 47 | 350 | 35 | 70 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| S50U-PCLNR/L-19N | 63 | 50 | 47 | 350 | 35 | 70 | CN□□1906□□ | LV6N    | VHX1027N  | SC63N | SP6N          | LSPS6     | HW40L | 3    |          |       |      |       |       |
| A16R-PCLNR/L-09N | 20 | 16 | 14 | 200 | 11 | 25 | CN□□0903□□ | LV3CN   | VHX0509BN | -     | -             | -         | HW20L | 1    |          |       |      |       |       |
| A20S-PCLNR/L-09N | 25 | 20 | 18 | 250 | 13 | 32 |            |         |           |       |               |           |       | 3    |          |       |      |       |       |
| A25R-PCLNR/L-09N | 32 | 25 | 23 | 200 | 17 | 40 | CN□□1204□□ | LV4AN   | VHX0613N  | -     | -             | -         | HW25L | 1    |          |       |      |       |       |
| A25R-PCLNR/L-12N | 32 | 25 | 23 | 200 | 17 | 40 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| A32R-PCLNR/L-12N | 40 | 32 | 30 | 250 | 22 | 50 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| A40T-PCLNR/L-12N | 50 | 40 | 38 | 300 | 27 | 60 |            |         |           |       |               |           |       | LV4N | VHX0820N | SC42N | SP4N | LSPS4 | HW30L |
| A50U-PCLNR/L-12N | 63 | 50 | 47 | 350 | 35 | 70 |            |         |           |       |               |           |       |      |          |       |      |       |       |
| A50U-PCLNR/L-19N | 63 | 50 | 47 | 350 | 35 | 70 |            |         |           |       |               |           |       |      |          |       |      |       |       |

➔ Insertos Aplicables B28~B35

# PDSNR/L



DN□□



• Inserto tipo R (mm)

| Designación       | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado Iaina | Pin Punch | Llave | Fig. |
|-------------------|----|----|----|-----|----|----|------------|---------|----------|-------|---------------|-----------|-------|------|
| S32S-PDSNR/L-15   | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1506□□ | LV4B    | VHX0821  | SD42  | SP4           | LSPS4     | HW30L | 3    |
| S40T-PDSNR/L-15   | 50 | 40 | 38 | 300 | 27 | 60 |            |         |          |       |               |           |       |      |
| S32S-PDSNR/L-15-3 | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1504□□ | LV4     | VHX0821  | SD42  | SP4           | LSPS4     | HW30L |      |
| S40T-PDSNR/L-15-3 | 50 | 40 | 38 | 300 | 27 | 60 |            |         |          |       |               |           |       |      |
| A32S-PDSNR/L-15   | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1506□□ | LV4B    | VHX0821  | SD42  | SP4           | LSPS4     | HW30L |      |
| A32S-PDSNR/L-15-3 | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1504□□ | LV4     | VHX0821  | SD42  | SP4           | LSPS4     | HW30L |      |

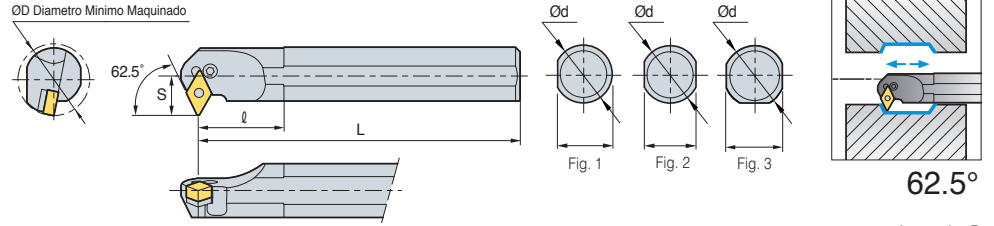
➔ Insertos Aplicables B36~B42



## PDSNR/L



DN□□



• Inserto tipo R (mm)

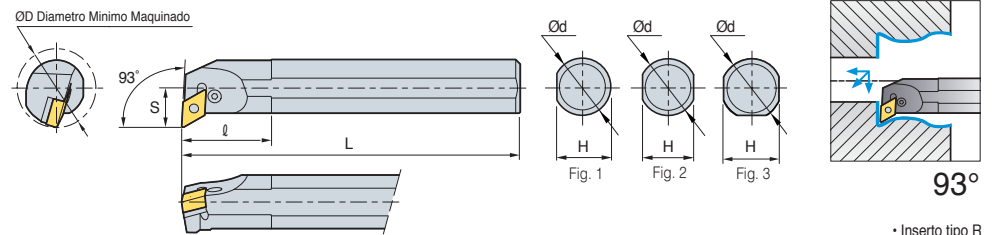
| Designación        | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Pin Punch | Llave | Fig. |
|--------------------|----|----|----|-----|----|----|------------|---------|----------|-------|---------------|-----------|-------|------|
| S32S-PDSNR/L-15N   | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1506□□ | LV4BN   | VHX0821  | SD42N | SP4N          | LSPS4     | HW30L | 3    |
| S40T-PDSNR/L-15N   | 50 | 40 | 38 | 300 | 27 | 60 |            |         |          |       |               |           |       |      |
| S32S-PDSNR/L-15-3N | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1504□□ | LV4BN   | VHX0821  | SD42N | SP4N          | LSPS4     | HW30L |      |
| S40T-PDSNR/L-15-3N | 50 | 40 | 38 | 300 | 27 | 60 |            |         |          |       |               |           |       |      |
| A32S-PDSNR/L-15N   | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1506□□ | LV4BN   | VHX0821  | SD42N | SP4N          | LSPS4     | HW30L |      |
| A40T-PDSNR/L-15N   | 50 | 40 | 38 | 300 | 27 | 60 |            |         |          |       |               |           |       |      |
| A32S-PDSNR/L-15-3N | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1504□□ | LV4BN   | VHX0821  | SD42N | SP4N          | LSPS4     | HW30L |      |
| A40T-PDSNR/L-15-3N | 50 | 40 | 38 | 300 | 27 | 60 |            |         |          |       |               |           |       |      |

↻ Insertos Aplicables B36~B42

## PDUNR/L



DN□□



• Inserto tipo R (mm)

| Designación        | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Palanca | Tornillo  | Placa | Candado laina | Pin Punch | Llave | Fig. |
|--------------------|----|----|----|-----|----|----|------------|---------|-----------|-------|---------------|-----------|-------|------|
| S32S-PDUNR/L-11    | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1104□□ | LV3     | VHX0617   | SD317 | SP3           | LSPS3     | HW25L | 3    |
| S32S-PDUNR/L-15    | 40 | 32 | 30 | 250 | 22 | 50 |            |         |           |       |               |           |       |      |
| S40T-PDUNR/L-15    | 50 | 40 | 38 | 300 | 27 | 60 | DN□□1506□□ | LV4B    | VHX0821   | SD42  | SP4           | LSPS4     | HW30L | 3    |
| S50U-PDUNR/L-15    | 63 | 50 | 47 | 350 | 35 | 70 |            |         |           |       |               |           |       |      |
| S32S-PDUNR/L-15-3  | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1504□□ | LV4     | VHX0821   | SD42  | SP4           | LSPS4     | HW30L | 3    |
| S40T-PDUNR/L-15-3  | 50 | 40 | 38 | 300 | 27 | 60 |            |         |           |       |               |           |       |      |
| A32S-PDUNR/L-15    | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1506□□ | LV4B    | VHX0821   | SD42  | SP4           | LSPS4     | HW30L | 3    |
| A32S-PDUNR/L-15-3  | 40 | 32 | 30 | 250 | 22 | 50 |            |         |           |       |               |           |       |      |
| S20S-PDUNR/L-11N   | 25 | 20 | 18 | 250 | 13 | 32 | DN□□1104□□ | LV3DN   | VHX0512BN | -     | -             | -         | HW20L | 2    |
| S25R-PDUNR/L-11N   | 32 | 25 | 23 | 200 | 17 | 40 |            |         |           |       |               |           |       |      |
| S32S-PDUNR/L-11N   | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1506□□ | LV3AN   | VHX0617N  | SD32N | SP3           | LSPS3     | HW30L | 3    |
| S32S-PDUNR/L-15N   | 40 | 32 | 30 | 250 | 22 | 50 |            |         |           |       |               |           |       |      |
| S32U-PDUNR/L-15N   | 40 | 32 | 30 | 350 | 22 | 50 | DN□□1506□□ | LV4BN   | VHX0821N  | SD42N | SP4N          | LSPS4     | HW30L | 3    |
| S40T-PDUNR/L-15N   | 50 | 40 | 38 | 300 | 27 | 60 |            |         |           |       |               |           |       |      |
| S50U-PDUNR/L-15N   | 63 | 50 | 47 | 350 | 35 | 70 | DN□□1504□□ | LV4BN   | VHX0821N  | SD43N | SP4N          | LSPS4     | HW30L | 3    |
| S32S-PDUNR/L-15-3N | 40 | 32 | 30 | 250 | 22 | 50 |            |         |           |       |               |           |       |      |
| S40T-PDUNR/L-15-3N | 50 | 40 | 38 | 300 | 27 | 60 | DN□□1104□□ | LV3DN   | VHX0512BN | -     | -             | -         | HW20L | 1    |
| A20S-PDUNR/L-11N   | 25 | 20 | 19 | 250 | 13 | 32 |            |         |           |       |               |           |       |      |
| A25R-PDUNR/L-11N   | 32 | 25 | 24 | 200 | 17 | 40 | DN□□1104□□ | LV3AN   | VHX0617N  | SD32N | SP3           | LSPS3     | HW30L | 3    |
| A32S-PDUNR/L-11N   | 40 | 32 | 30 | 250 | 22 | 50 |            |         |           |       |               |           |       |      |
| A32S-PDUNR/L-15N   | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1506□□ | LV4BN   | VHX0821N  | SD42N | SP4N          | LSPS4     | HW30L | 3    |
| A40T-PDUNR/L-15N   | 50 | 40 | 38 | 300 | 27 | 60 |            |         |           |       |               |           |       |      |
| A50U-PDUNR/L-15N   | 63 | 50 | 47 | 350 | 35 | 70 | DN□□1504□□ | LV4BN   | VHX0821N  | SD43N | SP4N          | LSPS4     | HW30L | 3    |
| A32S-PDUNR/L-15-3N | 40 | 32 | 30 | 250 | 22 | 50 |            |         |           |       |               |           |       |      |
| A40T-PDUNR/L-15-3N | 50 | 40 | 38 | 300 | 27 | 60 |            |         |           |       |               |           |       |      |

↻ Insertos Aplicables B36~B42

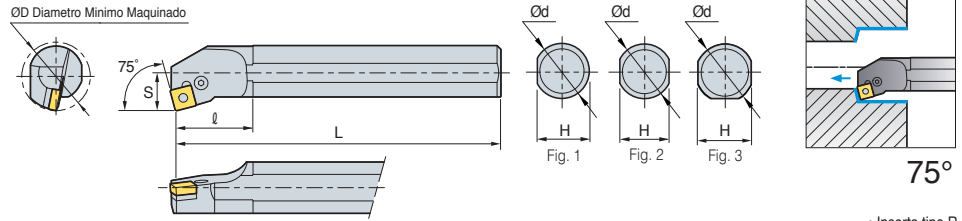




# PSKNR/L



SN□□

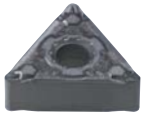


• Inserto tipo R (mm)

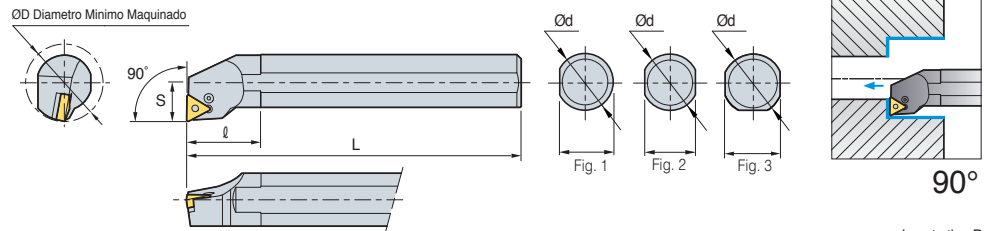
| Designación      | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Palanca  | Tornillo | Placa | Candado Iaina | Pin Punch | Llave | Fig. |
|------------------|----|----|----|-----|----|----|------------|----------|----------|-------|---------------|-----------|-------|------|
| S25R-PSKNR/L-12  | 32 | 25 | 23 | 200 | 17 | 40 | SN□□1204□□ | LV4A     | VHX0613A | -     | -             | -         | HW30L | 3    |
| S32S-PSKNR/L-12  | 40 | 32 | 30 | 250 | 22 | 50 |            | LV4      | VHX0821  | SS42B | SP4           | LSPS4     | HW30L |      |
| S40T-PSKNR/L-12  | 50 | 40 | 38 | 300 | 27 | 60 |            | LV4A     | VHX0613A | -     | SP4           | -         | HW25L |      |
| A25R-PSKNR/L-12  | 32 | 25 | 24 | 200 | 17 | 40 | SN□□1204□□ | LV4      | VHX0821  | SS42B | SP4           | LSPS4     | HW30L | 3    |
| A32S-PSKNR/L-12  | 40 | 32 | 30 | 250 | 22 | 50 |            | LV4AN    | VHX0613N | -     | -             | -         | HW25L | 3    |
| S25R-PSKNR/L-12N | 32 | 25 | 23 | 200 | 17 | 40 |            | LV4N     | VHX0821N | SS42N | SP4N          | LSPS4     | HW30L |      |
| S32S-PSKNR/L-12N | 40 | 32 | 30 | 250 | 22 | 50 | LV4AN      | VHX0613N | -        | -     | -             | HW25L     | 1     |      |
| S40T-PSKNR/L-12N | 50 | 40 | 38 | 300 | 27 | 60 | SN□□1204□□ | LV4N     | VHX0821N | SS42N | SP4N          | LSPS4     | HW30L | 3    |
| A25R-PSKNR/L-12N | 32 | 25 | 24 | 200 | 17 | 40 |            | LV4AN    | VHX0613N | -     | -             | -         | HW25L | 1    |
| A32S-PSKNR/L-12N | 40 | 32 | 30 | 250 | 22 | 50 |            | LV4N     | VHX0821N | SS42N | SP4N          | LSPS4     | HW30L | 3    |
| A40T-PSKNR/L-12N | 50 | 40 | 38 | 300 | 27 | 60 |            |          |          |       |               |           |       |      |

➔ Insertos Aplicables B44~B52

# PTFNR/L



TN□□



• Inserto tipo R (mm)

| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Palanca    | Tornillo | Placa   | Candado Iaina | Pin Punch | Llave | Fig.  |
|-----------------|----|----|----|-----|----|----|------------|------------|----------|---------|---------------|-----------|-------|-------|
| S16R-PTFNR/L-11 | 20 | 16 | 23 | 200 | 11 | 25 | TN□□1103□□ | LV2        | VHX0509B | -       | -             | -         | HW25L | 1     |
| S20S-PTFNR/L-11 | 25 | 20 | 30 | 250 | 13 | 32 |            | LV3B       | VHX0512B | -       | -             | -         | HW20L | 3     |
| S25R-PTFNR/L-11 | 32 | 25 | 38 | 200 | 17 | 40 |            | TN□□1604□□ | LV3      | VHX0617 | ST317B        | SP3       | LSPS3 | HW25L |
| S25R-PTFNR/L-16 | 32 | 25 | 23 | 200 | 17 | 40 | LV3        |            | VHX0617  | ST317B  | SP3           | LSPS3     | HW25L | 3     |
| S32S-PTFNR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 | LV3        |            | VHX0617  | ST317B  | SP3           | LSPS3     | HW25L | 3     |
| S40T-PTFNR/L-16 | 50 | 40 | 38 | 300 | 27 | 60 |            |            |          |         |               |           |       |       |
| A25R-PTFNR/L-16 | 32 | 25 | 24 | 200 | 17 | 40 |            |            |          |         |               |           |       |       |
| A32S-PTFNR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 |            |            |          |         |               |           |       |       |

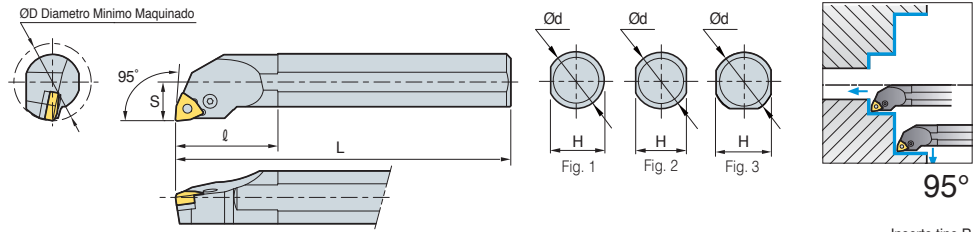
➔ Insertos Aplicables B53~B59



## PWLNR/L



WN□□



• Inserto tipo R (mm)

| Designación      | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Palanca | Tornillo | Placa  | Candado laina | Pin Punch | Llave | Fig. |
|------------------|----|----|----|-----|----|----|------------|---------|----------|--------|---------------|-----------|-------|------|
| S16R-PWLNR/L-06  | 20 | 16 | 14 | 200 | 11 | 25 | WNMG060408 | LV3B    | VHX0512B | -      | -             | -         | HW20L | 2    |
| S20S-PWLNR/L-06  | 25 | 20 | 18 | 250 | 13 | 32 | WN□□0604□□ | LV3B    | VHX0512B | -      | -             | -         | HW20L | 2    |
| S25R-PWLNR/L-06  | 32 | 25 | 23 | 200 | 17 | 40 |            | LV3     | VHX0617  | SW317  | SP3           | LSPS3     | HW25L | 3    |
| S32S-PWLNR/L-06  | 40 | 32 | 30 | 250 | 22 | 50 |            | LV4A    | VHX0613A | -      | -             | -         | HW25L | 3    |
| S25R-PWLNR/L-08  | 32 | 25 | 23 | 200 | 17 | 40 | WN□□0804□□ | LV4     | VHX0821  | SW42   | SP4           | LSPS3     | HW30L |      |
| S32S-PWLNR/L-08  | 40 | 32 | 30 | 250 | 22 | 50 |            | LV3N    | VHX0617N | SW317N | SP3           | LSPS3     | HW25L | 3    |
| S25R-PWLNR/L-08N | 32 | 25 | 23 | 200 | 17 | 40 | WN□□0804□□ | LV4AN   | VHX0613N | -      | -             | -         | HW25L |      |
| S32S-PWLNR/L-08N | 40 | 32 | 30 | 250 | 22 | 50 |            | LV4N    | VHX0820N | SW42N  | SP4N          | LSPS4     | HW30L |      |

➔ Insertos Aplicables B62~B65

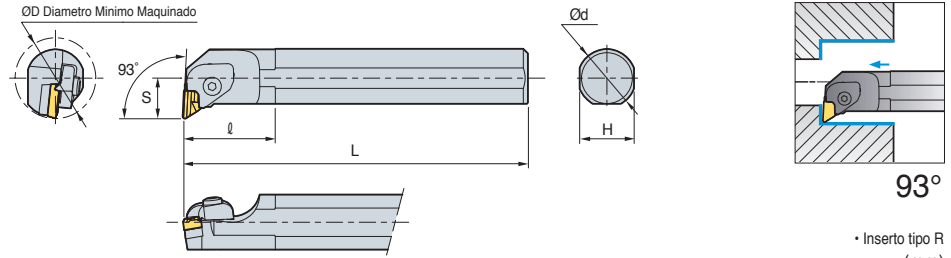


- Portas y partes mejoradas para una máxima durabilidad y Eficiencia
- “N” Soporte Nuevo (Portaherramientas & partes)

# CKUNR/L



KN□□

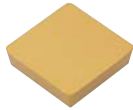


| Designación   | ØD | Ød | H  | L   | S  | ℓ  | Inserto     | Brida | Tornillo Brida | Resorte | Placa | Perno+Resorte | Tornillo Placa | Llave |
|---------------|----|----|----|-----|----|----|-------------|-------|----------------|---------|-------|---------------|----------------|-------|
| S32S-CKUNR-16 | 40 | 32 | 30 | 250 | 22 | 70 | KN□□1604□□L |       |                |         |       |               |                |       |
| S40T-CKUNR-16 | 50 | 40 | 37 | 300 | 27 | 60 |             |       |                |         |       |               |                |       |
| S50U-CKUNR-16 | 63 | 50 | 43 | 350 | 35 | 55 |             |       |                |         |       |               |                |       |
| S32S-CKUNL-16 | 40 | 32 | 30 | 250 | 22 | 70 | KN□□1604□□R |       |                |         |       |               |                |       |
| S40T-CKUNL-16 | 50 | 40 | 37 | 300 | 27 | 60 |             |       |                |         |       |               |                |       |
| S50U-CKUNL-16 | 63 | 50 | 43 | 350 | 35 | 55 |             |       |                |         |       |               |                |       |

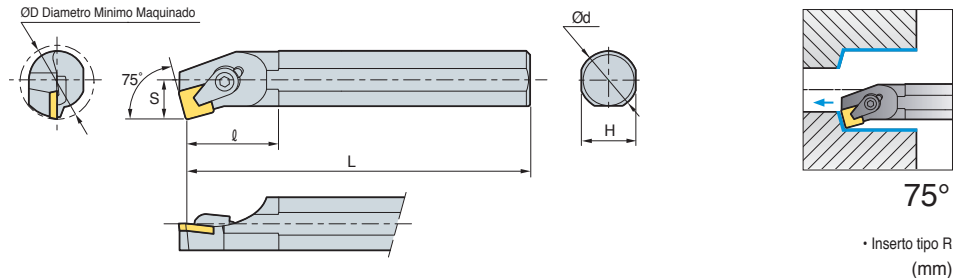
➔ Insertos Aplicables **B43**

• Use inserto de mano izquierda para porta de mano derecha

# CSKPR/L



SP□□



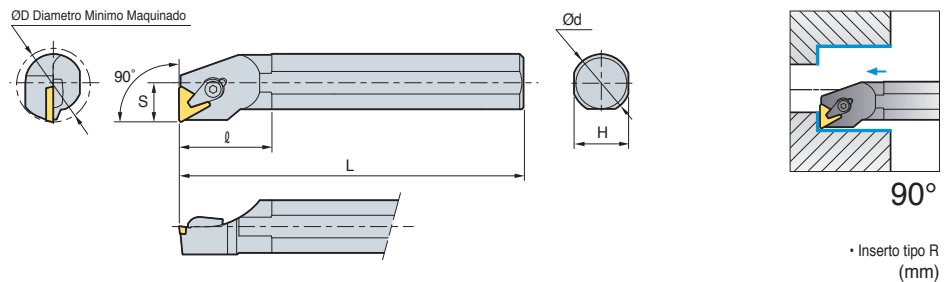
| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Brida | Tornillo Brida | Candado C | Llave |
|-----------------|----|----|----|-----|----|----|------------|-------|----------------|-----------|-------|
| S16R-CSKPR/L-09 | 20 | 16 | 15 | 200 | 11 | 30 | SP□□0903□□ |       |                |           |       |
| S20S-CSKPR/L-09 | 25 | 20 | 18 | 250 | 13 | 36 |            |       |                |           |       |
| S20S-CSKPR/L-12 | 25 | 20 | 18 | 250 | 13 | 28 | SP□□1203□□ |       |                |           |       |
| S25R-CSKPR/L-12 | 32 | 25 | 23 | 300 | 17 | 40 |            |       |                |           |       |

➔ Insertos Aplicables **B76~B77**

# CTFPR/L



TP□□



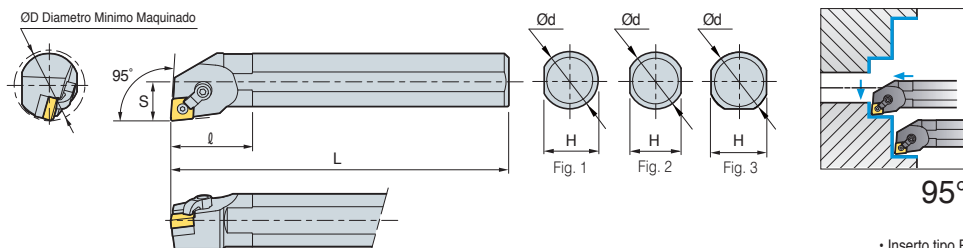
| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Brida | Tornillo Brida | Candado C | Placa | Candado Iaina | Llave |
|-----------------|----|----|----|-----|----|----|------------|-------|----------------|-----------|-------|---------------|-------|
| S12M-CTFPR/L-11 | 16 | 12 | 11 | 150 | 9  | 26 | TP□□1103□□ |       |                |           |       |               |       |
| S16R-CTFPR/L-11 | 20 | 16 | 15 | 200 | 11 | 40 |            |       |                |           |       |               |       |
| S20S-CTFPR/L-11 | 25 | 20 | 18 | 250 | 13 | 40 |            |       |                |           |       |               |       |
| S16R-CTFPR/L-16 | 20 | 16 | 15 | 200 | 11 | 40 | TP□□1603□□ |       |                |           |       |               |       |
| S20S-CTFPR/L-16 | 25 | 20 | 18 | 250 | 13 | 40 |            |       |                |           |       |               |       |
| S25R-CTFPR/L-16 | 32 | 25 | 23 | 200 | 17 | 40 |            |       |                |           |       |               |       |
| S32S-CTFPR/L-16 | 40 | 32 | 30 | 250 | 22 | 45 | TP□□2204□□ |       |                |           |       |               |       |
| S40T-CTFPR/L-16 | 50 | 40 | 37 | 300 | 27 | 60 |            |       |                |           |       |               |       |
| S40T-CTFPR/L-22 | 50 | 40 | 37 | 300 | 27 | 60 |            |       |                |           |       |               |       |

➔ Insertos Aplicables **B81~B83**

## MCLNR/L



CN□□



• Inserto tipo R (mm)

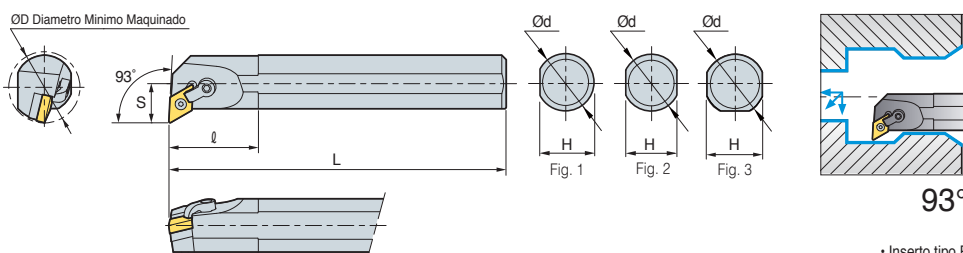
| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Candado Iaina | Llave              | Fig. |
|-----------------|----|----|----|-----|----|----|------------|-------|----------------|-------|---------------|--------------------|------|
| S20S-MCLNR/L-09 | 25 | 20 | 18 | 200 | 13 | 32 | CN□□0903□□ | CDH7N | DHA10/32-19    | -     | SP3D3         | HW19.8L<br>HW23.8L | 2    |
| S25R-MCLNR/L-09 | 32 | 25 | 23 | 250 | 17 | 40 |            |       |                |       |               |                    | 3    |
| S25R-MCLNR/L-12 | 32 | 25 | 23 | 200 | 17 | 40 | CN□□1204□□ | CDH6N | DHA1/4-21      | SC43D | SP4DS         | HW31.8L<br>HW23.8L | 3    |
| S32S-MCLNR/L-12 | 40 | 32 | 30 | 250 | 22 | 50 |            |       |                |       |               |                    | 3    |
| S40T-MCLNR/L-12 | 50 | 40 | 38 | 300 | 27 | 60 | CN□□1204□□ | CDH6N | DHA1/4-21      | -     | SP4DS         | HW31.8L            | 1    |
| A25R-MCLNR/L-12 | 32 | 25 | 24 | 200 | 17 | 40 |            |       |                |       |               |                    | 3    |
| A32S-MCLNR/L-12 | 40 | 32 | 31 | 250 | 22 | 50 |            |       | SC43D          | SP4D  | HW23.8L       |                    |      |

↻ Insertos Aplicables B28~B35

## MDUNR/L



DN□□



• Inserto tipo R (mm)

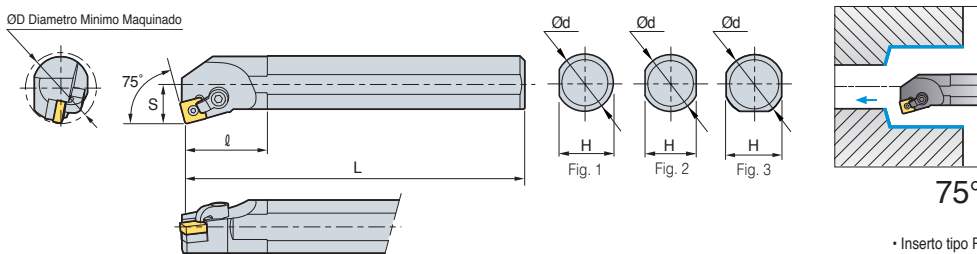
| Designación       | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Candado Iaina | Llave              | Fig. |
|-------------------|----|----|----|-----|----|----|------------|-------|----------------|-------|---------------|--------------------|------|
| S32S-MDUNR/L-15-3 | 40 | 32 | 30 | 250 | 22 | 50 | DN□□1504□□ | CDH6N | DHA1/4-21      | SD43D | SP4D          | HW31.8L<br>HW23.8L | 3    |
| S40T-MDUNR/L-15-3 | 50 | 40 | 38 | 300 | 27 | 60 |            |       |                |       |               |                    | 3    |
| A32S-MDUNR/L-15-3 | 40 | 32 | 30 | 250 | 22 | 50 |            |       |                |       |               |                    | 3    |

↻ Insertos Aplicables B36~B42

## MSKNR/L



SN□□



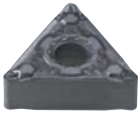
• Inserto tipo R (mm)

| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado Iaina | Llave              | Fig. |
|-----------------|----|----|----|-----|----|----|------------|--------|----------------|-------|---------------|--------------------|------|
| S25R-MSKNR/L-12 | 32 | 25 | 23 | 200 | 17 | 40 | SN□□1204□□ | CDH8N1 | DHA5/16-28     | -     | SP4DS         | HW39.7L<br>HW23.8L | 3    |
| S32S-MSKNR/L-12 | 40 | 32 | 30 | 250 | 22 | 50 |            |        |                |       |               |                    | 3    |
| S40T-MSKNR/L-12 | 50 | 40 | 38 | 300 | 27 | 60 | SN□□1204□□ | CDH8N1 | DHA5/16-28     | -     | SP4DS         | HW39.7L            | 1    |
| A25R-MSKNR/L-12 | 32 | 25 | 23 | 200 | 17 | 40 |            |        |                |       |               |                    | 3    |
| A32S-MSKNR/L-12 | 40 | 32 | 30 | 250 | 22 | 50 |            |        | SS43D          | SP4D  | HW23.8L       |                    |      |
| A40T-MSKNR/L-12 | 50 | 40 | 38 | 300 | 27 | 60 |            |        |                |       |               |                    |      |

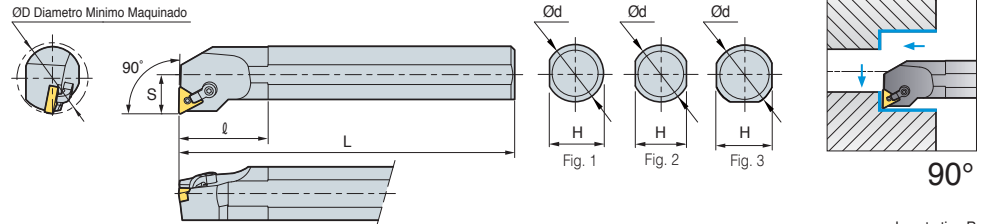
↻ Insertos Aplicables B44~B52



# MTFNR/L



TN□□



• Inserto tipo R (mm)

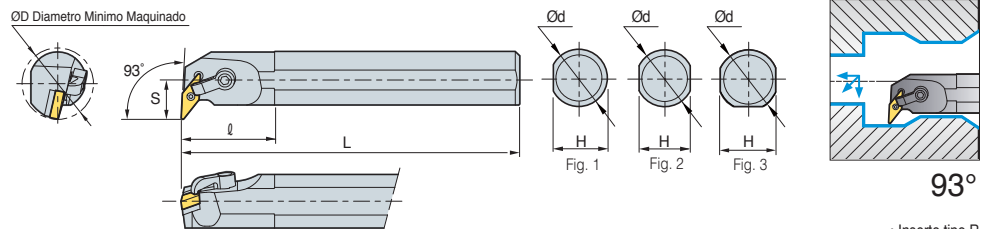
| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado laina | Llave   | Fig. |
|-----------------|----|----|----|-----|----|----|------------|--------|----------------|-------|---------------|---------|------|
| S25R-MTFNR/L-16 | 32 | 25 | 23 | 200 | 17 | 40 | TN□□1604□□ | CDH7N1 | DHA10-32-19    | -     | SP3D3         | HW23.8L | 3    |
| S32S-MTFNR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 |            | CDH7N1 | DHA10-32-19    | ST32D | SP3D          | HW19.8L |      |
| S40T-MTFNR/L-16 | 50 | 40 | 38 | 300 | 27 | 60 | TN□□1604□□ | CDH7N1 | DHA10-32-19    | -     | SP3D3         | HW23.8L | 1    |
| A25R-MTFNR/L-16 | 32 | 25 | 24 | 200 | 17 | 40 |            | CDH7N1 | DHA10-32-19    | ST32D | SP3D          | HW19.8L |      |
| A32S-MTFNR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 |            | CDH7N1 | DHA10-32-19    | ST32D | SP3D          | HW19.8L | 3    |

↻ Insertos Aplicables B53~B59

# MVUNR/L



VN□□

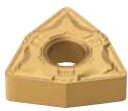


• Inserto tipo R (mm)

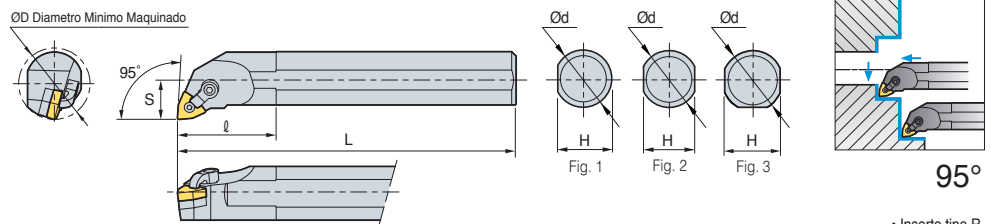
| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Brida  | Tornillo Brida | Placa | Candado laina | Llave   | Fig. |
|-----------------|----|----|----|-----|----|----|------------|--------|----------------|-------|---------------|---------|------|
| S32S-MVUNR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 | VN□□1604□□ | CDH8N2 | DHA5/16-28     | SV32D | SP3D          | HW39.7L | 3    |
| S40T-MVUNR/L-16 | 50 | 40 | 38 | 300 | 27 | 60 |            | CDH8N2 | DHA5/16-28     | SV32D | SP3D          | HW19.8L |      |
| A32S-MVUNR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 | VN□□1604□□ | CDH8N2 | DHA5/16-28     | SV32D | SP3D          | HW39.7L | 3    |
| A40T-MVUNR/L-16 | 50 | 40 | 38 | 300 | 27 | 60 |            | CDH8N2 | DHA5/16-28     | SV32D | SP3D          | HW19.8L |      |

↻ Insertos Aplicables B60~B61

# MWLNRL



WN□□



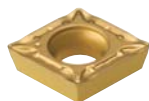
• Inserto tipo R (mm)

| Designación    | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Brida | Tornillo Brida | Placa | Candado laina | Llave   | Fig. |
|----------------|----|----|----|-----|----|----|------------|-------|----------------|-------|---------------|---------|------|
| S25R-MWLNRL-06 | 32 | 25 | 23 | 200 | 17 | 40 | WN□□0604□□ | CDH7N | DHA10/32-19    | -     | SP3D3         | HW23.8L | 3    |
| S32S-MWLNRL-06 | 40 | 32 | 30 | 250 | 22 | 50 |            |       |                | SW32D | SP3D          | HW19.8L |      |
| S40T-MWLNRL-06 | 50 | 40 | 38 | 300 | 27 | 60 |            |       |                |       |               |         |      |
| S25R-MWLNRL-08 | 32 | 25 | 23 | 200 | 17 | 40 | WN□□0804□□ | CDH6N | DHA1/4-21      | -     | SP4DS         | HW31.8L | 3    |
| S32S-MWLNRL-08 | 40 | 32 | 30 | 250 | 22 | 50 |            |       |                | SW43D | SP4D          | HW23.8L |      |
| S40T-MWLNRL-08 | 50 | 40 | 38 | 300 | 27 | 60 |            |       |                |       |               |         |      |
| A25R-MWLNRL-06 | 32 | 25 | 24 | 200 | 17 | 40 | WN□□0604□□ | CDH7N | DHA10/32-19    | -     | SP3D3         | HW31.8L | 1    |
| A32S-MWLNRL-06 | 40 | 32 | 31 | 250 | 22 | 50 |            |       |                | SW32D | SP3D          | HW19.8L |      |
| A25R-MWLNRL-08 | 32 | 25 | 24 | 200 | 17 | 40 | WN□□0804□□ | CDH6N | DHA1/4-21      | -     | SP4DS         | HW31.8L | 1    |
| A32S-MWLNRL-08 | 40 | 32 | 31 | 250 | 22 | 50 |            |       |                | SW43D | SP4D          | HW23.8L |      |

↻ Insertos Aplicables B62~B65

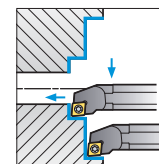
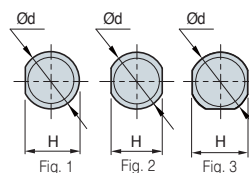
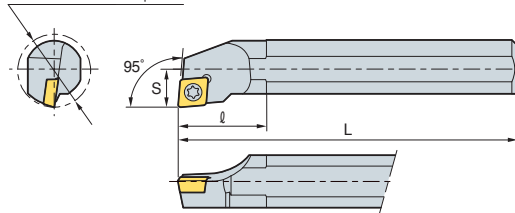


## SCLCR/L



CC□□

ØD Diámetro Mínimo Maquinado



95°

• Inserto tipo R  
(mm)

### ➤ Barras de aceros

| Designación     | ØD | Ød | H    | L   | S  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave          | Fig. |
|-----------------|----|----|------|-----|----|----|------------|-----------|-------|----------------|----------------|------|
| S08K-SCLCR/L-06 | 11 | 8  | 7.2  | 125 | 6  | 12 | CC□□0602□□ | FTKA02555 | -     | -              | TW07           | 2    |
| S10K-SCLCR/L-06 | 13 | 10 | 9    | 125 | 7  | 16 |            | FTKA02565 | -     | -              | TW07P          |      |
| S10M-SCLCR/L-06 | 13 | 10 | 9    | 150 | 7  | 16 |            |           |       |                |                |      |
| S12M-SCLCR/L-06 | 16 | 12 | 11   | 150 | 9  | 20 |            |           |       |                |                |      |
| S16R-SCLCR/L-06 | 20 | 16 | 14   | 200 | 11 | 25 |            |           |       |                |                |      |
| S12M-SCLCR/L-09 | 16 | 12 | 11   | 150 | 9  | 20 | CC□□09T3□□ | FTGA03508 | -     | -              | TW15P          | 2    |
| S16R-SCLCR/L-09 | 20 | 16 | 14   | 200 | 11 | 25 |            |           |       |                |                |      |
| S20S-SCLCR/L-09 | 25 | 20 | 18   | 250 | 13 | 32 |            | FTGA03510 | -     | -              | TW15P          |      |
| S25R-SCLCR/L-09 | 32 | 25 | 23   | 200 | 17 | 40 | CC□□1204□□ | FTGA0411F | -     | -              | TW15P          | 3    |
| S25R-SCLCR/L-12 | 32 | 25 | 23   | 200 | 17 | 40 |            | FTGA0411F | SC42S | SHXN0610F      | HW40L<br>TW15P |      |
| S32S-SCLCR/L-12 | 40 | 32 | 30   | 250 | 22 | 50 |            |           |       |                |                |      |
| S40T-SCLCR/L-12 | 50 | 40 | 38   | 300 | 27 | 60 |            |           |       |                |                |      |
| A08F-SCLCR/L-06 | 11 | 8  | 7.6  | 80  | 6  | 12 | CC□□0602□□ | FTKA02555 | -     | -              | TW07P          | 1    |
| A10H-SCLCR/L-06 | 13 | 10 | 9.5  | 100 | 7  | 16 |            | FTKA02565 | -     | -              | TW07P          |      |
| A12K-SCLCR/L-06 | 16 | 12 | 11.5 | 125 | 9  | 20 |            |           |       |                |                |      |
| A12K-SCLCR/L-09 | 16 | 12 | 11.5 | 125 | 9  | 20 | CC□□09T3□□ | FTGA03508 | -     | -              | TW15P          | 1    |
| A16M-SCLCR/L-09 | 20 | 16 | 15   | 150 | 11 | 25 |            |           |       |                |                |      |
| A20Q-SCLCR/L-09 | 25 | 20 | 19   | 180 | 13 | 32 |            | FTGA03510 | -     | -              | TW15P          |      |
| A25R-SCLCR/L-09 | 32 | 25 | 24   | 200 | 17 | 40 |            |           |       |                |                |      |
| A25R-SCLCR/L-12 | 32 | 25 | 24   | 200 | 17 | 40 | CC□□1204□□ | FTGA0411F | -     | -              | TW15P          | 1    |
| A32S-SCLCR/L-12 | 40 | 32 | 31   | 250 | 22 | 50 |            | FTGA0411F | SC42S | SHXN0610F      | HW40L,TW15P    |      |

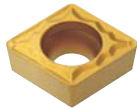
### ➤ Barras de carburo

| Designación     | ØD | Ød | H   | L   | S   | Inserto    | Tornillo   | Llave     | Fig.  |           |       |           |       |
|-----------------|----|----|-----|-----|-----|------------|------------|-----------|-------|-----------|-------|-----------|-------|
| C04G-SCLCR/L-03 | 5  | 4  | 3.8 | 90  | 2.5 | CC□T0301□□ | FTNA01633  | TW06P     | 1     |           |       |           |       |
| C05H-SCLCR/L-03 | 6  | 5  | 4.4 | 100 | 3   |            |            |           |       |           |       |           |       |
| C06H-SCLCR/L-04 | 7  | 6  | 5.4 | 100 | 3.5 |            |            |           |       |           |       |           |       |
| C07K-SCLCR/L-04 | 8  | 7  | 6.4 | 125 | 4   | CC□T0401□□ | FTNA0238   | TW06P     | 2     |           |       |           |       |
| C08K-SCLCR/L-06 | 10 | 8  | 7   | 125 | 5   | CC□T0602□□ | FTKA02555  | TW07P     |       |           |       |           |       |
| C10K-SCLCR/L-06 | 12 | 10 | 9   | 125 | 6   |            | FTKA02565  | TW07P     |       |           |       |           |       |
| C10M-SCLCR/L-06 | 12 | 10 | 9   | 150 | 6   |            |            |           |       |           |       |           |       |
| C12M-SCLCR/L-06 | 14 | 12 | 11  | 150 | 7   |            |            |           |       |           |       |           |       |
| C12Q-SCLCR/L-06 | 14 | 12 | 11  | 180 | 7   |            |            |           |       |           |       |           |       |
| C12M-SCLCR/L-09 | 15 | 12 | 11  | 150 | 8   |            | CC□T09T3□□ | FTGA03508 | TW15P |           |       |           |       |
| C12Q-SCLCR/L-09 | 15 | 12 | 11  | 180 | 8   |            |            |           |       |           |       |           |       |
| C16R-SCLCR/L-09 | 20 | 16 | 15  | 200 | 10  |            |            |           |       |           |       |           |       |
| C16S-SCLCR/L-09 | 20 | 16 | 15  | 250 | 10  |            | CC□T1204□□ | FTGA0411F | TW15P |           |       |           |       |
| C20R-SCLCR/L-09 | 25 | 20 | 18  | 200 | 13  |            |            |           |       |           |       |           |       |
| C20S-SCLCR/L-09 | 25 | 20 | 18  | 250 | 13  |            |            |           |       |           |       |           |       |
| C25T-SCLCR/L-12 | 32 | 25 | 23  | 300 | 17  |            |            |           |       |           |       |           |       |
| E06H-SCLCR/L-04 | 7  | 6  | 5.4 | 100 | 3.5 | CC□T0401□□ |            |           |       | FTNA0238  | TW06P | 1         |       |
| E07K-SCLCR/L-04 | 8  | 7  | 6.4 | 125 | 4   |            |            |           |       |           |       |           |       |
| E08K-SCLCR/L-06 | 10 | 8  | 7   | 125 | 5   | CC□T0602□□ |            |           |       | FTKA02555 | TW07P |           |       |
| E10K-SCLCR/L-06 | 12 | 10 | 9   | 125 | 6   |            |            |           |       |           |       |           |       |
| E10M-SCLCR/L-06 | 12 | 10 | 9   | 150 | 6   |            |            |           |       |           |       | FTKA02565 | TW07P |
| E12M-SCLCR/L-06 | 14 | 12 | 11  | 150 | 7   |            |            |           |       |           |       |           |       |
| E12Q-SCLCR/L-06 | 14 | 12 | 11  | 180 | 7   |            |            |           |       |           |       |           |       |
| E12M-SCLCR/L-09 | 15 | 12 | 11  | 150 | 8   |            | CC□T09T3□□ | FTGA03508 | TW15P |           |       |           |       |
| E12Q-SCLCR/L-09 | 15 | 12 | 11  | 180 | 8   |            |            |           |       |           |       |           |       |
| E16R-SCLCR/L-09 | 20 | 16 | 15  | 200 | 11  |            |            |           |       |           |       |           |       |
| E16S-SCLCR/L-09 | 20 | 16 | 15  | 250 | 10  |            |            |           |       |           |       |           |       |
| E20R-SCLCR/L-09 | 25 | 20 | 18  | 200 | 13  |            |            |           |       |           |       |           |       |
| E20S-SCLCR/L-09 | 25 | 20 | 19  | 250 | 13  |            |            |           |       |           |       |           |       |
| E25T-SCLCR/L-12 | 32 | 25 | 23  | 300 | 17  | CC□T1204□□ |            |           |       | FTGA0411F | TW15P | 2         |       |
|                 |    |    |     |     |     |            |            |           |       |           |       |           |       |

➤ Insertos Aplicables B66-B68

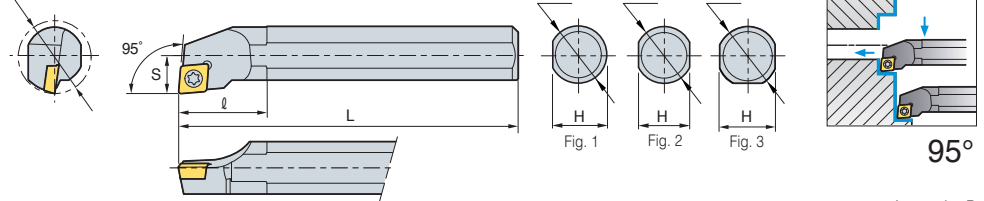


# SCLPR/L



CP□□

ØD Diámetro Mínimo Maquinado



## ➔ Barras de aceros

• Inserto tipo R (mm)

| Designación     | ØD | Ød | H    | L   | S  | ℓ  | Inserto    | Tornillo | Llave | Fig. |
|-----------------|----|----|------|-----|----|----|------------|----------|-------|------|
| S10M-SCLPR/L-08 | 13 | 10 | 9    | 150 | 7  | 16 | CP□□0802□□ | FTNA0305 | TW09P | 2    |
| S12M-SCLPR/L-08 | 16 | 12 | 11   | 150 | 9  | 20 |            | FTNA0307 | TW09P |      |
| S16N-SCLPR/L-09 | 20 | 16 | 14   | 160 | 11 | 25 | CP□□0903□□ | FTNA0408 | TW15P | 2    |
| S16R-SCLPR/L-09 | 20 | 16 | 14   | 200 | 11 | 25 |            |          |       |      |
| S20N-SCLPR/L-09 | 25 | 20 | 18   | 160 | 13 | 32 |            |          |       |      |
| S20S-SCLPR/L-09 | 25 | 20 | 18   | 250 | 13 | 32 |            |          |       | 3    |
| A10H-SCLPR/L-08 | 12 | 10 | 9.65 | 100 | 6  | -  | CP□□0802□□ | FTNA0305 | TW09P | 1    |
| A12K-SCLPR/L-08 | 16 | 12 | 11.5 | 125 | 9  | 20 |            | FTNA0307 | TW09P |      |
| A16M-SCLPR/L-09 | 20 | 16 | 15.5 | 150 | 10 | 25 | CP□□0903□□ | FTNA0408 | TW15P | 1    |
| A20Q-SCLPR/L-09 | 25 | 20 | 19   | 180 | 13 | 32 |            |          |       | 3    |

## ➔ Barras de carburo

(mm)

| Designación     | ØD | Ød | H  | L   | S   | Inserto    | Tornillo | Llave | Fig. |
|-----------------|----|----|----|-----|-----|------------|----------|-------|------|
| C10K-SCLPR/L-08 | 12 | 10 | 9  | 125 | 6   | CP□T0802□□ | FTNA0305 | TW09P | 2    |
| C10M-SCLPR/L-08 | 12 | 10 | 9  | 150 | 6   |            | FTNA0306 | TW09P |      |
| C12M-SCLPR/L-08 | 15 | 12 | 11 | 150 | 7.5 |            |          |       |      |
| C12Q-SCLPR/L-08 | 15 | 12 | 11 | 180 | 7.5 |            |          |       |      |
| C12M-SCLPR/L-09 | 15 | 12 | 11 | 150 | 8   | CP□T0903□□ | FTNA0408 | TW15P | 2    |
| C12Q-SCLPR/L-09 | 15 | 12 | 11 | 180 | 8   |            |          |       |      |
| C16R-SCLPR/L-09 | 20 | 16 | 15 | 200 | 10  |            |          |       |      |
| C16S-SCLPR/L-09 | 20 | 16 | 15 | 250 | 10  |            |          |       |      |
| C20R-SCLPR/L-09 | 25 | 20 | 18 | 200 | 13  | CP□T0802□□ | FTNA0305 | TW09P | 2    |
| C20S-SCLPR/L-09 | 25 | 20 | 18 | 250 | 13  |            |          |       |      |
| E10K-SCLPR/L-08 | 12 | 10 | 9  | 125 | 6   |            |          |       |      |
| E10M-SCLPR/L-08 | 12 | 10 | 9  | 150 | 6   |            |          |       |      |
| E12M-SCLPR/L-08 | 15 | 12 | 11 | 150 | 7.5 | CP□T0802□□ | FTNA0407 | TW09P | 2    |
| E12Q-SCLPR/L-08 | 15 | 12 | 11 | 180 | 7.5 |            |          |       |      |
| E12M-SCLPR/L-09 | 15 | 12 | 11 | 150 | 8   | CP□T0903□□ | FTNA0408 | TW15P | 2    |
| E12Q-SCLPR/L-09 | 15 | 12 | 11 | 180 | 8   |            |          |       |      |
| E16R-SCLPR/L-09 | 20 | 16 | 15 | 200 | 10  |            |          |       |      |
| E16S-SCLPR/L-09 | 20 | 16 | 15 | 250 | 10  |            |          |       |      |
| E20R-SCLPR/L-09 | 25 | 20 | 18 | 200 | 13  |            |          |       |      |
| E20S-SCLPR/L-09 | 25 | 20 | 18 | 250 | 13  |            |          |       |      |

➔ Insertos Aplicables B70

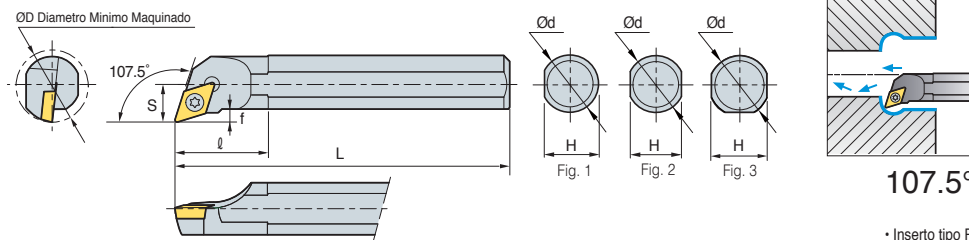


# B Sistema con Tornillo

## SDQCR/L



DC□□



### ➤ Barras de aceros

| Designación     | ØD | Ød | H    | L   | S  | ℓ  | Inserto    | Tornillo  | Llave | Fig. |
|-----------------|----|----|------|-----|----|----|------------|-----------|-------|------|
| S10M-SDQCR/L-07 | 13 | 10 | 9    | 150 | 7  | 16 | DC□□0702□□ | FTKA02555 | TW07P | 2    |
| S12M-SDQCR/L-07 | 16 | 12 | 11   | 150 | 9  | 20 |            | FTKA02565 | TW07P |      |
| S16R-SDQCR/L-07 | 20 | 16 | 14   | 200 | 11 | 25 |            |           |       |      |
| S16R-SDQCR/L-11 | 20 | 16 | 14   | 200 | 11 | 25 | DC□□11T3□□ | FTGA03508 | TW15P | 2    |
| S20S-SDQCR/L-11 | 25 | 20 | 18   | 250 | 13 | 32 |            | FTGA03510 | TW15P | 3    |
| S25R-SDQCR/L-11 | 32 | 25 | 23   | 200 | 17 | 40 |            |           |       |      |
| A10H-SDQCR/L-07 | 13 | 10 | 9.5  | 100 | 7  | 16 | DC□□0702□□ | FTKA02555 | TW07P | 1    |
| A12K-SDQCR/L-07 | 16 | 12 | 11.5 | 125 | 9  | 20 |            | FTKA02565 | TW07P | 1    |
| A16M-SDQCR/L-11 | 20 | 16 | 15   | 150 | 11 | 25 | DC□□11T3□□ | FTGA03508 | TW15P | 1    |
| A20Q-SDQCR/L-11 | 25 | 20 | 19   | 180 | 13 | 32 |            | FTGA03510 | TW15P | 1    |
| A25R-SDQCR/L-11 | 32 | 25 | 24   | 200 | 17 | 40 |            |           |       |      |

### ➤ Barras de carburo

| Designación     | ØD | Ød | H  | L   | S  | Inserto    | Tornillo  | Llave | Fig. |
|-----------------|----|----|----|-----|----|------------|-----------|-------|------|
| C08K-SDQCR/L-07 | 10 | 8  | 7  | 125 | 6  | DC□T0702□□ | FTKA02555 | TW07P | 2    |
| C10K-SDQCR/L-07 | 13 | 10 | 9  | 125 | 7  |            | FTKA02565 | TW07P |      |
| C12M-SDQCR/L-07 | 16 | 12 | 11 | 150 | 9  |            |           |       |      |
| C16R-SDQCR/L-07 | 20 | 16 | 15 | 200 | 11 |            |           |       |      |
| C16R-SDQCR/L-11 | 20 | 16 | 15 | 200 | 11 | DC□T11T3□□ | FTGA03508 | TW15P |      |
| C20R-SDQCR/L-11 | 25 | 20 | 18 | 200 | 13 |            |           |       |      |
| C20S-SDQCR/L-11 | 25 | 20 | 18 | 250 | 13 |            |           |       |      |
| E08K-SDQCR/L-07 | 10 | 8  | 7  | 125 | 6  | DC□T0702□□ | FTKA02555 | TW07P | 2    |
| E10K-SDQCR/L-07 | 13 | 10 | 9  | 125 | 7  |            | FTKA02565 | TW07P |      |
| E12M-SDQCR/L-07 | 16 | 12 | 11 | 150 | 9  |            |           |       |      |
| E16R-SDQCR/L-07 | 20 | 16 | 15 | 200 | 11 |            |           |       |      |
| E16R-SDQCR/L-11 | 20 | 16 | 15 | 200 | 11 | DC□T11T3□□ | FTGA03508 | TW15P |      |
| E20R-SDQCR/L-11 | 25 | 20 | 18 | 200 | 13 |            |           |       |      |
| E20S-SDQCR/L-11 | 25 | 20 | 19 | 250 | 13 |            |           |       |      |

➤ Insertos Aplicables B71~B73, B92

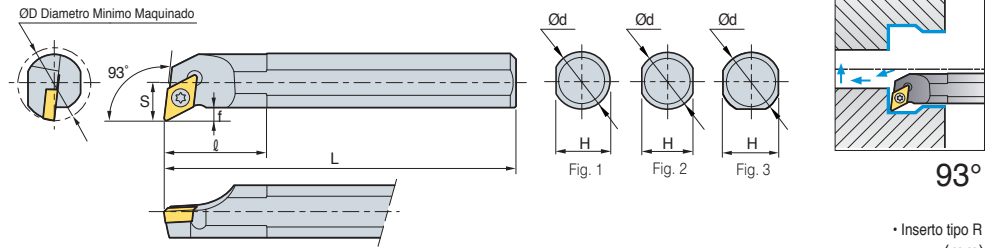




# SDUCR/L



DC□□



## ➤ Barras de aceros

• Inserto tipo R (mm)

| Designación     | ØD | Ød | H    | L   | S  | ℓ  | Inserto    | Tornillo  | Llave | Fig. |
|-----------------|----|----|------|-----|----|----|------------|-----------|-------|------|
| S10M-SDUCR/L-07 | 13 | 10 | 9    | 150 | 7  | 16 | DC□□0702□□ | FTKA02555 | TW07P | 2    |
| S12M-SDUCR/L-07 | 16 | 12 | 11   | 150 | 9  | 20 |            | FTKA02565 | TW07P | 2    |
| S16R-SDUCR/L-07 | 20 | 16 | 14   | 200 | 11 | 25 |            |           |       |      |
| S16R-SDUCR/L-11 | 20 | 16 | 14   | 200 | 11 | 25 | DC□□11T3□□ | FTGA03508 | TW15P | 2    |
| S20S-SDUCR/L-11 | 25 | 20 | 18   | 250 | 13 | 32 |            | FTGA03510 | TW15P | 3    |
| S25R-SDUCR/L-11 | 32 | 25 | 23   | 200 | 17 | 40 |            |           |       |      |
| S32S-SDUCR/L-11 | 40 | 32 | 30   | 250 | 22 | 50 |            |           |       |      |
| A10H-SDUCR/L-07 | 13 | 10 | 9.5  | 100 | 7  | 16 | DC□□0702□□ | FTKA02555 | TW07P | 1    |
| A12K-SDUCR/L-07 | 16 | 12 | 11.5 | 125 | 9  | 20 |            | FTKA02565 | TW07P | 1    |
| A16M-SDUCR/L-07 | 20 | 16 | 15   | 150 | 11 | 25 |            |           |       |      |
| A20Q-SDUCR/L-11 | 25 | 20 | 19   | 180 | 13 | 32 | DC□□11T3□□ | FTGA03508 | TW15P | 1    |
| A25R-SDUCR/L-11 | 32 | 25 | 24   | 200 | 17 | 40 |            | FTGA03510 | TW15P |      |

## ➤ Barras de carburo

(mm)

| Designación     | ØD | Ød | H  | L   | S  | Inserto    | Tornillo  | Llave | Fig. |
|-----------------|----|----|----|-----|----|------------|-----------|-------|------|
| C10K-SDUCR/L-07 | 13 | 10 | 9  | 125 | 7  | DC□T0702□□ | FTKA02555 | TW07P | 2    |
| C10M-SDUCR/L-07 | 13 | 10 | 9  | 150 | 7  |            | FTKA02565 | TW07P |      |
| C12M-SDUCR/L-07 | 16 | 12 | 11 | 150 | 9  |            |           |       |      |
| C12Q-SDUCR/L-07 | 16 | 12 | 11 | 180 | 9  |            |           |       |      |
| C16R-SDUCR/L-07 | 20 | 16 | 15 | 200 | 11 |            |           |       |      |
| C16S-SDUCR/L-07 | 20 | 16 | 15 | 250 | 11 | DC□T11T3□□ | FTGA03508 | TW15P | 2    |
| C16R-SDUCR/L-11 | 20 | 16 | 15 | 200 | 11 |            | FTGA03510 | TW15P |      |
| C16S-SDUCR/L-11 | 20 | 16 | 15 | 250 | 11 |            |           |       |      |
| C20R-SDUCR/L-11 | 25 | 20 | 18 | 200 | 13 |            |           |       |      |
| C20S-SDUCR/L-11 | 25 | 20 | 18 | 250 | 13 |            |           |       |      |
| C25T-SDUCR/L-11 | 32 | 25 | 23 | 300 | 17 |            |           |       |      |
| E10K-SDUCR/L-07 | 13 | 10 | 9  | 125 | 7  | DC□T0702□□ | FTKA02555 | TW07P | 2    |
| E10M-SDUCR/L-07 | 13 | 10 | 9  | 150 | 7  |            | FTKA02565 | TW07P |      |
| E12M-SDUCR/L-07 | 16 | 12 | 11 | 150 | 9  |            |           |       |      |
| E12Q-SDUCR/L-07 | 16 | 12 | 11 | 180 | 9  |            |           |       |      |
| E16R-SDUCR/L-07 | 20 | 16 | 15 | 200 | 11 |            |           |       |      |
| E16S-SDUCR/L-07 | 20 | 16 | 15 | 250 | 11 | DC□T11T3□□ | FTGA03508 | TW15P | 2    |
| E16R-SDUCR/L-11 | 20 | 16 | 15 | 200 | 11 |            | FTGA03510 | TW15P |      |
| E16S-SDUCR/L-11 | 20 | 16 | 15 | 250 | 11 |            |           |       |      |
| E20R-SDUCR/L-11 | 25 | 20 | 18 | 200 | 13 |            |           |       |      |
| E20S-SDUCR/L-11 | 25 | 20 | 18 | 250 | 13 |            |           |       |      |
| E25T-SDUCR/L-11 | 32 | 25 | 23 | 300 | 17 |            |           |       |      |

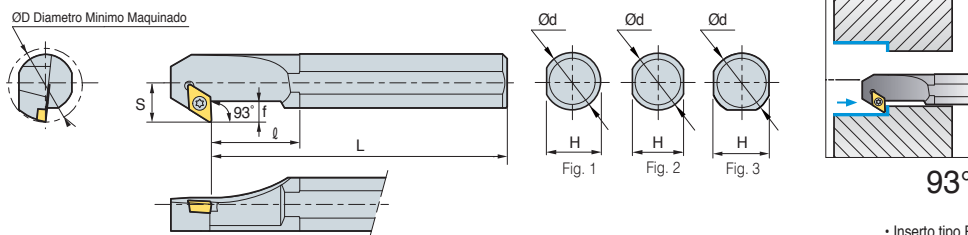
➤ Insertos Aplicables B71~B73, B92



## SDZCR/L



DC□□



• Inserto tipo R (mm)

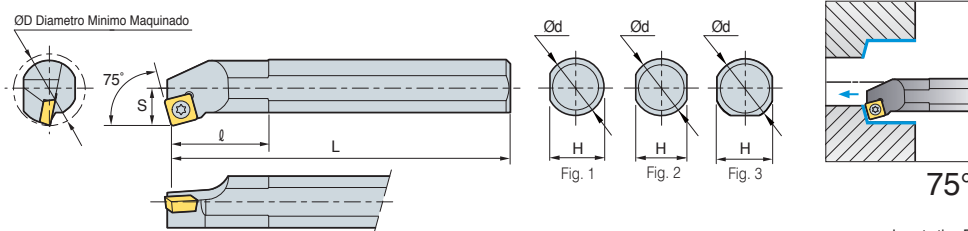
| Designación     | ØD | Ød | H  | L   | S  | ℓ  | f   | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        | Fig. |
|-----------------|----|----|----|-----|----|----|-----|------------|-----------|-------|----------------|--------------|------|
| S16R-SDZCR/L-07 | 20 | 16 | 14 | 200 | 11 | 25 | 6.5 | DC□□0702□□ | FTKA02565 | -     | -              | TW07P        | 2    |
| S20S-SDZCR/L-07 | 25 | 20 | 18 | 250 | 13 | 32 | 7.5 |            | -         | -     | -              | -            | -    |
| S25R-SDZCR/L-11 | 32 | 25 | 23 | 200 | 17 | 40 | 9   | DC□□11T3□□ | FTGA03510 | -     | -              | TW15P        | 3    |
| S32S-SDZCR/L-11 | 40 | 32 | 30 | 250 | 22 | 50 | 11  |            | FTGA03512 | SD32S | SHXN0509F      | TW15P, HW35L |      |
| S40T-SDZCR/L-11 | 50 | 40 | 38 | 300 | 27 | 60 | 11  |            | FTGA03510 | -     | -              | TW15P        | 1    |
| A25R-SDZCR/L-11 | 32 | 25 | 24 | 200 | 17 | 40 | 9   |            | FTGA03512 | SD32S | SHXN0509F      | TW15P, HW35L | 3    |
| A32S-SDZCR/L-11 | 40 | 32 | 30 | 250 | 22 | 50 | 11  |            |           |       |                |              |      |

➔ Insertos Aplicables B71~B73, B92

## SSKCR/L



SC□□



• Inserto tipo R (mm)

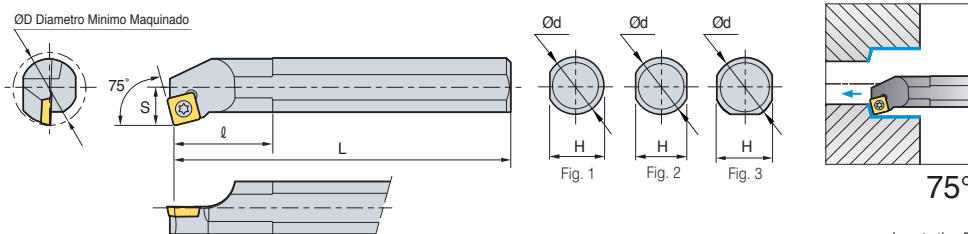
| Designación     | ØD | Ød | H    | L   | S  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        | Fig. |
|-----------------|----|----|------|-----|----|----|------------|-----------|-------|----------------|--------------|------|
| S12M-SSKCR/L-09 | 16 | 12 | 11   | 150 | 9  | 20 | SC□□09T3□□ | FTGA03507 | -     | -              | TW15P        | 2    |
| S16R-SSKCR/L-09 | 20 | 16 | 14   | 200 | 11 | 25 |            | FTGA03508 | -     | -              | TW15P        |      |
| S20S-SSKCR/L-09 | 25 | 20 | 18   | 250 | 13 | 32 | SC□□1204□□ | FTGA0411F | -     | -              | TW15P        | 3    |
| S25R-SSKCR/L-12 | 32 | 25 | 23   | 200 | 17 | 40 |            | FTGA0411F | SS42S | SHXN0610F      | TW15P, HW40L |      |
| S32S-SSKCR/L-12 | 40 | 32 | 30   | 250 | 22 | 50 |            |           |       |                |              |      |
| A12K-SSKCR/L-09 | 16 | 12 | 11.5 | 125 | 9  | 20 | SC□□09T3□□ | FTGA03507 | -     | -              | TW15P        | 1    |
| A16M-SSKCR/L-09 | 20 | 16 | 15   | 150 | 11 | 25 |            | FTGA03508 | -     | -              | TW15P        |      |
| A20Q-SSKCR/L-09 | 25 | 20 | 19   | 180 | 13 | 32 | SC□□1204□□ | FTGA0411F | -     | -              | TW15P        | 3    |
| A25R-SSKCR/L-12 | 32 | 25 | 24   | 200 | 17 | 40 |            | FTGA0411F | SS42S | SFXN0610F      | TW15P, HW40L |      |
| A32S-SSKCR/L-12 | 40 | 32 | 30   | 250 | 22 | 50 |            |           |       |                |              |      |

➔ Insertos Aplicables B74~B75, B94

## SSKPR/L



SP□□



• Inserto tipo R (mm)

| Designación     | ØD | Ød | H    | L   | S  | ℓ  | Inserto    | Tornillo | Llave | Fig. |
|-----------------|----|----|------|-----|----|----|------------|----------|-------|------|
| S12M-SSKPR/L-09 | 16 | 12 | 11   | 150 | 9  | 20 | SP□□09T3□□ | FTNA0307 | TW09P | 2    |
| S16N-SSKPR/L-09 | 20 | 16 | 14   | 160 | 11 | 25 |            |          |       |      |
| S16R-SSKPR/L-09 | 20 | 16 | 14   | 200 | 11 | 25 |            |          |       |      |
| S20N-SSKPR/L-09 | 25 | 20 | 18   | 160 | 13 | 32 |            |          |       |      |
| S20S-SSKPR/L-09 | 25 | 20 | 18   | 250 | 13 | 32 | SP□□09T3□□ | FTNA0307 | TW09P | 1    |
| A12K-SSKPR/L-09 | 16 | 12 | 11.5 | 125 | 9  | 20 |            |          |       |      |
| A16M-SSKPR/L-09 | 20 | 16 | 15   | 150 | 11 | 25 |            |          |       |      |
| A20Q-SSKPR/L-09 | 25 | 20 | 19   | 180 | 13 | 32 |            |          |       |      |

➔ Insertos Aplicables B76~B77

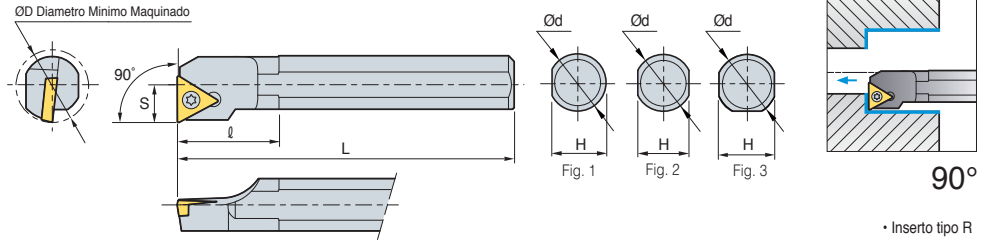
• Use inserto de mano izquierda para porta de mano derecha



# STFCR/L



TC□□



## ➤ Barras de aceros

• Inserto tipo R (mm)

| Designación     | ØD | Ød | H    | L   | S  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave        | Fig. |
|-----------------|----|----|------|-----|----|----|------------|-----------|-------|----------------|--------------|------|
| S10M-STFCR/L-09 | 13 | 10 | 9    | 150 | 7  | 16 | TC□□0902□□ | FTKA02206 | -     | -              | TW06P        | 2    |
| S12M-STFCR/L-09 | 16 | 12 | 11   | 150 | 9  | 20 |            |           |       |                |              |      |
| S12M-STFCR/L-11 | 16 | 12 | 11   | 150 | 9  | 20 | TC□□1102□□ | FTKA02565 | -     | -              | TW07P        | 2    |
| S16R-STFCR/L-11 | 20 | 16 | 14   | 200 | 11 | 25 |            |           |       |                |              |      |
| S20S-STFCR/L-11 | 25 | 20 | 18   | 250 | 13 | 32 | TC□□16T3□□ | FTGA03510 | -     | -              | TW15P        | 2    |
| S20S-STFCR/L-16 | 25 | 20 | 18   | 250 | 13 | 32 |            |           |       |                |              | 3    |
| S25R-STFCR/L-16 | 32 | 25 | 23   | 200 | 17 | 40 | TC□□16T3□□ | FTGA03512 | ST32S | SHXN0509F      | TW15P, HW35L | 3    |
| S32S-STFCR/L-16 | 40 | 32 | 30   | 250 | 22 | 50 |            |           |       |                |              |      |
| S40T-STFCR/L-16 | 50 | 40 | 38   | 300 | 27 | 60 | TC□□0902□□ | FTKA02206 | -     | -              | TW06P        | 1    |
| A10H-STFCR/L-09 | 13 | 10 | 9.5  | 100 | 7  | 16 |            |           |       |                |              |      |
| A12K-STFCR/L-09 | 16 | 12 | 11.5 | 125 | 9  | 20 | TC□□1102□□ | FTKA02565 | -     | -              | TW07P        | 1    |
| A12K-STFCR/L-11 | 16 | 12 | 11.5 | 125 | 9  | 20 |            |           |       |                |              |      |
| A16M-STFCR/L-11 | 20 | 16 | 15   | 150 | 11 | 25 | TC□□16T3□□ | FTKA03510 | -     | -              | TW15P        | 1    |
| A20Q-STFCR/L-11 | 25 | 20 | 19   | 180 | 13 | 32 |            |           |       |                |              |      |
| A25R-STFCR/L-16 | 32 | 25 | 24   | 200 | 17 | 40 | TC□□16T3□□ | FTGA03512 | ST32S | SHXN0509F      | TW15P, HW35L | 3    |
| A32S-STFCR/L-16 | 40 | 32 | 30   | 250 | 22 | 50 |            |           |       |                |              |      |

## ➤ Barras de carburo

(mm)

| Designación     | ØD | Ød | H  | L   | S  | Inserto    | Tornillo  | Llave | Fig. |
|-----------------|----|----|----|-----|----|------------|-----------|-------|------|
| C08K-STFCR/L-09 | 10 | 8  | 7  | 125 | 5  | TC□T0902□□ | FTKA02206 | TW06P | 2    |
| C10K-STFCR/L-09 | 12 | 10 | 9  | 125 | 6  |            |           |       |      |
| C10K-STFCR/L-11 | 12 | 10 | 9  | 125 | 6  | TC□T1102□□ | FTKA02565 | TW07P |      |
| C12M-STFCR/L-11 | 15 | 12 | 11 | 150 | 8  |            |           |       |      |
| C16R-STFCR/L-11 | 20 | 16 | 15 | 200 | 10 |            |           |       |      |
| C20R-STFCR/L-11 | 25 | 20 | 18 | 200 | 13 |            |           |       |      |
| C20S-STFCR/L-11 | 25 | 20 | 18 | 250 | 13 | TC□T16T3□□ | FTGA03510 | TW15P |      |
| C20R-STFCR/L-16 | 25 | 20 | 18 | 200 | 13 |            |           |       |      |
| C20S-STFCR/L-16 | 25 | 20 | 18 | 250 | 13 | TC□T0902□□ | FTKA02206 | TW06P |      |
| E08K-STFCR/L-09 | 10 | 8  | 7  | 125 | 5  |            |           |       |      |
| E10K-STFCR/L-09 | 12 | 10 | 9  | 125 | 6  | TC□T1102□□ | FTKA02565 | TW07P |      |
| E10K-STFCR/L-11 | 12 | 10 | 9  | 125 | 6  |            |           |       |      |
| E12M-STFCR/L-11 | 15 | 12 | 11 | 150 | 8  |            |           |       |      |
| E16R-STFCR/L-11 | 20 | 16 | 15 | 200 | 11 |            |           |       |      |
| E20R-STFCR/L-11 | 25 | 20 | 18 | 200 | 13 | TC□T16T3□□ | FTGA03510 | TW15P |      |
| E20S-STFCR/L-11 | 25 | 20 | 18 | 250 | 13 |            |           |       |      |
| E20R-STFCR/L-16 | 25 | 20 | 18 | 200 | 13 |            |           |       |      |
| E20S-STFCR/L-16 | 25 | 20 | 19 | 250 | 13 |            |           |       |      |

➤ Insertos Aplicables B79~B80, B95

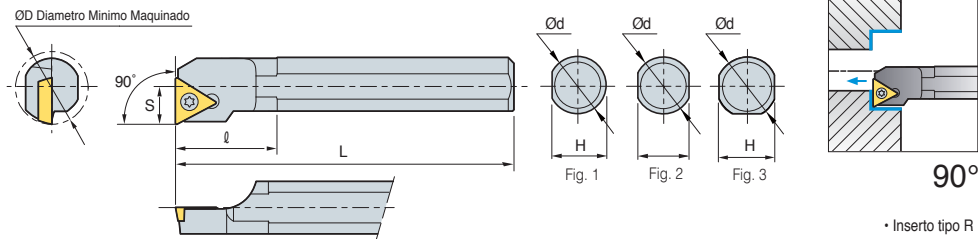


# B Sistema con Tornillo

## STFPR/L



TP□□



• Inserto tipo R (mm)

### ➤ Barras de aceros

| Designación     | ØD | Ød | H   | L   | S  | ℓ  | Inserto    | Tornillo  | Llave | Fig. |
|-----------------|----|----|-----|-----|----|----|------------|-----------|-------|------|
| S10M-STFPR/L-11 | 13 | 10 | 9   | 150 | 7  | 16 | TP□□1103□□ | FTGA03507 | TW15P | 2    |
| S12M-STFPR/L-11 | 16 | 12 | 11  | 150 | 9  | 20 |            | FTGA03508 | TW15P | 2    |
| S16N-STFPR/L-11 | 20 | 16 | 14  | 160 | 11 | 25 |            |           |       |      |
| S16R-STFPR/L-11 | 20 | 16 | 14  | 200 | 11 | 25 | TP□□1604□□ | FTGA0411F | TW15P | 2    |
| S20N-STFPR/L-16 | 25 | 20 | 18  | 160 | 13 | 32 |            |           |       |      |
| S20S-STFPR/L-16 | 25 | 20 | 18  | 250 | 13 | 32 |            |           |       |      |
| A10H-STFPR/L-11 | 13 | 10 | 9.5 | 100 | 7  | 16 | TP□□1103□□ | FTGA03507 | TW15P | 1    |
| A12K-STFPR/L-11 | 16 | 12 | 11  | 125 | 9  | 20 |            | FTGA03508 | TW15P | 1    |
| A16M-STFPR/L-11 | 20 | 16 | 15  | 150 | 11 | 25 |            |           |       |      |
| A20Q-STFPR/L-16 | 25 | 20 | 19  | 180 | 13 | 32 | TP□□1604□□ | FTGA0411F | TW15P | 1    |

### ➤ Barras de carburo

| Designación     | ØD | Ød | H  | L   | S  | Inserto    | Tornillo   | Llave    | Fig. |       |
|-----------------|----|----|----|-----|----|------------|------------|----------|------|-------|
| C08K-STFPR/L-08 | 10 | 8  | 7  | 125 | 5  | TP□T0802□□ | FTNA02205  | TW06P    | 2    |       |
| C10K-STFPR/L-11 | 12 | 10 | 9  | 125 | 6  |            | TP□T1103□□ | FTNA0305 |      | TW09P |
| C10M-STFPR/L-11 | 12 | 10 | 9  | 150 | 6  |            |            | FTNA0307 |      | TW09P |
| C12M-STFPR/L-11 | 15 | 12 | 11 | 150 | 8  |            |            |          |      |       |
| C12Q-STFPR/L-11 | 15 | 12 | 11 | 180 | 8  |            |            |          |      |       |
| C16R-STFPR/L-11 | 20 | 16 | 15 | 200 | 10 |            |            |          |      |       |
| C16S-STFPR/L-11 | 20 | 16 | 15 | 250 | 10 |            |            |          |      |       |
| C20R-STFPR/L-11 | 25 | 20 | 18 | 200 | 13 |            |            |          |      |       |
| C20S-STFPR/L-11 | 25 | 20 | 18 | 250 | 13 |            |            |          |      |       |
| C20R-STFPR/L-16 | 25 | 20 | 18 | 200 | 13 | TP□T1604□□ | FTNA0408   | TW15P    | 2    |       |
| C20S-STFPR/L-16 | 25 | 20 | 18 | 250 | 13 |            |            |          |      |       |
| C25T-STFPR/L-16 | 32 | 25 | 23 | 300 | 17 |            |            |          |      |       |
| E08K-STFPR/L-08 | 10 | 8  | 7  | 125 | 5  | TP□T0802□□ | FTNA02205  | TW06P    | 2    |       |
| E10K-STFPR/L-11 | 12 | 10 | 9  | 125 | 6  |            | TP□T1103□□ | FTNA0305 |      | TW09P |
| E10M-STFPR/L-11 | 12 | 10 | 9  | 150 | 6  |            |            | FTNA0307 |      | TW09P |
| E12M-STFPR/L-11 | 15 | 12 | 11 | 150 | 8  |            |            |          |      |       |
| E12Q-STFPR/L-11 | 15 | 12 | 11 | 180 | 8  |            |            |          |      |       |
| E16R-STFPR/L-11 | 20 | 16 | 15 | 200 | 10 |            |            |          |      |       |
| E16S-STFPR/L-11 | 20 | 16 | 15 | 250 | 10 |            |            |          |      |       |
| E20R-STFPR/L-11 | 25 | 20 | 18 | 200 | 13 |            |            |          |      |       |
| E20S-STFPR/L-11 | 25 | 20 | 18 | 250 | 13 |            |            |          |      |       |
| E20R-STFPR/L-16 | 25 | 20 | 18 | 200 | 13 | TP□T1604□□ | FTNA0408   | TW15P    | 2    |       |
| E20S-STFPR/L-16 | 25 | 20 | 18 | 250 | 13 |            |            |          |      |       |
| E25T-STFPR/L-16 | 32 | 25 | 23 | 300 | 17 |            |            |          |      |       |

➤ Insertos Aplicables B81~B83

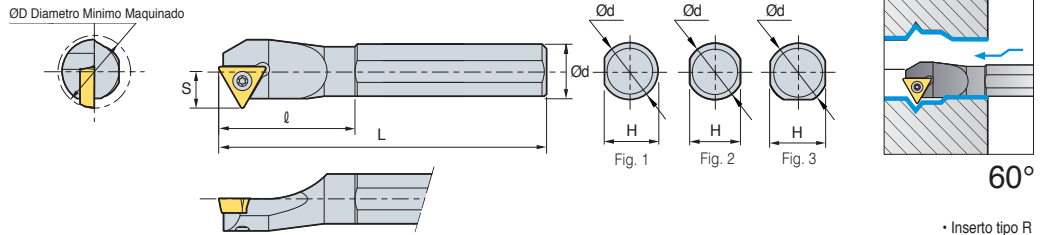
• Use inserto de mano izquierda para porta de mano derecha



# STWPR/L



TP□□



• Inserto tipo R (mm)

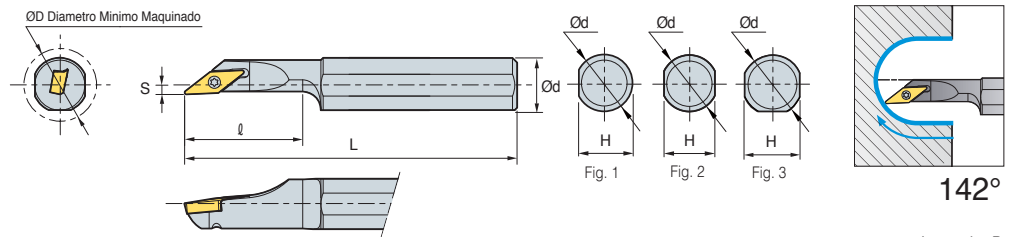
| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Tornillo | Llave | Fig. |
|-----------------|----|----|----|-----|----|----|------------|----------|-------|------|
| S10M-STWPR/L-11 | 13 | 10 | 7  | 150 | 7  | 16 | TPGH1102□□ | FTNA0305 | TW09P | 2    |
| S12M-STWPR/L-11 | 16 | 12 | 9  | 150 | 9  | 20 | TPGH1103□□ | FTNA0306 | TW09P |      |
| S16Q-STWPR/L-11 | 20 | 16 | 14 | 180 | 11 | 25 | TPMT1103□□ |          |       |      |
| S20R-STWPR/L-11 | 25 | 20 | 18 | 200 | 13 | 32 |            |          |       |      |

➔ Insertos Aplicables B81~B83

# SVJCR/L



VC□□



• Inserto tipo R (mm)

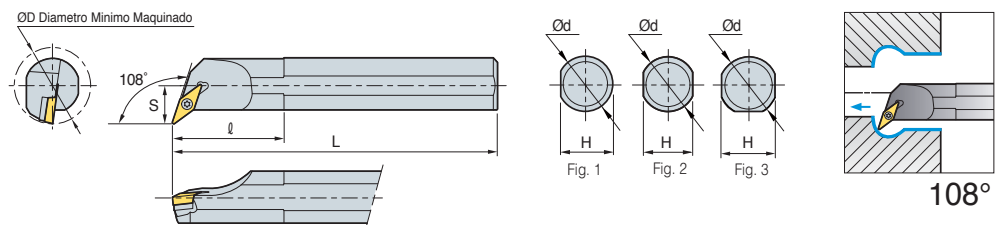
| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Tornillo | Llave | Fig. |
|-----------------|----|----|----|-----|----|----|------------|----------|-------|------|
| S12M-SVJCR/L-08 | 16 | 12 | 11 | 150 | 9  | 20 | VCMT0802□□ | FTNA0204 | TW06P | 2    |
| S16Q-SVJCR/L-08 | 20 | 16 | 14 | 180 | 11 | 25 |            |          |       |      |

➔ Insertos Aplicables B86~B87, B97

# SVQBR/L



VB□□



• Inserto tipo R (mm)

| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave          | Fig. |
|-----------------|----|----|----|-----|----|----|------------|-----------|-------|----------------|----------------|------|
| S32S-SVQBR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 | VB□□1604□□ | FTGA03512 | SV32S | SHXN0509F      | TW15P<br>HW35L | 3    |
| S40T-SVQBR/L-16 | 50 | 40 | 38 | 300 | 27 | 60 |            |           |       |                |                |      |
| A32S-SVQBR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 |            |           |       |                |                |      |

➔ Insertos Aplicables B84~B85, B96

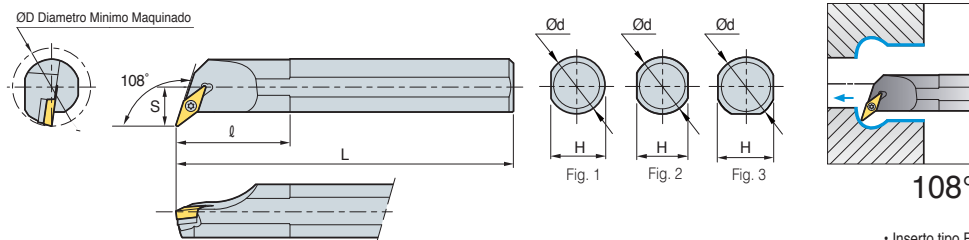


# B Sistema con Tornillo

## SVQCR/L



VC□□

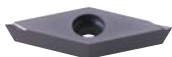


• Inserto tipo R (mm)

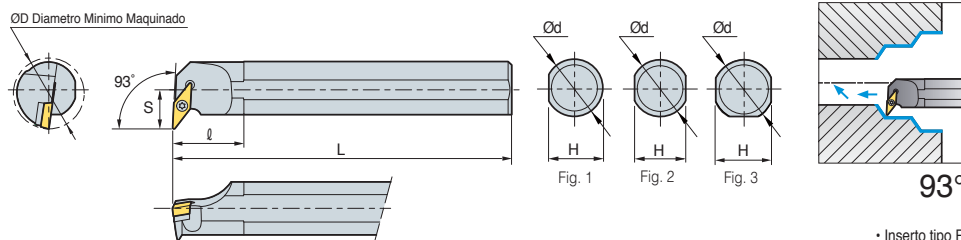
| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave | Fig. |
|-----------------|----|----|----|-----|----|----|------------|-----------|-------|----------------|-------|------|
| S16R-SVQCR/L-11 | 20 | 16 | 14 | 200 | 11 | 25 | VC□□1103□□ | FTKA02565 | -     | -              | TW07P | 2    |
| S20S-SVQCR/L-11 | 25 | 20 | 18 | 250 | 13 | 32 |            |           |       |                |       | 3    |
| S25R-SVQCR/L-11 | 32 | 25 | 23 | 200 | 17 | 40 |            |           |       |                |       |      |
| S20S-SVQCR/L-13 | 25 | 20 | 18 | 250 | 13 | 32 | VC□□1303□□ | FTKA0307  | -     | -              | TW07P | 2    |
| S25R-SVQCR/L-13 | 32 | 25 | 23 | 200 | 17 | 40 |            |           |       |                |       | 3    |
| S25R-SVQCR/L-16 | 32 | 25 | 23 | 200 | 17 | 40 | VC□□1604□□ | FTGA03510 | -     | -              | TW15P |      |
| S32S-SVQCR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 |            |           |       |                |       | 3    |
| S40T-SVQCR/L-16 | 50 | 40 | 38 | 300 | 27 | 60 |            |           |       |                |       |      |

➔ Insertos Aplicables B86~B87, B97

## SVUBR/L



VB□□



• Inserto tipo R (mm)

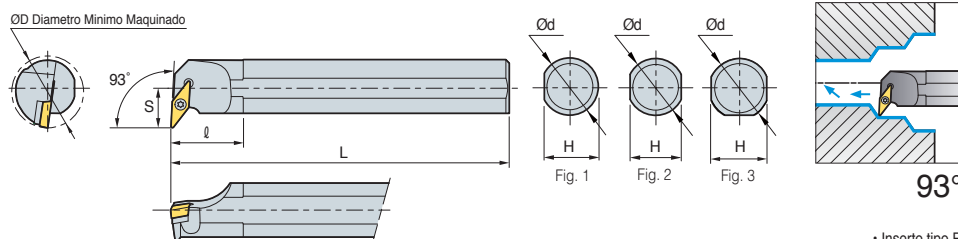
| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave          | Fig. |
|-----------------|----|----|----|-----|----|----|------------|-----------|-------|----------------|----------------|------|
| S32S-SVUBR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 | VB□□1604□□ | FTGA03512 | SV32S | SHXN0509F      | TW15P<br>HW35L | 3    |
| S40T-SVUBR/L-16 | 50 | 40 | 38 | 300 | 27 | 60 |            |           |       |                |                |      |
| A32S-SVUBR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 |            |           |       |                |                |      |

➔ Insertos Aplicables B84~B85, B96

## SVUCR/L



VC□□



• Inserto tipo R (mm)

| Designación     | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Tornillo  | Placa | Tornillo Placa | Llave | Fig. |
|-----------------|----|----|----|-----|----|----|------------|-----------|-------|----------------|-------|------|
| S16R-SVUCR/L-11 | 20 | 16 | 14 | 200 | 11 | 25 | VC□□1103□□ | FTKA02565 | -     | -              | TW07P | 2    |
| S20S-SVUCR/L-11 | 25 | 20 | 18 | 250 | 13 | 32 |            |           |       |                |       | 3    |
| S25T-SVUCR/L-11 | 32 | 25 | 23 | 300 | 17 | 40 |            |           |       |                |       |      |
| S20S-SVUCR/L-13 | 25 | 20 | 18 | 250 | 13 | 32 | VC□□1303□□ | FTKA0307  | -     | -              | TW09P | 2    |
| S25R-SVUCR/L-13 | 32 | 25 | 23 | 200 | 17 | 40 |            |           |       |                |       | 3    |
| S25R-SVUCR/L-16 | 32 | 25 | 23 | 200 | 17 | 40 | VC□□1604□□ | FTGA03510 | -     | -              | TW15P |      |
| S32S-SVUCR/L-16 | 40 | 32 | 30 | 250 | 22 | 50 |            |           |       |                |       | 3    |
| S40T-SVUCR/L-16 | 50 | 40 | 38 | 300 | 27 | 60 |            |           |       |                |       |      |

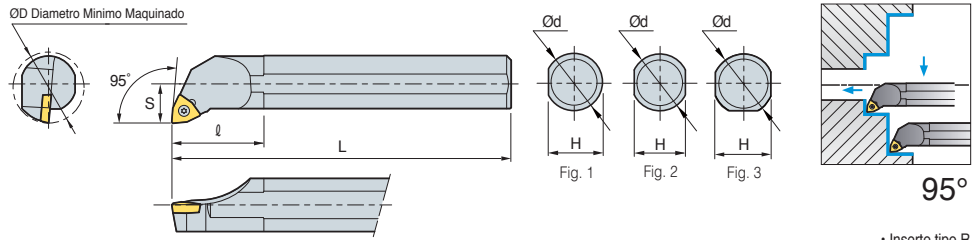
➔ Insertos Aplicables B86~B87, B97



# SWLCR/L



WC□□



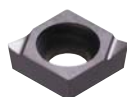
• Inserto tipo R (mm)

| Designación            | ØD | Ød | H  | L   | S  | ℓ  | Inserto    | Tornillo  | Llave | Fig. |
|------------------------|----|----|----|-----|----|----|------------|-----------|-------|------|
| <b>S25R-SWLCR/L-08</b> | 32 | 25 | 23 | 200 | 17 | 40 | WC□□0804□□ | FTGA0411F | TW15P | 3    |
| <b>S32S-SWLCR/L-08</b> | 40 | 32 | 30 | 250 | 22 | 50 |            |           |       |      |
| <b>A25R-SWLCR/L-08</b> | 32 | 25 | 24 | 200 | 17 | 40 | WC□□0804□□ | FTGA0411F | TW15P | 1    |
| <b>A32S-SWLCR/L-08</b> | 40 | 32 | 30 | 250 | 22 | 50 |            |           |       | 3    |

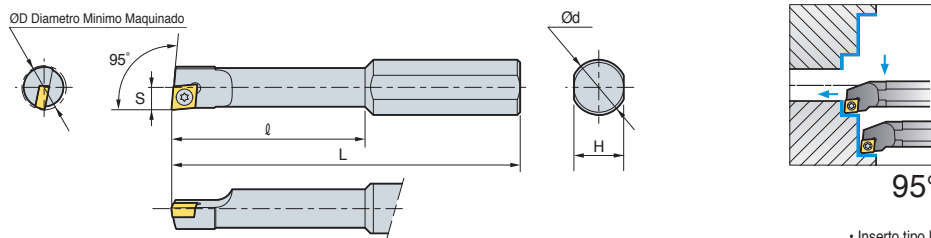


# B Micro Barra de Interior

## SCLCR/L



CCET



• Inserto tipo R (mm)

| Designación       | ØD | Ød | H | L   | S   | ℓ  | Inserto     | Tornillo  | Llave |
|-------------------|----|----|---|-----|-----|----|-------------|-----------|-------|
| S10H-SCLCR/L-0305 | 5  | 10 | 9 | 100 | 2.5 | 25 | CCET 0301□□ | FTNA01633 | TW06P |
| S10H-SCLCR/L-0306 | 6  | 10 | 9 | 100 | 3.0 | 25 |             |           |       |
| S10J-SCLCR/L-0407 | 7  | 10 | 9 | 110 | 3.5 | 30 | CCET 0401□□ | FTNA0238  | TW06P |
| S10J-SCLCR/L-0408 | 8  | 10 | 9 | 110 | 4.0 | 30 |             |           |       |

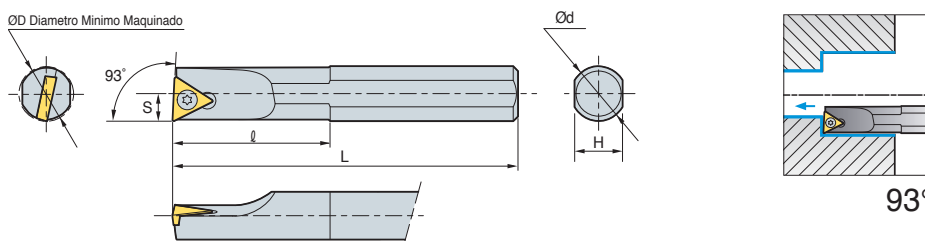
↻ Insertos Aplicables B66

• Use inserto de mano izquierda para porta de mano derecha

## STUBR/L



TB□□



• Inserto tipo R (mm)

| Designación     | ØD | Ød | H   | L   | S | ℓ  | Inserto       | Tornillo | Llave |
|-----------------|----|----|-----|-----|---|----|---------------|----------|-------|
| S08K-STUBR/L-06 | 8  | 8  | 7   | 125 | 4 | 30 | TB□□0601□□R/L | FTNA0204 | TW06P |
| A08F-STUBR/L-06 | 8  | 8  | 7.5 | 80  | 4 | 30 |               |          |       |

↻ Barras de aceros

↻ Barras de carburo

| Designación     | ØD | Ød | H | L   | S | ℓ | Inserto     | Tornillo | Llave |
|-----------------|----|----|---|-----|---|---|-------------|----------|-------|
| C08K-STUBR/L-06 | 10 | 8  | 7 | 125 | 5 |   | TB□□T0601□□ | FTNA0204 | TW06P |
| C10K-STUBR/L-06 | 12 | 10 | 9 | 125 | 6 |   |             |          |       |
| E08K-STUBR/L-06 | 10 | 8  | 7 | 125 | 5 |   | TB□□T0601□□ | FTNA0204 | TW06P |
| E10K-STUBR/L-06 | 12 | 10 | 9 | 125 | 6 |   |             |          |       |

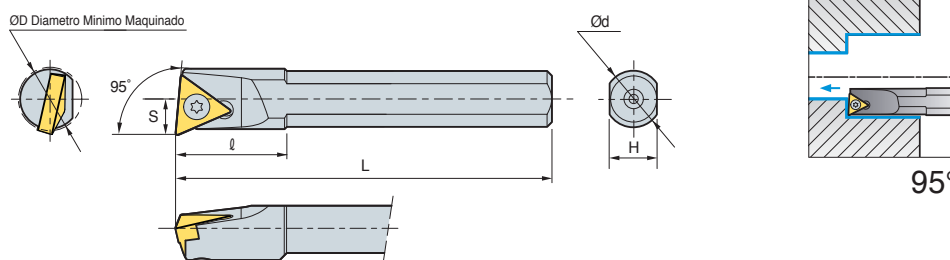
↻ Insertos Aplicables B78

• Use inserto de mano izquierda para porta de mano derecha

## STLBR/L



TB□□



• Inserto tipo R (mm)

↻ Barras de aceros

| Designación        | ØD | Ød | H | L   | S   | ℓ  | Inserto       | Tornillo | Llave |
|--------------------|----|----|---|-----|-----|----|---------------|----------|-------|
| S06H-STLBR/L-06-SP | 8  | 6  | 5 | 100 | 3.8 | 12 | TB□□0601□□R/L | FTNA0204 | TW06P |

↻ Insertos Aplicables B78

• Use inserto de mano izquierda para porta de mano derecha



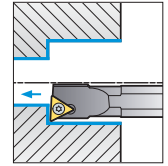
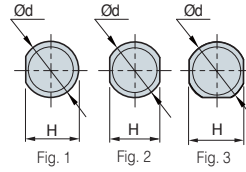
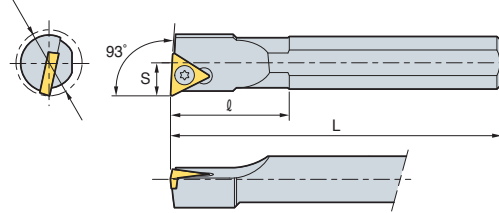


# STUPR/L



TP□□

ØD Diámetro Mínimo Maquinado



93°

## ➤ Barras de aceros

• Inserto tipo R (mm)

| Designación     | ØD | Ød | H   | L   | S | ℓ  | Inserto       | Tornillo  | Llave | Fig. |
|-----------------|----|----|-----|-----|---|----|---------------|-----------|-------|------|
| S08K-STUPR/L-08 | 10 | 8  | 7   | 125 | 4 | 18 | TP□□0802□□R/L | FTNA02205 | TW06P | 2    |
| A08F-STUPR/L-08 | 10 | 8  | 7.5 | 80  | 4 | 18 |               |           |       |      |

## ➤ Barras de carburo

(mm)

| Designación     | ØD | Ød | H  | L   | S  | ℓ           | Inserto     | Tornillo  | Llave | Fig.        |   |          |       |
|-----------------|----|----|----|-----|----|-------------|-------------|-----------|-------|-------------|---|----------|-------|
| C08K-STUPR/L-08 | 10 | 8  | 7  | 125 | 5  | TP□□T0802□□ | FTNA02205   | TW06P     | 2     |             |   |          |       |
| C10K-STUPR/L-11 | 12 | 10 | 9  | 125 | 6  |             | FTNA0305    | TW09P     |       |             |   |          |       |
| C10M-STUPR/L-11 | 12 | 10 | 9  | 150 | 6  |             | TP□□T1103□□ | FTNA0307  |       | TW09P       |   |          |       |
| C12M-STUPR/L-11 | 15 | 12 | 11 | 150 | 8  |             |             |           |       |             |   |          |       |
| C12Q-STUPR/L-11 | 15 | 12 | 11 | 180 | 8  |             |             |           |       |             |   |          |       |
| C16R-STUPR/L-11 | 20 | 16 | 15 | 200 | 10 |             |             |           |       |             |   |          |       |
| C16S-STUPR/L-11 | 20 | 16 | 15 | 250 | 10 |             |             |           |       |             |   |          |       |
| C20R-STUPR/L-11 | 25 | 20 | 18 | 200 | 13 |             |             |           |       |             |   |          |       |
| C20S-STUPR/L-11 | 25 | 20 | 18 | 250 | 13 |             | TP□□T1604□□ | FTNA0408  |       | TW15P       |   |          |       |
| C20R-STUPR/L-16 | 25 | 20 | 18 | 200 | 13 |             |             |           |       |             |   |          |       |
| C20S-STUPR/L-16 | 25 | 20 | 18 | 250 | 13 |             |             |           |       |             |   |          |       |
| C25T-STUPR/L-16 | 32 | 25 | 23 | 300 | 17 |             | TP□□T0802□□ | FTNA02205 |       | TW06P       | 2 |          |       |
| E08K-STUPR/L-08 | 10 | 8  | 7  | 125 | 5  | TP□□T1103□□ |             | FTNA0305  | TW09P |             |   |          |       |
| E10K-STUPR/L-11 | 12 | 10 | 9  | 125 | 6  |             |             |           |       |             |   |          |       |
| E10M-STUPR/L-11 | 12 | 10 | 9  | 150 | 6  |             |             |           |       |             |   |          |       |
| E12M-STUPR/L-11 | 15 | 12 | 11 | 150 | 8  |             |             |           |       |             |   |          |       |
| E12Q-STUPR/L-11 | 15 | 12 | 11 | 180 | 8  |             |             |           |       |             |   |          |       |
| E16R-STUPR/L-11 | 20 | 16 | 15 | 200 | 10 |             |             |           |       |             |   |          |       |
| E16S-STUPR/L-11 | 20 | 16 | 15 | 250 | 10 |             |             |           |       |             |   |          |       |
| E20R-STUPR/L-11 | 25 | 20 | 18 | 200 | 13 |             |             |           |       |             |   |          |       |
| E20S-STUPR/L-11 | 25 | 20 | 18 | 250 | 13 |             |             |           |       |             |   |          |       |
| E20R-STUPR/L-16 | 25 | 20 | 18 | 200 | 13 |             |             |           |       | TP□□T1604□□ |   | FTNA0408 | TW15P |
| E20S-STUPR/L-16 | 25 | 20 | 18 | 250 | 13 |             |             |           |       |             |   |          |       |
| E25T-STUPR/L-16 | 32 | 25 | 23 | 300 | 17 |             |             |           |       |             |   |          |       |

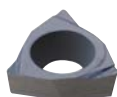
➤ Insertos Aplicables B81~B83

• Use inserto de mano izquierda para porta de mano derecha



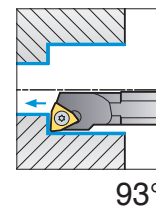
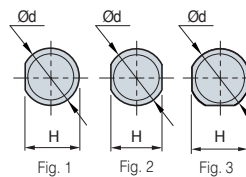
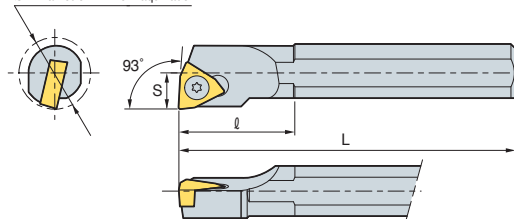
# B Micro Barra de Interior

## SWUBR/L



WB□T

ØD Diámetro Mínimo Maquinado



93°

### ➤ Barras de aceros

• Inserto tipo R (mm)

| Designación     | ØD  | Ød | H   | L   | S    | ℓ  | Inserto        | Tornillo  | Llave | Fig |
|-----------------|-----|----|-----|-----|------|----|----------------|-----------|-------|-----|
| S05H-SWUBR/L-02 | 5.5 | 5  | 4.5 | 100 | 2.75 | -  | WBGT 0201□□R/L | FTNA0203  | TW06P | 2   |
| S08K-SWUBR/L-02 | 8   | 8  | 7   | 125 | 4    | 30 | WBGT 0201□□R/L | FTNA02033 | TW06P |     |
| S08K-SWUBR/L-S3 | 10  | 8  | 7   | 125 | 5    | 18 | WBGT S302□□R/L | FTNA02205 | TW06P |     |
| A08F-SWUBR/L-02 | 8   | 8  | 7.5 | 80  | 4    | 30 | WBGT 0201□□R/L | FTNA0203  | TW06P |     |
| A08F-SWUBR/L-S3 | 10  | 8  | 7.5 | 80  | 5    | 16 | WBGT S302□□R/L | FTNA02205 | TW06P |     |

### ➤ Barras de carburo

(mm)

| Designación     | ØD | Ød | H   | L   | S   | ℓ          | Inserto    | Tornillo   | Llave     | Fig   |
|-----------------|----|----|-----|-----|-----|------------|------------|------------|-----------|-------|
| C05H-SWUBR/L-02 | 6  | 5  | 4.4 | 100 | 3   | -          | WB□T0201□□ | FTNA0203   | TW06P     | 1     |
| C06H-SWUBR/L-02 | 7  | 6  | 5.4 | 100 | 3.5 |            |            | FTNA02033  | TW06P     |       |
| C08K-SWUBR/L-02 | 9  | 8  | 7   | 125 | 4.5 |            |            | WB□TS301□□ | FTNA02205 | TW06P |
| E06H-SWUBR/L-02 | 7  | 6  | 5.4 | 100 | 3.5 | FTNA0203   | TW06P      |            | 1         |       |
| E08K-SWUBR/L-02 | 9  | 8  | 7   | 125 | 4.5 | WB□T0201□□ | FTNA02033  | TW06P      |           | 2     |
| E08K-SWUBR/L-S3 | 10 | 8  | 7   | 125 | 5   |            | WB□TS301□□ | FTNA02205  | TW06P     |       |

➤ Insertos Aplicables B89

• Use left handed insert for right handed holder



✳ Refieran a las mangas aplicables en la página de 136.

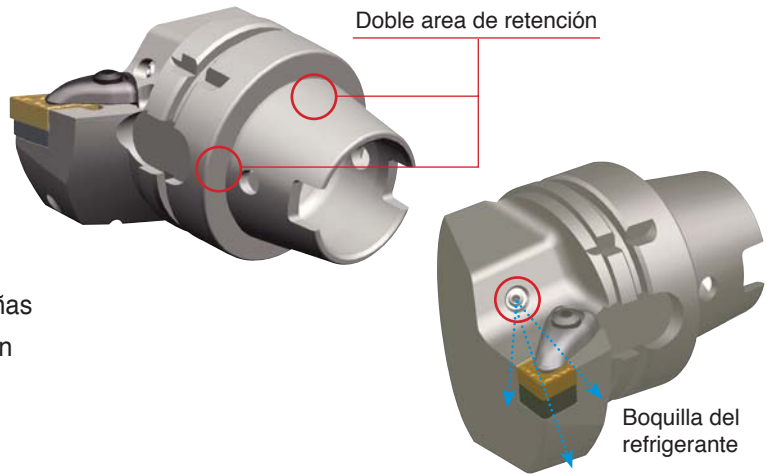


2 lados de retención - lateral y la parte cónica

# Herramienta con Sistema HSK

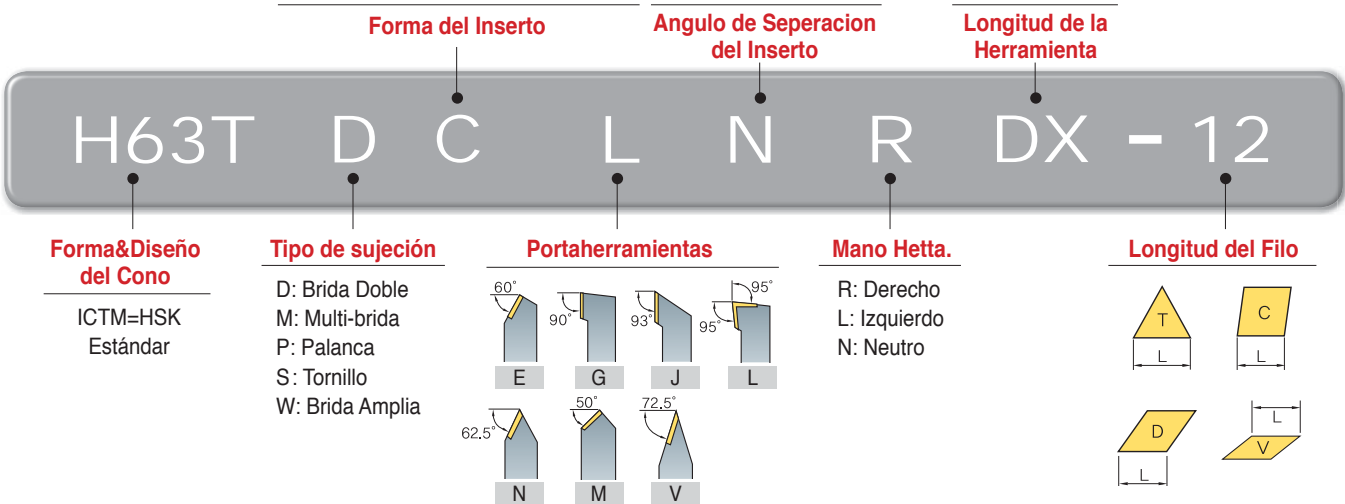
[Para Maquinado de tareas múltiples]

- 2 sides restraint - lateral y la parte cónica
- Resistencia garantizada para los movimientos estáticos y dinámicos
- Precisión garantizada en direcciones repetitivas del eje
- Recomendable para trabajos a alta velocidad
- Recomendable para trabajos con piezas pequeñas
- La boquilla del Refrigerante se puede ajustar con facilidad



## ➤ Sistema Codificación Herramientas

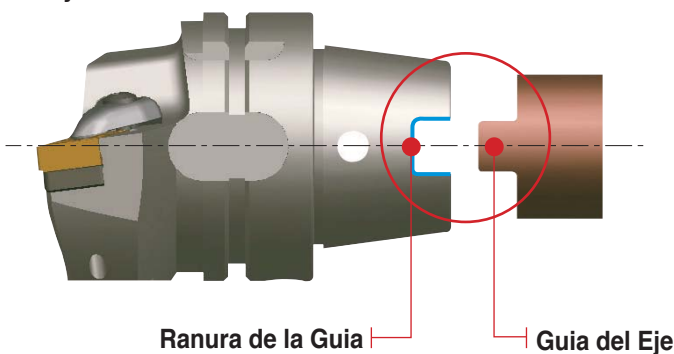
C: 80° Rombo    D: 55° Rombo    DX: 65  
 S: 90° Cuadrado    T: 60° Triangular    H: 100  
 V: 35° Rombo    W: 80° Hexagonal    L: 140  
 N = 0°    B = 5°



## ➤ ICTM (Comité de la Interfaz para Torneado)

• Interfaz para tareas múltiples en máquinas de torneado que es el sistema de herramientas basada en el estándar ICTM con la cooperación de las principales 17 empresas japonesas. Compatible con los sistemas convencionales HSK-tipo A y comúnmente con las máquinas múltiples tareas y los centros de maquinado.

## ➤ Tolerancia de la muesca de sujeción ha sido mejorada: HSK-T63



## ➤ Comparación en Tolerancias (Ejemplo) (mm)

| Observaciones         | Tolerancia Maxima | Tolerancia Minima |
|-----------------------|-------------------|-------------------|
| ICTM STANDARD HSK-T63 | 0.075             | 0.035             |
| ISO STANDARD HSK-A63  | 0.33              | 0.08              |

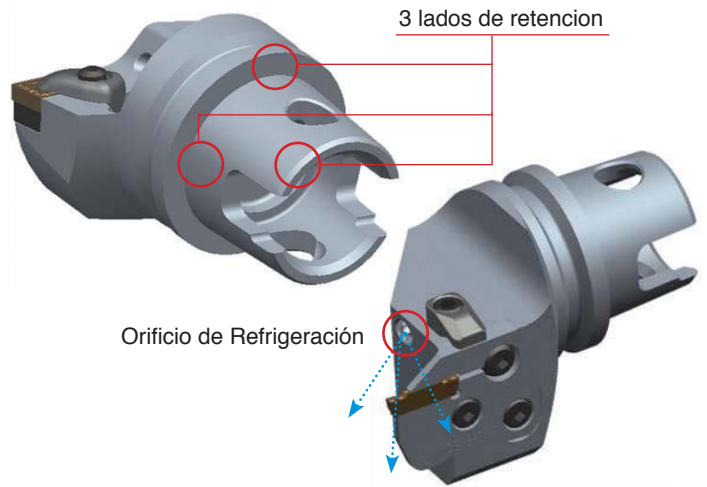
# B Información técnica para el sistema de adaptación KM

3 tipos de retención - Precisión superior

## Herramienta con Sistema KM

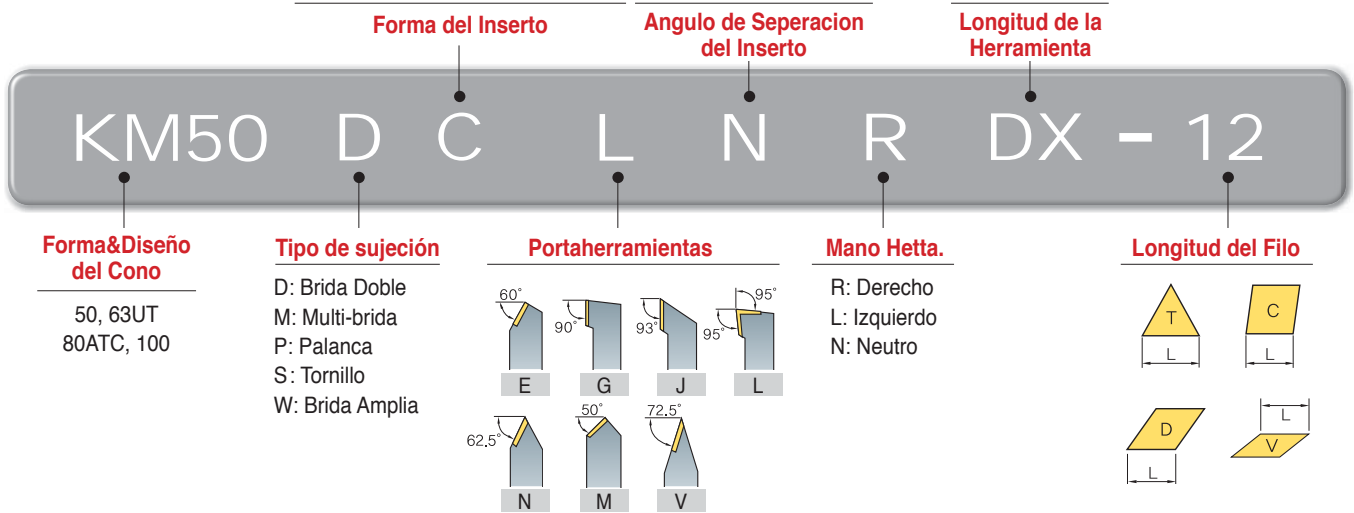
[Para Tareas Múltiples]

- Sujeción con 3 caras de contactos / Precisión superior
- Sistema flexible de Fijación / Rigidez Superior
- Varios tamaños y estilos
- Apropriados para Torneado y fresado
- Dirección del refrigerante ajustable con boquilla de refrigerante

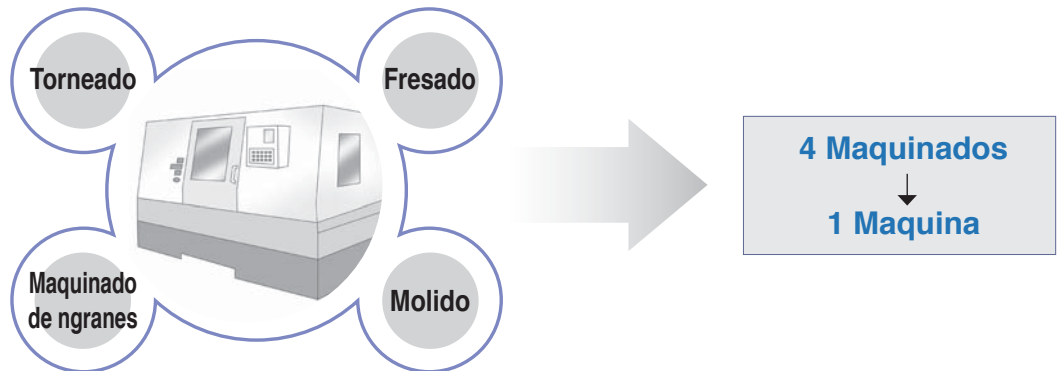


### ➤ Sistema de Codificación Herramental

C: 80° Rombo D: 55° Rombo  
 S: 90° Cuadrado T: 60° Triangular  
 V: 35° Rombo W: 80° Hexagonal  
 N = 0° B = 5°  
 DX: 65 H: 100 L: 140



### ➤ Herramientas de Tareas Múltiples



Herramientas del sistema KM son superiores para una amplia aplicación.

Proceso Externo

Proceso Interno

Proceso Ranurado

Proceso Barrenado

Proceso Tronzado

KM50, KM63UT, KM80, KM100 Estandar y Especiales son producidas



## Indice para Sistema Herramientales HSK

|                  |                   |                  |                   |                  |                   |                  |                   |                  |
|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|
| Forma del Corte  |                   |                  |                   |                  |                   |                  |                   |                  |
| Designación      | H63T-DCLNR/L-DX12 | H63T-DCMNN-H/L12 | H63T-DDJNR/L-DX15 | H63T-DDNNN-H/L15 | H63T-PCLNR/L-DX12 | H63T-PCMNN-H/L12 | H63T-PDJNR/L-DX15 | H63T-PDNNN-H/L15 |
| Angulo de Corte  | 95°               | 95°              | 93°               | 107.5°           | 95°               | 95°              | 93°               | 107.5°           |
| Pag.             | B220              | B220             | B220              | B220             | B221              | B221             | B221              | B221             |
| Tornalama        | ●                 | ●                | ●                 | ●                | ●                 | ●                | ●                 | ●                |
| Copiado          |                   |                  | ●                 | ●                |                   |                  | ●                 | ●                |
| Careado          | ●                 | ●                | ●                 | ●                | ●                 | ●                | ●                 | ●                |
| Torneado tras.   | ●                 | ●                | ●                 | ●                | ●                 | ●                | ●                 | ●                |
| Torneado interno |                   |                  |                   |                  |                   |                  |                   |                  |

|                  |                 |                  |                   |                  |                           |             |             |
|------------------|-----------------|------------------|-------------------|------------------|---------------------------|-------------|-------------|
| Forma del Corte  |                 |                  |                   |                  |                           |             |             |
| Designación      | H63T-PRGCR-DX12 | H63T-PRDCN-H/L12 | H63T-SVPBR/L-DX16 | H63T-SVVBH-H/L16 | H63T-A25K/A32L-DCLNR/L-12 | H63T-MCFR/L | H63T-MCHR/L |
| Angulo de Corte  | -               | -                | 117.5°            | 117.5°           | 95°                       | -           | -           |
| Pag.             | B222            | B222             | B222              | B222             | B224                      | B224        | B223        |
| Tornalama        | ●               | ●                | ●                 | ●                | ●                         | ●           |             |
| Copiado          | ●               | ●                | ●                 | ●                | ●                         | ●           |             |
| Careado          | ●               | ●                | ●                 | ●                | ●                         | ●           | ●           |
| Torneado tras.   | ●               | ●                | ●                 | ●                | ●                         |             |             |
| Torneado interno |                 |                  |                   |                  | ●                         |             |             |

## Indice para Sistema Herramiental KM

|                  |  |                                    |  |  |  |  |
|------------------|--|------------------------------------|--|--|--|--|
| Forma del Corte  |  |                                    |  |  |  |  |
| Designación      | KM50-DCLNR/L-C12<br>KM63UT-DCLNR/L-D12 | KM50-DCMNN-C12<br>KM63UT-DCMNN-D12 | KM50-DDJNR/L-C15(-3)<br>KM63UT-DCJNR/L-D15(-3) | KM50-DDNNN-C15(-3)<br>KM63UT-DDNNN-D15(-3) | KM50-A25K-DCLNR/L-12<br>KM50-A32K-DCLNR/L-12<br>KM63UT-A25K-DCLNR/L-12<br>KM63UT-A32L-DCLNR/L-12 | KM50-PCLNR/L-C12<br>KM63UT-PCLNR/L-D12 |
| Angulo de Corte  | 95°                                    | 95°                                | 93°  | 107.5°                                     | 95°  | 95°                                    |
| Pag.             | B226                                   | B226                               | B226   | B227                                       | B229   | B227                                   |
| Tornalama        | ●                                      | ●                                  | ●  | ●  | ●  | ●                                      |
| Copiado          |  |                                    | ●  | ●  |  |  |
| Careado          | ●                                      | ●                                  | ●  | ●  | ●  | ●                                      |
| Torneado tras.   | ●                                      | ●                                  | ●  | ●  | ●  | ●                                      |
| Torneado interno |  |                                    |  |  | ●  |  |

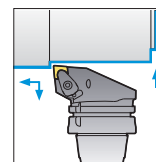
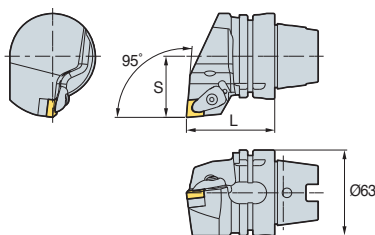
|                  |                                    |  |  |                              |  |
|------------------|------------------------------------|--|--|------------------------------|--|
| Forma del Corte  |                                    |  |  |                              |  |
| Designación      | KM50-PCMNN-C12<br>KM63UT-PCMNN-D12 | KM50-PDJNR/L-C15(-3)<br>KM63UT-PDJNR/L-D15(-3) | KM50-PDNNN-C15(-3)<br>KM63UT-PDNNN-D15(-3) | KM50-MCHR/L<br>KM63UT-MCHR/L |  |
| Angulo de Corte  | 95°                                | 93°  | 107.5°                                     | -                            |  |
| Pag.             | B227                               | B228   | B228                                       | B228                         |  |
| Tornalama        | ●                                  | ●  | ●  | ●                            |  |
| Copiado          |                                    | ●  | ●  | ●                            |  |
| Careado          | ●                                  | ●  | ●  |                              |  |
| Torneado tras.   | ●                                  | ●  | ●  | ●                            |  |
| Torneado interno |                                    |  |  |                              |  |



## DCLNR/L



CN□□



95°

• Inserto tipo R  
(mm)

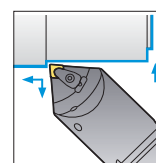
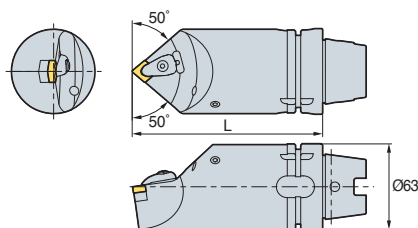
| Designación       | L  | S  | Inserto    | Brida | Tornillo | Placa | Tornillo Placa | Resorte | Buje Ref. | Enchufe | Llave | Pipa Ref. |
|-------------------|----|----|------------|-------|----------|-------|----------------|---------|-----------|---------|-------|-----------|
| H63T-DCLNR/L-DX12 | 65 | 45 | CN□□1204□□ | CVH4  | CHX0518  | SC44V | FTKA0410       | SPR0714 | CN0605    | -       | HW30P | CP63T     |

↻ Insertos Aplicables B28~B35

## DCMNN



CN□□



95°

(mm)

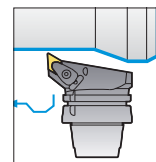
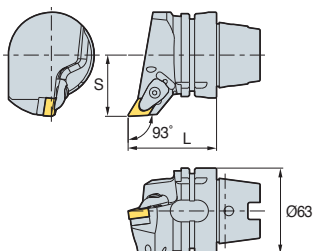
| Designación    | L   | Inserto    | Brida | Tornillo | Placa | Tornillo Placa | Resorte | Buje Ref. | Enchufe | Llave | Pipa Ref. |
|----------------|-----|------------|-------|----------|-------|----------------|---------|-----------|---------|-------|-----------|
| H63T-DCMNN-H12 | 100 | CN□□1204□□ | CVH4  | CHX0518  | SC44V | FTKA0410       | SPR0714 | CN0605    | KHA0808 | HW30P | CP63T     |
| H63T-DCMNN-L12 | 140 |            |       |          |       |                |         |           |         |       |           |

↻ Insertos Aplicables B28~B35

## DDJNR/L



DN□□



93°

• Inserto tipo R  
(mm)

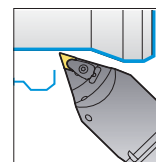
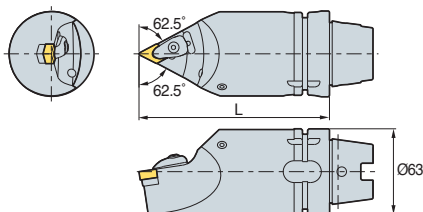
| Designación         | L  | S  | Inserto    | Brida | Tornillo | Placa | Tornillo Placa | Resorte | Buje Ref. | Enchufe | Llave | Pipa Ref. |
|---------------------|----|----|------------|-------|----------|-------|----------------|---------|-----------|---------|-------|-----------|
| H63T-DDJNR/L-DX15   | 65 | 45 | DN□□1506□□ | CVH4  | CHX0518  | SD43V | FTKA0410       | SPR0714 | CN0605    | -       | HW30P | CP63T     |
| H63T-DDJNR/L-DX15-3 | 65 | 45 | DN□□1504□□ |       |          | SD44V |                |         |           |         |       |           |

↻ Insertos Aplicables B36~B42

## DDNNN



DN□□



107.5°

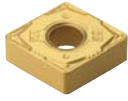
(mm)

| Designación      | L   | Inserto    | Brida | Tornillo | Placa | Tornillo Placa | Resorte | Buje Ref. | Enchufe | Llave | Pipa Ref. |
|------------------|-----|------------|-------|----------|-------|----------------|---------|-----------|---------|-------|-----------|
| H63T-DDNNN-H15   | 100 | DN□□1506□□ | CVH4  | CHX0518  | SD43V | FTKA0410       | SPR0714 | CN0605    | KHA0808 | HW30P | CP63T     |
| H63T-DDNNN-L15   | 140 |            |       |          |       |                |         |           |         |       |           |
| H63T-DDNNN-H15-3 | 100 | DN□□1504□□ | CVH4  | CHX0518  | SD44V | FTKA0410       | SPR0714 | CN0605    | KHA0808 | HW30P | CP63T     |
| H63T-DDNNN-L15-3 | 140 |            |       |          |       |                |         |           |         |       |           |

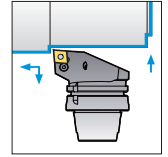
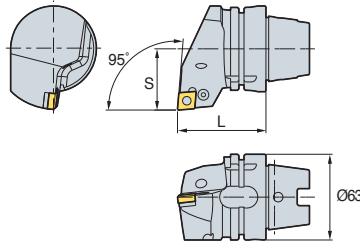
↻ Insertos Aplicables B36~B42



# PCLNR/L



CN□□



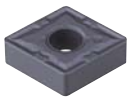
95°

• Inserto tipo R (mm)

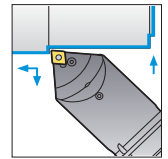
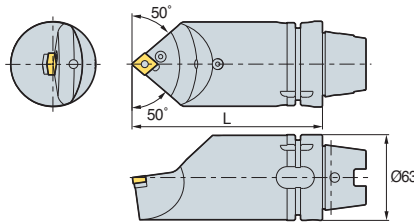
| Designación       | L  | S  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Prensa colocación inserto | Buje Ref. | Enchufe | Llave | Pipa Ref. |
|-------------------|----|----|------------|---------|----------|-------|---------------|---------------------------|-----------|---------|-------|-----------|
| H63T-PCLNR/L-DX12 | 65 | 45 | CN□□1204□□ | LV4N    | VHX0820N | SC42N | SP4N          | LSPS4                     | CN0605    | -       | HW30L | CP63T     |

↻ Insertos Aplicables B28~B35

# PCMNN



CN□□



95°

(mm)

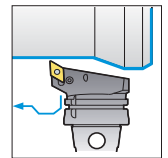
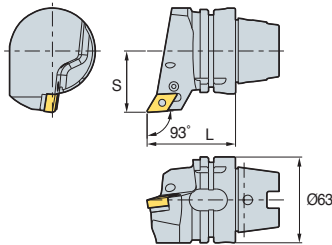
| Designación    | L   | Inserto    | Palanca | Tornillo | Placa | Candado laina | Prensa colocación inserto | Buje Ref. | Enchufe | Llave | Pipa Ref. |
|----------------|-----|------------|---------|----------|-------|---------------|---------------------------|-----------|---------|-------|-----------|
| H63T-PCMNN-H12 | 100 | CN□□1204□□ | LV4N    | VHX0820N | SC42N | SP4N          | LSPS4                     | CN0605    | KHA0808 | HW30L | CP63T     |
| H63T-PCMNN-L12 | 140 |            |         |          |       |               |                           |           |         |       |           |

↻ Insertos Aplicables B28~B35

# PDJNR/L



DN□□



95°

• Inserto tipo R (mm)

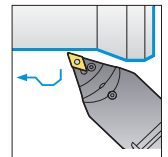
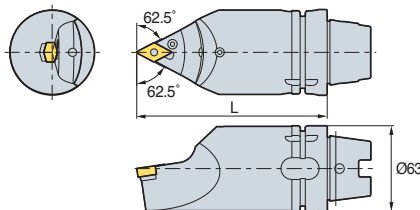
| Designación         | L  | S  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Prensa colocación inserto | Buje Ref. | Enchufe | Llave | Pipa Ref. |
|---------------------|----|----|------------|---------|----------|-------|---------------|---------------------------|-----------|---------|-------|-----------|
| H63T-PDJNR/L-DX15   | 65 | 45 | DN□□1506□□ | LV4BN   | VHX0821N | SD42N | SP4N          | LSPS4                     | CN0605    | -       | HW30L | CP63T     |
| H63T-PDJNR/L-DX15-3 | 65 | 45 | DN□□1504□□ |         |          | SD43N |               |                           |           |         |       |           |

↻ Insertos Aplicables B36~B42

# PDNNN



DN□□



107.5°

(mm)

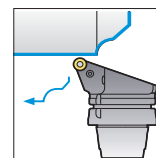
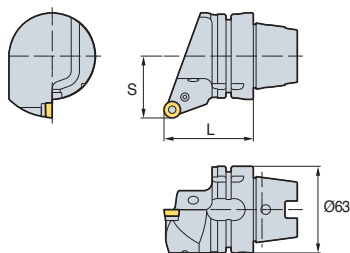
| Designación      | L   | Inserto    | Palanca | Tornillo | Placa | Candado laina | Prensa colocación inserto | Buje Ref. | Enchufe | Llave | Pipa Ref. |
|------------------|-----|------------|---------|----------|-------|---------------|---------------------------|-----------|---------|-------|-----------|
| H63T-PDNNN-H15   | 100 | DN□□1506□□ | LV4BN   | VHX0821N | SD42N | SP4N          | LSPS4                     | CN0605    | KHA0808 | HW30L | CP63T     |
| H63T-PDNNN-L15   | 140 |            |         |          |       |               |                           |           |         |       |           |
| H63T-PDNNN-H15-3 | 100 | DN□□1504□□ | LV4BN   | VHX0821N | SD43N | SP4N          | LSPS4                     | CN0605    | KHA0808 | HW30L | CP63T     |
| H63T-PDNNN-L15-3 | 140 |            |         |          |       |               |                           |           |         |       |           |

↻ Insertos Aplicables B36~B42

## PRGCR/L



RCMX1204M0



• Inserto tipo R  
(mm)

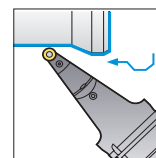
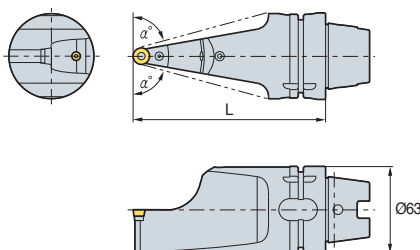
| Designación       | L  | S  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Prensa colocación inserto | Buje Ref. | Enchufe | Llave | Pipa Ref. |
|-------------------|----|----|------------|---------|----------|-------|---------------|---------------------------|-----------|---------|-------|-----------|
| H63T-PRGCR/L-DX12 | 65 | 45 | RCMX1204M0 | LR12    | VHX0617  | SR12  | SP3           | LSPS3                     | CN0605    | -       | HW25L | CP63T     |

➔ Insertos Aplicables B74

## PRDCN



RCMX1204M0



(mm)

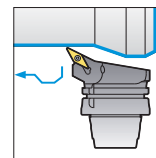
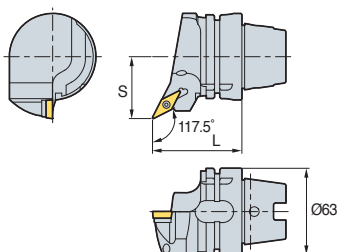
| Designación    | L   | α° | Inserto    | Palanca | Tornillo | Placa | Candado laina | Prensa colocación inserto | Buje Ref. | Enchufe | Llave | Pipa Ref. |
|----------------|-----|----|------------|---------|----------|-------|---------------|---------------------------|-----------|---------|-------|-----------|
| H63T-PRDCN-H12 | 100 | 69 | RCMX1204M0 | LR12    | VHX0617  | SR12  | SP3           | LSPS3                     | CN0605    | -       | HW25L | CP63T     |
| H63T-PRDCN-L12 | 140 | 75 |            |         |          |       |               |                           |           |         |       |           |

➔ Insertos Aplicables B74

## SVPBR/L



VB□T



117.5°

• Inserto tipo R  
(mm)

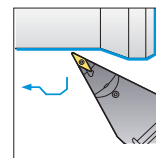
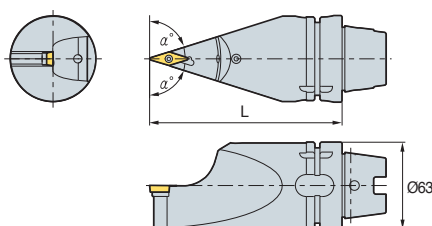
| Designación       | L  | S  | Inserto    | Tornillo  | Tornillo Placa | Placa | Buje Ref. | Enchufe | Llave | Llave | Pipa Ref. |
|-------------------|----|----|------------|-----------|----------------|-------|-----------|---------|-------|-------|-----------|
| H63T-SVPBR/L-DX16 | 65 | 45 | VB□T1604□□ | FTGA03512 | SHXN0509F      | SV32S | CN0605    | -       | TW15P | HW32L | CP63T     |

➔ Insertos Aplicables B84~B85, B96

## SVVBN



VB□T



117.5°

(mm)

| Designación    | L   | α°   | Inserto    | Tornillo  | Tornillo Placa | Placa | Buje Ref. | Enchufe | Llave | Llave | Pipa Ref. |
|----------------|-----|------|------------|-----------|----------------|-------|-----------|---------|-------|-------|-----------|
| H63T-SVVBN-H16 | 100 | 66.5 | VB□T1604□□ | FTGA03512 | SHXN0509F      | SV32S | CN0605    | KHA0808 | TW15P | HW32L | CP63T     |
| H63T-SVVBN-L16 | 140 | 72.5 |            |           |                |       |           |         |       |       |           |

➔ Insertos Aplicables B84~B85, B96

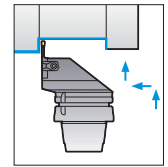
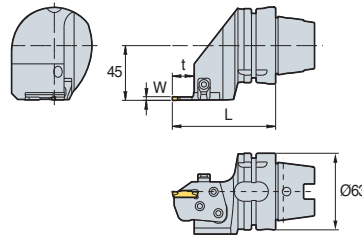




# MCHR/L



MGMN / MGMR/L  
MGGN / MRMN



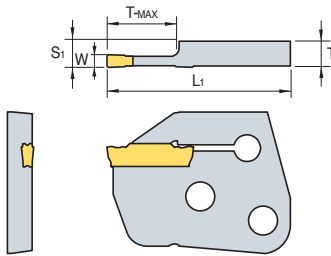
• Inserto tipo R  
(mm)

| Designación | L  | t  | W | T-MAX | Inserto | Cartridge   | Brida | Tornillo Brida | Tornillo bisagra | Tornillo | Buje Ref. | Enchufe | Llave | Pipa Ref. |
|-------------|----|----|---|-------|---------|-------------|-------|----------------|------------------|----------|-----------|---------|-------|-----------|
| H63T-MCHR/L | 85 | 18 | 3 | 16    | MGMN    | MCER/L3-T16 | CHX8N | DHA0818F       | RHA0613          | FHGA0618 | CN0605    | -       | HW40L | CP63T     |
|             | 85 | 18 | 4 | 16    | MGMR/L  | MCER/L4-T16 |       |                |                  |          |           |         |       |           |
|             | 89 | 22 | 5 | 20    | MGGN    | MCER/L5-T20 |       |                |                  |          |           |         |       |           |
|             | 89 | 22 | 6 | 20    | MRMN    | MCER/L6-T20 |       |                |                  |          |           |         |       |           |

# MCER/L (Cartucho)



MGMN / MGMR/L  
MGGN / MRMN



• Inserto tipo R  
(mm)

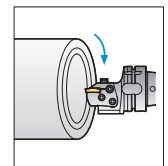
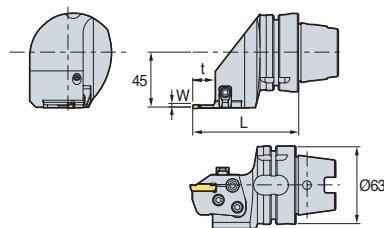
| Designación | L     | L1   | S1   | T-MAX | Inserto |             | Portalinserto Disponible |             |
|-------------|-------|------|------|-------|---------|-------------|--------------------------|-------------|
|             |       |      |      |       | W       | Designación |                          |             |
| MCER/L      | 3-T16 | 6.00 | 44.5 | 6.35  | 16      | 3           | MGMN                     | H63T-MCHR/L |
|             | 4-T16 | 5.97 | 44.5 | 6.35  | 16      | 4           | MGMR/L                   |             |
|             | 5-T20 | 5.87 | 48.5 | 6.35  | 20      | 5           | MGGN                     |             |
|             | 6-T20 | 5.82 | 48.5 | 6.35  | 20      | 6           | MGMN                     |             |

➔ Insertos Aplicables C27~C29

# MCHR/L



MFMN300  
MGMN400



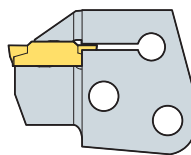
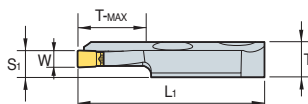
• Inserto tipo R  
(mm)

| Designación | L  | t  | W | T-MAX | Inserto             | Cartucho          | Brida | Tornillo Brida | Tornillo bisagra | Tornillo | Buje Ref. | Enchufe | Llave | Pipa Ref. |
|-------------|----|----|---|-------|---------------------|-------------------|-------|----------------|------------------|----------|-----------|---------|-------|-----------|
| H63T-MCHR/L | 85 | 18 | 3 | 16    | MFMN300             | MCFR/L3-24/35-T16 | CHX8N | DHA0818F       | RHA0613          | FHGA0618 | CN0605    | -       | HW40L |           |
|             | 85 | 18 | 3 | 16    |                     | MCFR/L3-29/40-T16 |       |                |                  |          |           |         |       |           |
|             | 85 | 18 | 3 | 16    |                     | MCFR/L3-34/50-T16 |       |                |                  |          |           |         |       |           |
|             | 85 | 18 | 3 | 16    |                     | MCFR/L3-44/70-T16 |       |                |                  |          |           |         |       |           |
|             | 85 | 18 | 3 | 16    |                     | MCFR/L3-64/99-T16 |       |                |                  |          |           |         |       |           |
|             | 85 | 18 | 3 | 16    | MGMN400             | MCFR/L4-44/60-T16 |       |                |                  |          |           |         |       |           |
|             | 85 | 18 | 3 | 16    | MCFR/L4-60/120-T16  |                   |       |                |                  |          |           |         |       |           |
|             | 85 | 18 | 3 | 16    | MCFR/L4-112/200-T16 |                   |       |                |                  |          |           |         |       |           |

## MCFR/L (Cartucho)



MFMN300  
MGMN400



• Inserto tipo R  
(mm)

| Designación | T           | L1   | S1   | T-MAX | Inserto |             | Portainsero Disponible |
|-------------|-------------|------|------|-------|---------|-------------|------------------------|
|             |             |      |      |       | W       | Designación |                        |
| MCFR/L3-    | 24/35-T16   | 8.00 | 44.5 | 6.35  | 16      | 3           | H63T-MCHR/L            |
|             | 29/40-T16   | 8.00 | 44.5 | 6.35  | 16      | 3           |                        |
|             | 34/50-T16   | 8.00 | 44.5 | 6.35  | 16      | 3           |                        |
|             | 44/70-T16   | 8.00 | 44.5 | 6.35  | 16      | 3           |                        |
|             | 64/99-T16   | 8.00 | 44.5 | 6.35  | 16      | 3           |                        |
| MCFR/L4-    | 44/60-T16   | 7.97 | 44.5 | 6.35  | 16      | 4           |                        |
|             | 60/120-T16  | 7.97 | 44.5 | 6.35  | 16      | 4           |                        |
|             | 112/200-T16 | 7.97 | 44.5 | 6.35  | 16      | 4           |                        |

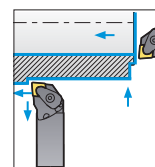
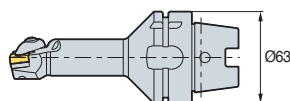
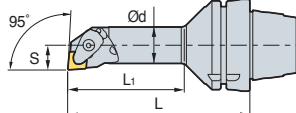
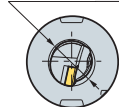
➔ Insertos Aplicables C27~C29

## DCLNR/L



CN□□

ØD Diámetro Mínimo Maquinado



95°

• Inserto tipo R  
(mm)

| Designación          | ØD | Ød | L   | L1 | S  | Inserto    | Brida | Tornillo | Placa | Tornillo Placa | Resorte | Buje Ref. | Enchufe | Llave | Coolant Pipe |
|----------------------|----|----|-----|----|----|------------|-------|----------|-------|----------------|---------|-----------|---------|-------|--------------|
| H63T-A25K-DCLNR/L-12 | 32 | 25 | 125 | 80 | 17 | CN□□1204□□ | CVH4  | CHX0518  | SC42V | FTKA0410       | SPR0714 | CN0605    | -       | HW30P | CP63T        |
| H63T-A32L-DCLNR/L-12 | 40 | 32 | 140 | 98 | 22 |            |       |          |       |                |         |           |         |       |              |

➔ Insertos Aplicables B28~B35

## Herramienta en blanco

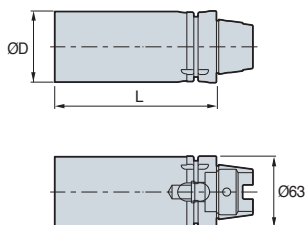


Fig. 1

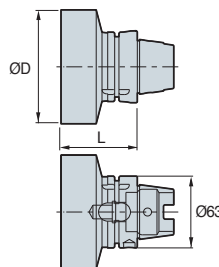


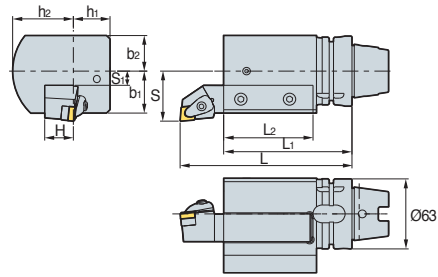
Fig. 2

(mm)

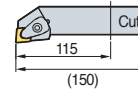
| Designación      | ØD  | L   | Fig. | Pipa Ref. |
|------------------|-----|-----|------|-----------|
| HSK-T63-BL62-102 | 62  | 102 | 1    | CP63T     |
| HSK-T63-BL62-142 | 62  | 142 | 2    |           |
| HSK-T63-BL100-67 | 100 | 67  | 1    |           |
| HSK-T63-BL120-70 | 120 | 70  | 2    |           |



# EV2525R/L-112



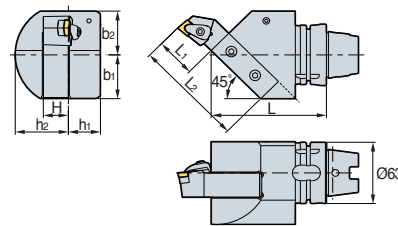
• Información de la Herramienta  
 - Tamaño Herramienta: 25 x 25  
 - Antes de utilizar, favor ajustar la longitud de la herramienta a 115 mm.



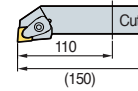
• Inserto tipo R (mm)

| Designación   | L   | L1  | L2 | H  | h1 | h2 | S  | S1    | b1    | b2 | Tornillo | Enchufe | Buje Ref. | Llave | Pipa Ref. |
|---------------|-----|-----|----|----|----|----|----|-------|-------|----|----------|---------|-----------|-------|-----------|
| EV2525R/L-112 | 150 | 112 | 77 | 25 | 32 | 53 | 45 | 12.75 | 37.75 | 32 | KHA1231  | KHA0808 | CN0605    | HW50L | CP63T     |

# EV2525R/L-115



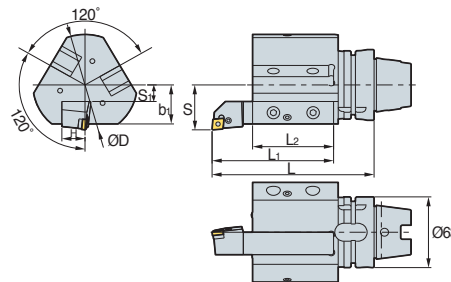
• Información de la Herramienta  
 - Tamaño Herramienta: 25 x 25  
 - Antes de utilizar, favor ajustar la longitud de la herramienta a 110 mm.



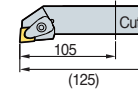
• Inserto tipo R (mm)

| Designación   | L   | L1 | L2  | H  | h1 | h2 | b1 | b2 | Tornillo | Enchufe | Buje Ref. | Llave | Pipa Ref. |
|---------------|-----|----|-----|----|----|----|----|----|----------|---------|-----------|-------|-----------|
| EV2525R/L-115 | 115 | 40 | 110 | 25 | 32 | 53 | 45 | 45 | KHA1231  | KHA0808 | CN0605    | HW50L | CP63T     |

# EV2020R/L-105-3



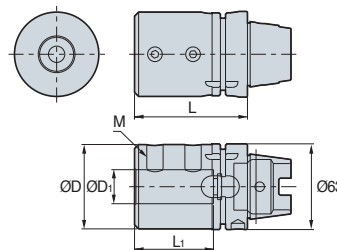
• Información de la Herramienta  
 - Tamaño Herramienta: 20 x 20  
 - Antes de utilizar, favor ajustar la longitud de la herramienta a 105 mm.



• Inserto tipo R (mm)

| Designación     | L   | L1  | L2 | H  | ØD | S  | S1 | B1 | Tornillo | Enchufe | Buje Ref. | Llave | Pipa Ref. |
|-----------------|-----|-----|----|----|----|----|----|----|----------|---------|-----------|-------|-----------|
| EV2020R/L-105-3 | 140 | 105 | 70 | 20 | 90 | 40 | 15 | 35 | KHA1231  | KHA0808 | CN0605    | HW50L | CP63T     |

# B○○○-○○○



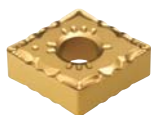
• Inserto tipo R (mm)

| Designación | ØD | D1 | L  | L1 | M   | Tornillo | Llave | Pipa Ref. |
|-------------|----|----|----|----|-----|----------|-------|-----------|
| B08-65      | 28 | 8  | 65 | 40 | M8  | KHA1218  | HW50L | CP63T     |
| B10-70      | 35 | 10 | 70 | 45 | M8  |          |       |           |
| B12-70      | 42 | 12 | 70 | 45 | M8  |          |       |           |
| B16-75      | 48 | 16 | 75 | 50 | M10 |          |       |           |
| B20-75      | 52 | 20 | 75 | 50 | M10 |          |       |           |
| B25-83      | 62 | 25 | 83 | 58 | M12 |          |       |           |
| B32-87      | 62 | 32 | 87 | 62 | M12 |          |       |           |
| B40-97      | 65 | 40 | 97 | 72 | M16 |          |       |           |

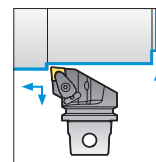
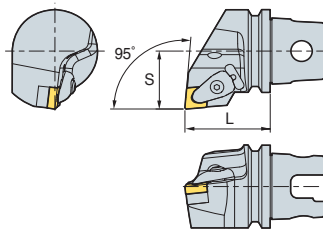


# B Herramienta con Sistema KM

## DCLNR/L



CN□□



95°

• Inserto tipo R  
(mm)

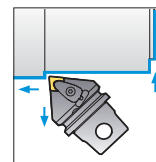
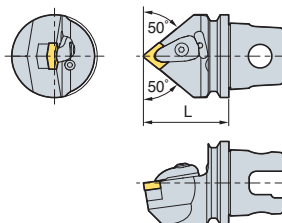
| Designación        | L  | S  | Inserto    | Brida | Tornillo | Placa | Tornillo Placa | Resorte | Buje Ref. | Enchufe | Llave |
|--------------------|----|----|------------|-------|----------|-------|----------------|---------|-----------|---------|-------|
| KM50-DCLNR/L-C12   | 50 | 35 | CN□□1204□□ | CVH4  | CHX0518  | SC44V | FTKA0410       | SPR0714 | CN0605    | -       | HW30P |
| KM63UT-DCLNR/L-D12 | 60 | 43 |            |       |          |       |                |         |           |         |       |

➔ Insertos Aplicables B28~B35

## DCMNN



CN□□



95°

(mm)

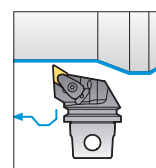
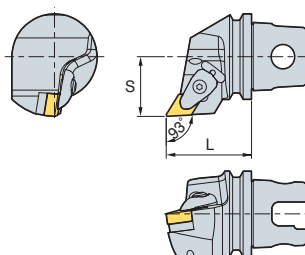
| Designación      | L  | Inserto    | Brida | Tornillo | Placa | Tornillo Placa | Resorte | Buje Ref. | Enchufe | Llave |
|------------------|----|------------|-------|----------|-------|----------------|---------|-----------|---------|-------|
| KM50-DCMNN-C12   | 50 | CN□□1204□□ | CVH4  | CHX0518  | SC44V | FTKA0410       | SPR0714 | CN0605    | KHA0808 | HW30P |
| KM63UT-DCMNN-D12 | 60 |            |       |          |       |                |         |           |         |       |

➔ Insertos Aplicables B28~B35

## DDJNR/L



DN□□



93°

• Inserto tipo R  
(mm)

| Designación          | L  | S  | Inserto    | Brida | Tornillo | Placa | Tornillo Placa | Resorte | Buje Ref. | Enchufe | Llave |
|----------------------|----|----|------------|-------|----------|-------|----------------|---------|-----------|---------|-------|
| KM50-DDJNR/L-C15     | 50 | 35 | DN□□1506□□ | CVH4  | CHX0518  | SD43V | FTKA0410       | SPR0714 | CN0605    | -       | HW30P |
| KM50-DDJNR/L-C15-3   | 50 | 35 | DN□□1504□□ | CVH4  | CHX0518  | SD44V | FTKA0410       | SPR0714 | CN0605    | -       | HW30P |
| KM63UT-DDJNR/L-D15   | 60 | 43 | DN□□1506□□ | CVH4  | CHX0518  | SD43V | FTKA0410       | SPR0714 | CN0605    | -       | HW30P |
| KM63UT-DDJNR/L-D15-3 | 60 | 43 | DN□□1504□□ | CVH4  | CHX0518  | SD44V | FTKA0410       | SPR0714 | CN0605    | -       | HW30P |

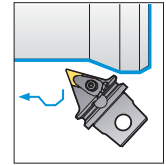
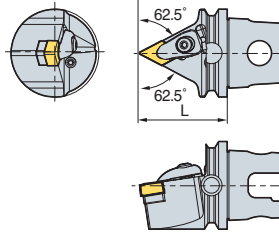
➔ Insertos Aplicables B36~B42



# DDNNN



DN□□



117.5°

(mm)

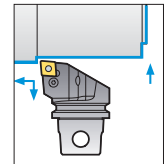
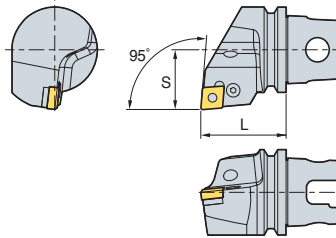
| Designación        | L  | Inserto    | Brida | Tornillo | Placa | Tornillo Placa | Resorte | Buje Ref. | Enchufe | Llave |
|--------------------|----|------------|-------|----------|-------|----------------|---------|-----------|---------|-------|
| KM50-DDNNN-C15     | 50 | DN□□1506□□ | CVH4  | CHX0518  | SD43V | FTKA0410       | SPR0714 | CN0605    | KHA0808 | HW30P |
| KM50-DDNNN-C15-3   | 50 | DN□□1504□□ | CVH4  | CHX0518  | SD44V | FTKA0410       | SPR0714 | CN0605    | KHA0808 | HW30P |
| KM63UT-DDNNN-D15   | 60 | DN□□1506□□ | CVH4  | CHX0518  | SD43V | FTKA0410       | SPR0714 | CN0605    | KHA0808 | HW30P |
| KM63UT-DDNNN-D15-3 | 60 | DN□□1504□□ | CVH4  | CHX0518  | SD44V | FTKA0410       | SPR0714 | CN0605    | KHA0808 | HW30P |

➔ Insertos Aplicables B36~B42

# PCLNR/L



CN□□



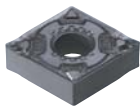
95°

• Inserto tipo R  
(mm)

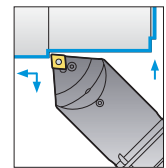
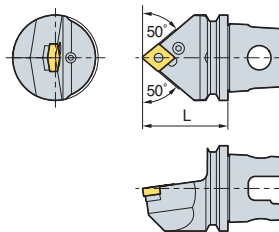
| Designación        | L  | S  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Prensa colocación inserto | Buje Ref. | Enchufe | Llave |
|--------------------|----|----|------------|---------|----------|-------|---------------|---------------------------|-----------|---------|-------|
| KM50-PCLNR/L-C12   | 50 | 35 | CN□□1204□□ | LV4N    | VHX0820N | SC42N | SP4N          | LSPS4                     | CN0605    | -       | HW30L |
| KM63UT-PCLNR/L-D12 | 60 | 43 |            |         |          |       |               |                           |           |         |       |

➔ Insertos Aplicables B28~B35

# PCMNN



CN□□



95°

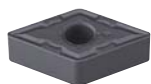
(mm)

| Designación      | L  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Prensa colocación inserto | Buje Ref. | Enchufe | Llave |
|------------------|----|------------|---------|----------|-------|---------------|---------------------------|-----------|---------|-------|
| KM50-PCMNN-C12   | 50 | CN□□1204□□ | LV4N    | VHX0820N | SC42N | SP4N          | LSPS4                     | CN0605    | KHA0808 | HW30L |
| KM63UT-PCMNN-D12 | 60 |            |         |          |       |               |                           |           |         |       |

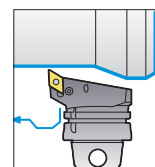
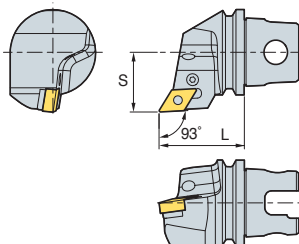
➔ Insertos Aplicables B28~B35

# B Herramienta con Sistema KM

## PDJNR/L



DN□□



93°

• Inserto tipo R (mm)

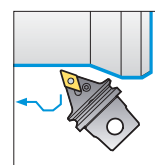
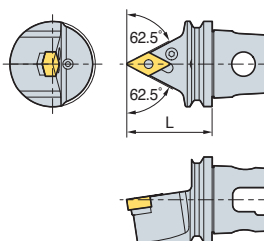
| Designación          | L  | S  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Punching | Buje Ref. | Enchufe | Llave |
|----------------------|----|----|------------|---------|----------|-------|---------------|----------|-----------|---------|-------|
| KM50-PDJNR/L-C15     | 50 | 35 | DN□□1506□□ | LV4BN   | VHX0821N | SD42N | SP4N          | LSPS4    | CN0605    | -       | HW30L |
| KM50-PDJNR/L-C15-3   | 50 | 35 | DN□□1504□□ | LV4BN   | VHX0821N | SD43N | SP4N          | LSPS4    | CN0605    | -       | HW30L |
| KM63UT-PDJNR/L-D15   | 60 | 43 | DN□□1506□□ | LV4BN   | VHX0821N | SD42N | SP4N          | LSPS4    | CN0605    | -       | HW30L |
| KM63UT-PDJNR/L-D15-3 | 60 | 43 | DN□□1504□□ | LV4BN   | VHX0821N | SD43N | SP4N          | LSPS4    | CN0605    | -       | HW30L |

➔ Insertos Aplicables B36~B42

## PDNNN



DN□□



107.5°

(mm)

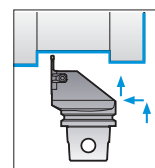
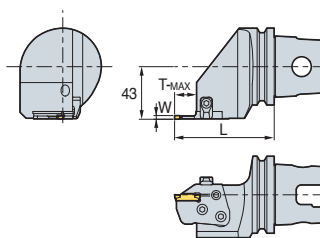
| Designación        | L  | Inserto    | Palanca | Tornillo | Placa | Candado laina | Prensa colocación inserto | Buje Ref. | Enchufe | Llave |
|--------------------|----|------------|---------|----------|-------|---------------|---------------------------|-----------|---------|-------|
| KM50-PDNNN-C15     | 50 | DN□□1506□□ | LV4BN   | VHX0821N | SD42N | SP4N          | LSPS4                     | CN0605    | KHA0808 | HW30L |
| KM50-PDNNN-C15-3   | 50 | DN□□1504□□ | LV4BN   | VHX0821N | SD43N | SP4N          | LSPS4                     | CN0605    | KHA0808 | HW30L |
| KM63UT-PDNNN-D15   | 60 | DN□□1506□□ | LV4BN   | VHX0821N | SD42N | SP4N          | LSPS4                     | CN0605    | KHA0808 | HW30L |
| KM63UT-PDNNN-D15-3 | 60 | DN□□1504□□ | LV4BN   | VHX0821N | SD43N | SP4N          | LSPS4                     | CN0605    | KHA0808 | HW30L |

➔ Insertos Aplicables B36~B42

## MCHR/L



MGMN / MGMR/L  
MGGN / MRMN



• Inserto tipo R (mm)

| Designación   | S  | L    | t  | W | T-MAX | Inserto        | Cartucho    | Brida | Tornillo Brida | Tomillo bisagra | Tornillo | Buje Ref. | Enchufe | Llave |
|---------------|----|------|----|---|-------|----------------|-------------|-------|----------------|-----------------|----------|-----------|---------|-------|
| KM50-MCHR/L   | 35 | 72.5 | 18 | 3 | 16    | MGMN<br>MGMR/L | MCER/L3-T16 | CHX8N | DHA0818F       | RHA0613         | FHGA0618 | CN0605    | -       | HW40L |
|               | 35 | 72.5 | 18 | 4 | 16    |                | MCER/L4-T16 |       |                |                 |          |           |         |       |
|               | 35 | 76.5 | 22 | 5 | 20    |                | MCER/L5-T20 |       |                |                 |          |           |         |       |
|               | 35 | 76.5 | 22 | 6 | 20    |                | MCER/L6-T20 |       |                |                 |          |           |         |       |
| KM63UT-MCHR/L | 43 | 81.5 | 18 | 3 | 16    | MGGN<br>MRMN   | MCER/L3-T16 | CHX8N | DHA0818F       | RHA0613         | FHGA0618 | CN0605    | -       | HW40L |
|               | 43 | 81.5 | 18 | 4 | 16    |                | MCER/L4-T16 |       |                |                 |          |           |         |       |
|               | 43 | 85.5 | 22 | 5 | 20    |                | MCER/L5-T20 |       |                |                 |          |           |         |       |
|               | 43 | 85.5 | 22 | 6 | 20    |                | MCER/L6-T20 |       |                |                 |          |           |         |       |

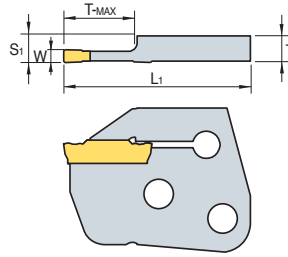
➔ Insertos Aplicables C27~C29



# MCER/L (Cartucho)



MGMN / MGMR/L  
MGGN / MRMN



• Inserto tipo R (mm)

| Designación | T     | L1   | S1   | T-MAX | Inserto |             | Portainsero Disponible |              |
|-------------|-------|------|------|-------|---------|-------------|------------------------|--------------|
|             |       |      |      |       | W       | Designación |                        |              |
| MCER/L      | 3-T16 | 6.00 | 44.5 | 6.35  | 16      | 3           | MGMN                   | H-63T-MCHR/L |
|             | 4-T16 | 5.97 | 44.5 | 6.35  | 16      | 4           | MGMR/L                 |              |
|             | 5-T20 | 5.87 | 48.5 | 6.35  | 20      | 5           | MGGN                   |              |
|             | 6-T20 | 5.82 | 48.5 | 6.35  | 20      | 6           | MRMN                   |              |

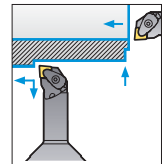
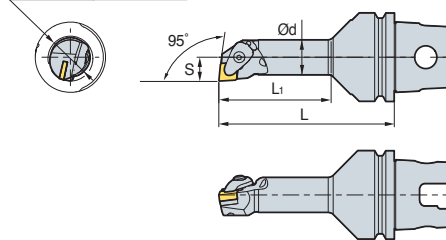
➔ Insertos Aplicables C27~C29

# KM○○-DCLNR/L



CN□□

ØD Diámetro Mínimo Maquinado



95°

• Inserto tipo R (mm)

| Designación            | ØD | Ød | L   | L1 | S  | Inserto    | Brida | Tornillo | Placa | Tornillo Placa | Resorte | Buje Ref. | Enchufe | Llave |
|------------------------|----|----|-----|----|----|------------|-------|----------|-------|----------------|---------|-----------|---------|-------|
| KM50-A25K-DCLNR/L-12   | 32 | 25 | 125 | 80 | 17 | CN□□1204□□ |       |          |       |                |         |           |         |       |
| KM50-A32L-DCLNR/L-12   | 40 | 32 | 140 | 98 | 22 |            |       |          |       |                |         |           |         |       |
| KM63UT-A25K-DCLNR/L-12 | 32 | 25 | 125 | 80 | 17 |            |       |          |       |                |         |           |         |       |
| KM63UT-A32L-DCLNR/L-12 | 40 | 32 | 140 | 98 | 22 |            |       |          |       |                |         |           |         |       |

➔ Insertos Aplicables B28~B35

# Herramienta en blanco

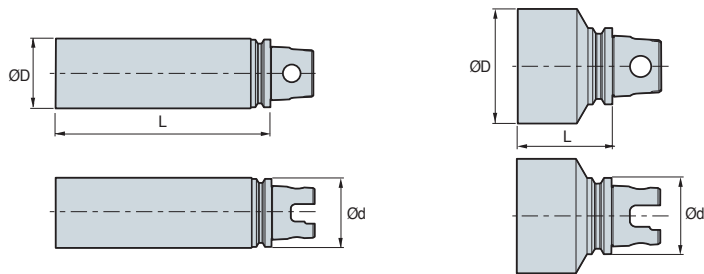


Fig. 1

Fig. 2

(mm)

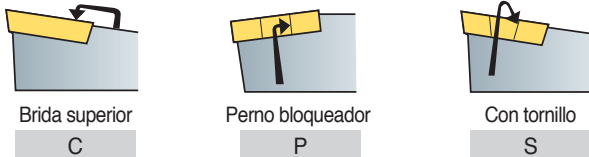
| Designación     | ØD  | L   | Ød | Fig. |
|-----------------|-----|-----|----|------|
| KM50-BL7562     | 45  | 62  | 50 | 1    |
| KM50-BL10562    | 105 | 62  | 50 | 2    |
| KM63UT-BL65200  | 65  | 200 | 50 | 1    |
| KM63UT-BL115150 | 115 | 150 | 50 | 2    |



# B Sistema de Codificación de Cartuchos (ISO)

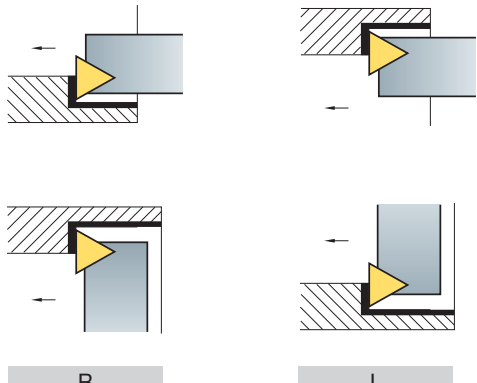


**1 Sistema de Sujeción**  
S T F C R 12 C A - 16



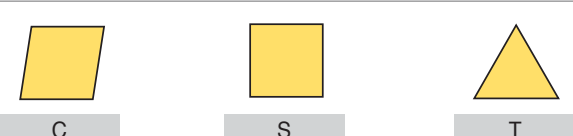
Brida superior C    Perno bloqueador P    Con tornillo S

**5 Mano del Cartucho**  
S T F C R 12 C A - 16



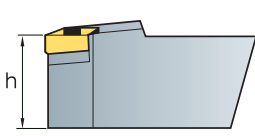
R    L

**2 Forma del Inserto**  
S T F C R 12 C A - 16



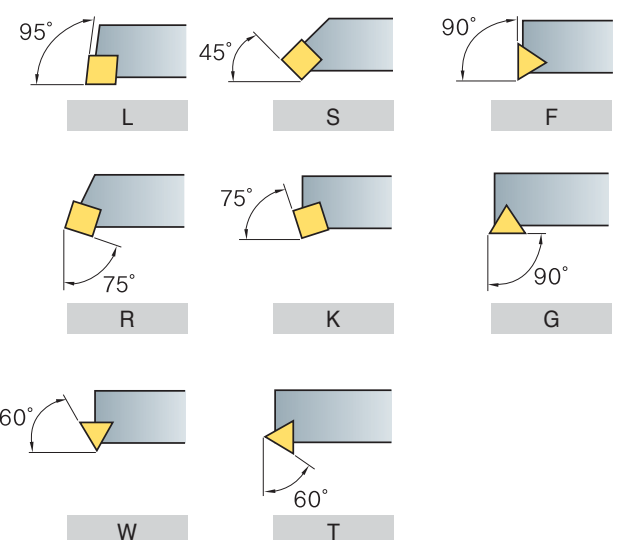
C    S    T

**6 Altura del Cartucho**  
S T F C R 12 C A - 16



h

**3 Ángulo de entrada**  
S T F C R 12 C A - 16



L    S    F    R    K    G    W    T

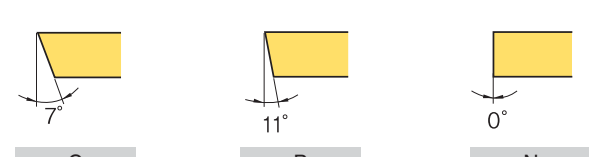
**7 Designación del Cartucho**  
S T F C R 12 C A - 16

C (Cartridge)

**8 Tipo de Cartucho**  
S T F C R 12 C A - 16

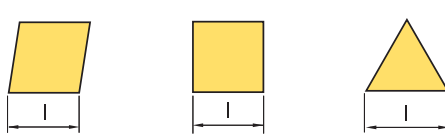
A (ISO5611)

**4 Angulo de Incidencia**  
S T F C R 12 C A - 16



C    P    N

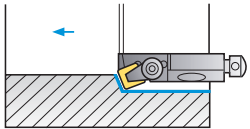
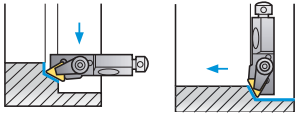
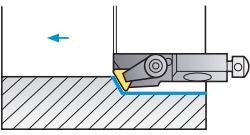
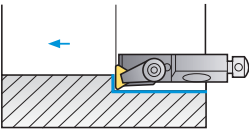
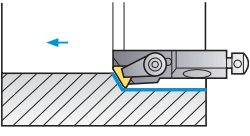
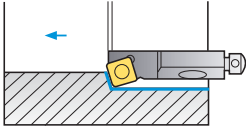
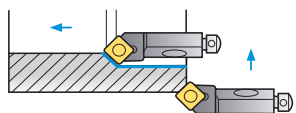
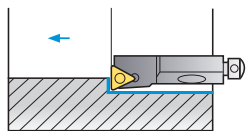
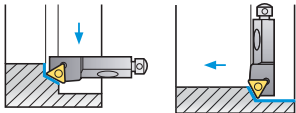
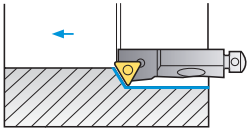
**9 Longitud Filo corte**  
S T F C R 12 C A - 16



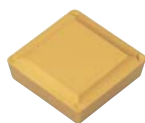
I    I    I



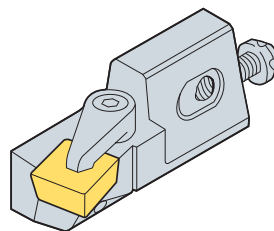
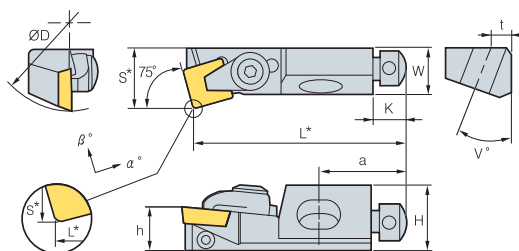


|                      | Forma del corte   |                    | Torneado | Copiado | Careado | Chafan | Insertos Disponibles  | Pag.  |
|----------------------|---|--------------------|----------|---------|---------|--------|-----------------------|-------|
| Sistema con Brida    |  <p><b>CSKPR/L</b></p>   | 10CA-09<br>12CA-12 | ●        |         |         |        | SP□R 0903□□<br>1203□□ | B232  |
|                      |  <p><b>CTTPR/L</b></p>   | 10CA-11<br>12CA-16 | ●        |         |         |        | TP□R 1103□□<br>1603□□ | B233  |
|                      |  <p><b>CTWPR/L</b></p>   | 10CA-11<br>12CA-16 | ●        |         |         |        | TP□R 1103□□<br>1603□□ | B2233 |
|                      |  <p><b>CTFPR/L</b></p>   | 10CA-11<br>12CA-16 | ●        |         | ●       |        | TP□R 1103□□<br>1603□□ | B232  |
|                      |  <p><b>CTSPR/L</b></p>  | 10CA-11<br>12CA-16 | ●        |         |         |        | TP□R 1103□□<br>1603□□ | B232  |
| Sistema con Tornillo |  <p><b>SSKCR/L</b></p> | 10CA-09<br>12CA-12 | ●        |         |         |        | SC□T 09T3□□<br>1204□□ | B234  |
|                      |  <p><b>SSSCR/L</b></p> | 10CA-09<br>12CA-12 | ●        |         |         | ●      | SC□T 09T3□□<br>1204□□ | B234  |
|                      |  <p><b>STFCL/L</b></p> | 10CA-11<br>12CA-16 | ●        |         | ●       |        | TC□T 1102□□<br>16T3□□ | B234  |
|                      |  <p><b>STTCR/L</b></p> | 10CA-11<br>12CA-16 | ●        |         | ●       |        | TC□T 1102□□<br>16T3□□ | B235  |
|                      |  <p><b>STWCR/L</b></p> | 10CA-11<br>12CA-16 | ●        |         |         |        | TC□T 1102□□<br>16T3□□ | B235  |

## CSKPR/L



SP□R



• Inserto tipo R (mm)

| Designación     | ØD | H  | W  | L* | S* | h  | K | α° | β° | a  | t | v° | Inserto                 |
|-----------------|----|----|----|----|----|----|---|----|----|----|---|----|-------------------------|
| CSKPR/L 10CA-09 | 40 | 15 | 11 | 50 | 14 | 10 | 8 | 6  | 0  | 20 | 5 | 20 | SP□R 0903 □□<br>1203 □□ |
| 12CA-12         | 50 | 20 | 15 | 55 | 20 | 12 | 8 | 6  | 0  | 20 | 6 | 20 |                         |

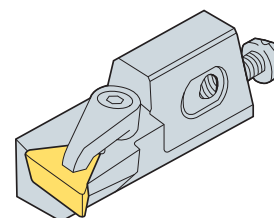
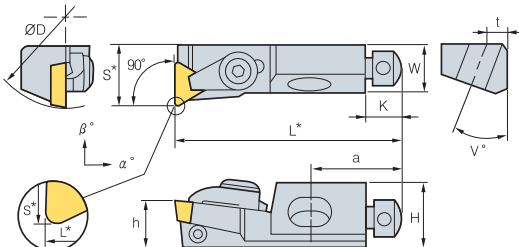
↻ Insertos Aplicables B76~B77 · a base Inserto : r = 0.8 D = ØD Diametro Minimo Maquinado

| Partes          | Brida | Tornillo Ajuste Axial | Tornillo Ajuste Radial | Tornillo Montaje | Anilla | Llave  | Llave |
|-----------------|-------|-----------------------|------------------------|------------------|--------|--------|-------|
| CSKPR/L 10CA-09 | CA05R | AZ0508F               | KHA0408                | RHA0620          | WA0602 | TW 15P | HW20L |
| 12CA-12         | CA06R | AZ0508F               | KHA0412                | RHA0625          | WA0602 | TW 15P | HW20L |

## CTFPR/L



TP□R



• Inserto tipo R (mm)

| Designación     | ØD | H  | W  | L* | S* | h  | K | α° | β° | a  | t | v° | Inserto                 |
|-----------------|----|----|----|----|----|----|---|----|----|----|---|----|-------------------------|
| CTFPR/L 10CA-11 | 40 | 15 | 11 | 50 | 14 | 10 | 8 | 6  | 0  | 20 | 5 | 20 | TP□R 1103 □□<br>1603 □□ |
| 12CA-16         | 50 | 20 | 15 | 55 | 20 | 12 | 8 | 6  | 0  | 20 | 6 | 20 |                         |

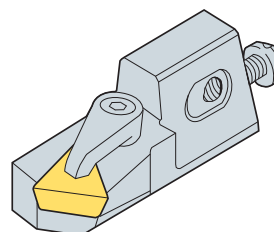
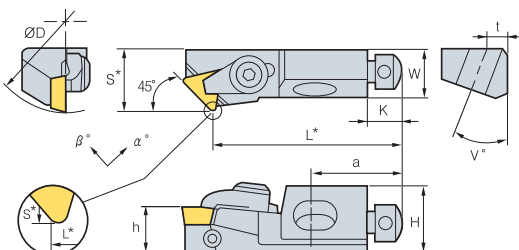
↻ Insertos Aplicables B81~B83 · a base Inserto : r = 0.4 (l=11) r = 0.8 (l = 16) D = ØD Diametro Minimo Maquinado

| Partes          | Brida | Tornillo Ajuste Axial | Tornillo Ajuste Radial | Tornillo Montaje | Anilla | Llave | Llave |
|-----------------|-------|-----------------------|------------------------|------------------|--------|-------|-------|
| CTFPR/L 10CA-11 | CA05R | AZ0508F               | KHA0408                | RHA0620          | WA0602 | TW25L | HW20L |
| 12CA-16         | CA06R | AZ0508F               | KHA0412                | RHA0625          | WA0602 | TW30L | HW20L |

## CTSPR/L



TP□R



• Inserto tipo R (mm)

| Designación     | ØD | H  | W  | L* | S* | h  | K | α° | β° | a  | t | v° | Inserto                 |
|-----------------|----|----|----|----|----|----|---|----|----|----|---|----|-------------------------|
| CTSPR/L 10CA-11 | 40 | 15 | 11 | 44 | 14 | 10 | 8 | 4  | 0  | 20 | 5 | 20 | TP□R 1103 □□<br>1603 □□ |
| 12CA-16         | 50 | 20 | 15 | 47 | 20 | 12 | 8 | 5  | 0  | 20 | 6 | 20 |                         |

↻ Insertos Aplicables B81~B83 · a base Inserto : r = 0.4 (l=11) r = 0.8 (l = 16) D = Diametro Minimo Maquinado

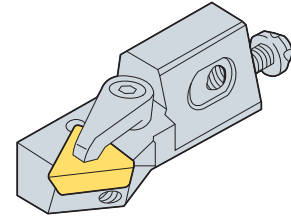
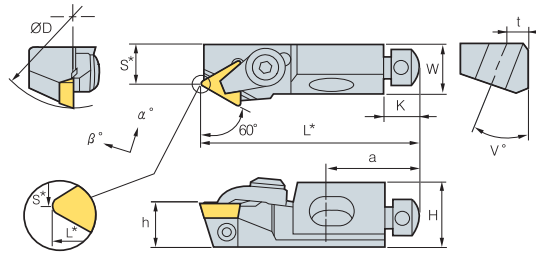
| Partes          | Brida | Tornillo Ajuste Axial | Tornillo Ajuste Radial | Tornillo Montaje | Anilla | Llave | Llave |
|-----------------|-------|-----------------------|------------------------|------------------|--------|-------|-------|
| CTSPR/L 10CA-11 | CA05R | AZ0508F               | KHA0408                | RHA0620          | WA0602 | TW25L | HW20L |
| 12CA-16         | CA06R | AZ0508F               | KHA0412                | RHA0625          | WA0602 | TW30L | HW20L |



# CTTPR/L



TP□R



• Inserto tipo R (mm)

| Designación     | ØD | H  | W  | L* | S* | h  | K | α° | β° | a  | t | v° | Inserto               |
|-----------------|----|----|----|----|----|----|---|----|----|----|---|----|-----------------------|
| CTTPR/L 10CA-11 | 40 | 15 | 11 | 50 | 9  | 10 | 8 | 5  | 0  | 20 | 5 | 20 | TP□R 1103□□<br>1603□□ |
| 12CA-16         | 50 | 20 | 15 | 55 | 20 | 12 | 8 | 5  | 0  | 20 | 6 | 20 |                       |

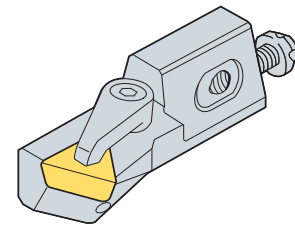
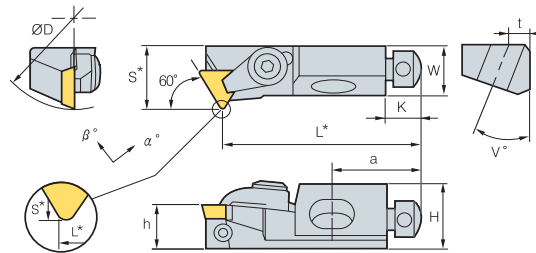
↻ Insertos Aplicables B81~B83 - a base Inserto : r = 0.8 D = ØD Diámetro Mínimo Maquinado

| Partes          | Brida | Tornillo Ajuste Axial | Tornillo Ajuste Radial | Tornillo Montaje | Anilla | Llave | Llave |
|-----------------|-------|-----------------------|------------------------|------------------|--------|-------|-------|
| CTTPR/L 10CA-11 | CA05R | AZ0508F               | KHA0408                | RHA0620          | WA0602 | TW25L | HW20L |
| 12CA-16         | CA06R | AZ0508F               | KHA0412                | RHA0625          | WA0602 | TW30L | HW20L |

# CTWPR/L



TP□R



• Inserto tipo R (mm)

| Designación     | ØD | H  | W  | L* | S* | h  | K | α° | β° | a  | t | v° | Inserto               |
|-----------------|----|----|----|----|----|----|---|----|----|----|---|----|-----------------------|
| CTWPR/L 10CA-11 | 40 | 15 | 11 | 44 | 14 | 10 | 8 | 5  | 0  | 20 | 5 | 20 | TP□R 1103□□<br>1603□□ |
| 12CA-16         | 50 | 20 | 15 | 47 | 20 | 12 | 8 | 5  | 0  | 20 | 6 | 20 |                       |

↻ Insertos Aplicables B81~B83 - a base Inserto : r = 0.8 D = ØD Diámetro Mínimo Maquinado

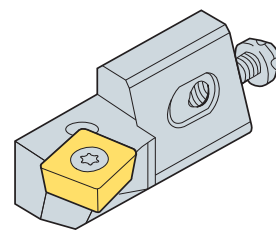
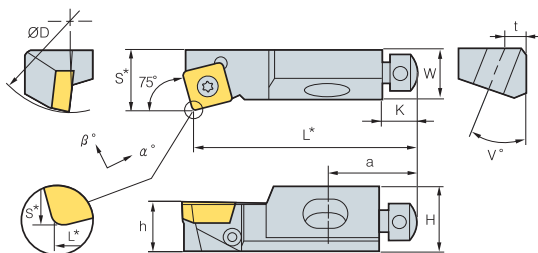
| Partes          | Brida | Tornillo Ajuste Axial | Tornillo Ajuste Radial | Tornillo Montaje | Anilla | Llave | Llave |
|-----------------|-------|-----------------------|------------------------|------------------|--------|-------|-------|
| CTWPR/L 10CA-11 | CA05R | AZ0508F               | KHA0408                | RHA0620          | WA0602 | TW25L | HW20L |
| 12CA-16         | CA06R | AZ0508F               | KHA0412                | RHA0625          | WA0602 | TW30L | HW20L |



## SSKCR/L



SC□□



• Inserto tipo R (mm)

| Designación     | ØD | H  | W  | L* | S* | h  | K | α° | β° | a  | t | v° | Inserto     |
|-----------------|----|----|----|----|----|----|---|----|----|----|---|----|-------------|
| SSKCR/L 10CA-09 | 40 | 15 | 11 | 50 | 14 | 10 | 8 | 0  | -4 | 20 | 5 | 20 | SC□□ 09T3□□ |
| 12CA-12         | 50 | 20 | 15 | 55 | 20 | 12 | 8 | 0  | -4 | 20 | 6 | 20 | SC□□ 1204□□ |

↻ Insertos Aplicables B74~B75, B94

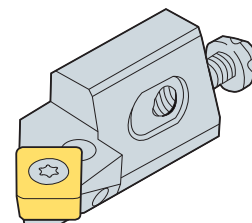
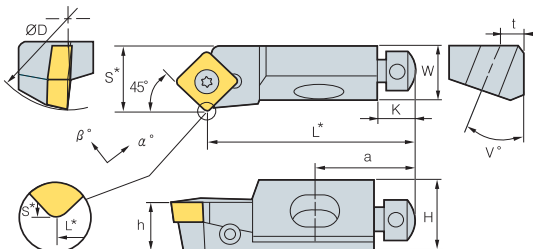
• a base Inserto : r = 0.8 D = ØD Diametro Minimo Maquinado

| Partes          | Tornillo  | Tornillo Ajuste Axial | Tornillo Ajuste Radial | Tornillo Montaje | Anilla | Llave  | Llave |
|-----------------|-----------|-----------------------|------------------------|------------------|--------|--------|-------|
| SSKCR/L 10CA-09 | FTGA03508 | AZ0508F               | KHA0408                | RHA0620          | WA0602 | TW 15P | HW20L |
| 12CA-12         | FTGA0411F | AZ0508F               | KHA0412                | RHA0625          | WA0602 | TW 15P | HW20L |

## SSSCR/L



SC□□



• Inserto tipo R (mm)

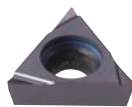
| Designación     | ØD | H  | W  | L* | S* | h  | K | α° | β° | a  | t | v° | Inserto     |
|-----------------|----|----|----|----|----|----|---|----|----|----|---|----|-------------|
| SSSCR/L 10CA-09 | 40 | 15 | 11 | 44 | 14 | 10 | 8 | -5 | 0  | 20 | 5 | 20 | SC□□ 09T3□□ |
| 12CA-12         | 50 | 20 | 15 | 47 | 20 | 12 | 8 | -5 | 0  | 20 | 6 | 20 | SC□□ 1204□□ |

↻ Insertos Aplicables B74~B75, B94

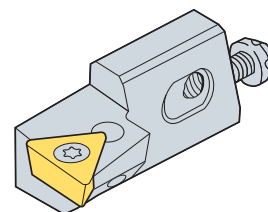
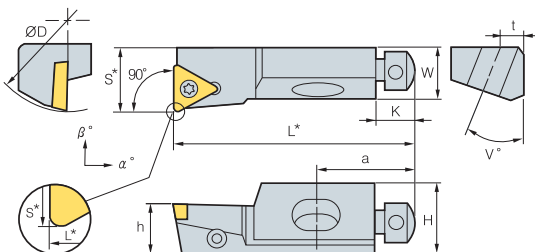
• a base Inserto : r = 0.8 D = ØD Diametro Minimo Maquinado

| Partes          | Tornillo  | Tornillo Ajuste Axial | Tornillo Ajuste Radial | Tornillo Montaje | Anilla | Llave  | Llave |
|-----------------|-----------|-----------------------|------------------------|------------------|--------|--------|-------|
| SSSCR/L 10CA-09 | FTGA03508 | AZ0508F               | KHA0408                | RHA0620          | WA0602 | TW 15P | HW20L |
| 12CA-12         | FTGA0411F | AZ0508F               | KHA0412                | RHA0625          | WA0602 | TW 15P | HW20L |

## STFCR/L



TC□□



• Inserto tipo R (mm)

| Designación     | ØD | H  | W  | L* | S* | h  | K | α° | β° | a  | t | v° | Inserto     |
|-----------------|----|----|----|----|----|----|---|----|----|----|---|----|-------------|
| STFCR/L 10CA-11 | 40 | 15 | 11 | 50 | 14 | 10 | 8 | 0  | -3 | 20 | 5 | 20 | TC□□ 1102□□ |
| 12CA-16         | 50 | 20 | 15 | 55 | 20 | 12 | 8 | 0  | -3 | 20 | 6 | 20 | TC□□ 16T3□□ |

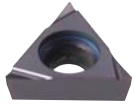
↻ Insertos Aplicables B79~B80, B95

• a base Inserto : r = 0.4 (l=11) r = 0.8 (l=16) D = Diametro Minimo Maquinado

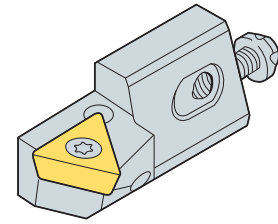
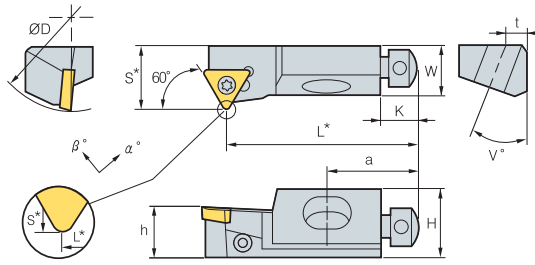
| Partes          | Tornillo  | Tornillo Ajuste Axial | Tornillo Ajuste Radial | Tornillo Montaje | Anilla | Llave  | Llave |
|-----------------|-----------|-----------------------|------------------------|------------------|--------|--------|-------|
| STFCR/L 10CA-11 | FTKA02565 | AZ0508F               | KHA0408                | RHA0620          | WA0602 | TW 15P | HW20L |
| 12CA-16         | FTKA03508 | AZ0508F               | KHA0412                | RHA0625          | WA0602 | TW 15P | HW20L |



# STTCR/L



TC□□



• Inserto tipo R (mm)

| Designación     | ØD | H  | W  | L* | S* | h  | K | α° | β° | a  | t | v° | Inserto     |
|-----------------|----|----|----|----|----|----|---|----|----|----|---|----|-------------|
| STTCR/L 10CA-11 | 40 | 15 | 11 | 50 | 9  | 10 | 8 | -5 | 0  | 20 | 5 | 20 | TC□□ 1102□□ |
| 12CA-16         | 50 | 20 | 15 | 47 | 20 | 12 | 8 | -3 | 0  | 20 | 6 | 20 | TC□□ 16T3□□ |

↻ Insertos Aplicables B79~B80, B95

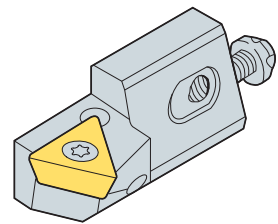
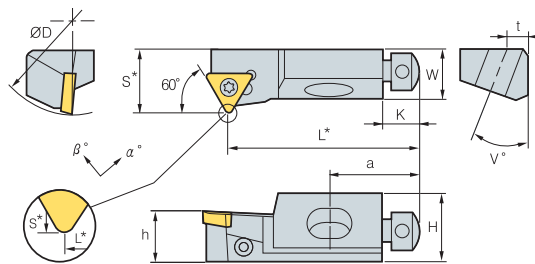
• a base Inserto : r = 0.4 (l=11) r = 0.8 (l=16) D = Diametro Minimo Maquinado

| Partes          | Tornillo  | Tornillo Ajuste Axial | Tornillo Ajuste Radial | Tornillo Montaje | Anilla | Llave  | Llave |
|-----------------|-----------|-----------------------|------------------------|------------------|--------|--------|-------|
| STTCR/L 10CA-11 | FTKA02565 | AZ0508F               | KHA0408                | RHA0620          | WA0602 | TW 07P | HW20L |
| 12CA-16         | FTKA03508 | AZ0508F               | KHA0412                | RHA0625          | WA0602 | TW 15P | HW20L |

# STWCR/L



TC□□



• Inserto tipo R (mm)

| Designación     | ØD | H  | W  | L* | S* | h  | K | α° | β° | a  | t | v° | Inserto     |
|-----------------|----|----|----|----|----|----|---|----|----|----|---|----|-------------|
| STWCR/L 10CA-11 | 40 | 15 | 11 | 44 | 14 | 10 | 8 | 0  | -4 | 20 | 5 | 20 | TC□□ 1102□□ |
| 12CA-16         | 50 | 20 | 15 | 47 | 20 | 12 | 8 | -5 | 0  | 20 | 6 | 20 | TC□□ 16T3□□ |

↻ Insertos Aplicables B79~B80, B95

• a base Inserto : r = 0.4 (l=11) r = 0.8 (l=16) D = Diametro Minimo Maquinado

| Partes          | Tornillo  | Tornillo Ajuste Axial | Tornillo Ajuste Radial | Tornillo Montaje | Anilla | Llave  | Llave |
|-----------------|-----------|-----------------------|------------------------|------------------|--------|--------|-------|
| STWCR/L 10CA-11 | FTKA02565 | AZ0508F               | KHA0408                | RHA0620          | WA0602 | TW 15P | HW20L |
| 12CA-16         | FTKA03508 | AZ0508F               | KHA0412                | RHA0625          | WA0602 | TW 15P | HW20L |

# C

## Herramientas multifuncionales

Las herramientas multifuncionales de Korloy realizan maquinado en ranurado, tronzado, refrentado y de forma en diversas aplicaciones. Su diseño garantiza un maquinado superior y mejora la productividad.



## Ejemplo de aplicación

- C02 Ejemplo de aplicación
- C04 Información técnica para herramientas multi función

## KG T

- C07 Información técnica para KG T
- C12 Inserto disponible para KG T
- C14 Portaherramienta de KG T
- C24 Tipo de lama para tronzado

## MGT

- C25 Información técnica para MGT
- C27 Inserto disponible para MGT
- C30 Portaherramienta de MGT
- C35 Portaherramienta de MGT (ranurado frontal)

## Cartucho de KG T/MGT

- C38 Información técnica para cartuchos KG T/MGT
- C39 Portaherramienta de cartuchos KG T/MGT
- C40 Tipo de cartucho KG T
- C41 Tipo de cartucho MGT

## MGT Serie de ruedas de aluminio

- C42 Información técnica para MGT Rueda de aluminio
- C43 Inserto disponible para la rueda de aluminio MGT
- C44 MGT para rueda de aluminio

## TB/TB-M

- C46 Información técnica para TB / TB-M
- C50 Inserto disponible para TB / TB-M
- C53 Portaherramienta de TB / TB-M

## K Notch

- C54 Información técnica para K Notch
- C56 Inserto aplicable para K Notch
- C58 Portaherramienta de K Notch

## Saw Man

- C59 Información técnica para Saw-man
- C60 Saw-man

## Saw Man-X

- C62 Información técnica para Saw Man-X
- C64 Saw Man-X

## Fine Tools

- C65 Información técnica para Fine Tools
- C66 Inserto disponible para Fine tools
- C67 Portaherramienta de Fine Tools

## Ranurado / Tronzado

- C68 IGH
- C68 DBH
- C69 GFT
- C69 GFIP
- C70 GH
- C70 GFIK
- C71 EH
- C71 PH

## Formulario de pedido especial

- C72 Formulario de pedido especial para MGT
- C73 Formulario de pedido especial para inserto de polea en la forma V

# C Ejemplo de aplicación

## Para Maquinado Externo

| KGEUR/L                  | MGEUR/L                          | TBH                               | K Notch                           | PH                              | GH                                 | GFT                              | DBH                         | KGEHR/L                        | MGEHR/L                              |
|--------------------------|----------------------------------|-----------------------------------|-----------------------------------|---------------------------------|------------------------------------|----------------------------------|-----------------------------|--------------------------------|--------------------------------------|
| Ancho: 2.5<br>T-Max: 3.0 | Ancho: 3,0~8,0<br>T-Max: 3,0~5,0 | Ancho: 1,25~4,5<br>T-Max: 1,5~5,0 | Ancho: 0,75~6,3<br>T-Max: 0~6,5   | Ancho: 3,0~5,0<br>ØD-Max: 30~50 | Ancho: 1,23~4,28<br>T-Max: 1,5~4,0 | Ancho: 1,1~8,0<br>T-Max: 2,1~9,0 | Ancho: 3,0~8,0<br>T-Max: 14 | Ancho: 2,0~8,0<br>T-Max: 17~20 | Ancho: 1,5~8,0<br>T-Max: 10~28       |
| KRMN<br>KRGN             | MRMN<br>MRGN                     | TB<br>TB-M                        | KNG<br>KNGP<br>KNR<br>KNRP<br>KNB | POB                             | GO<br>GS                           | GW<br>BF                         | DC<br>DB                    | KGGN<br>KGMN<br>KGMR/L<br>KRMN | MGGN<br>MGMN<br>MGMR<br>MRGN<br>MRMN |

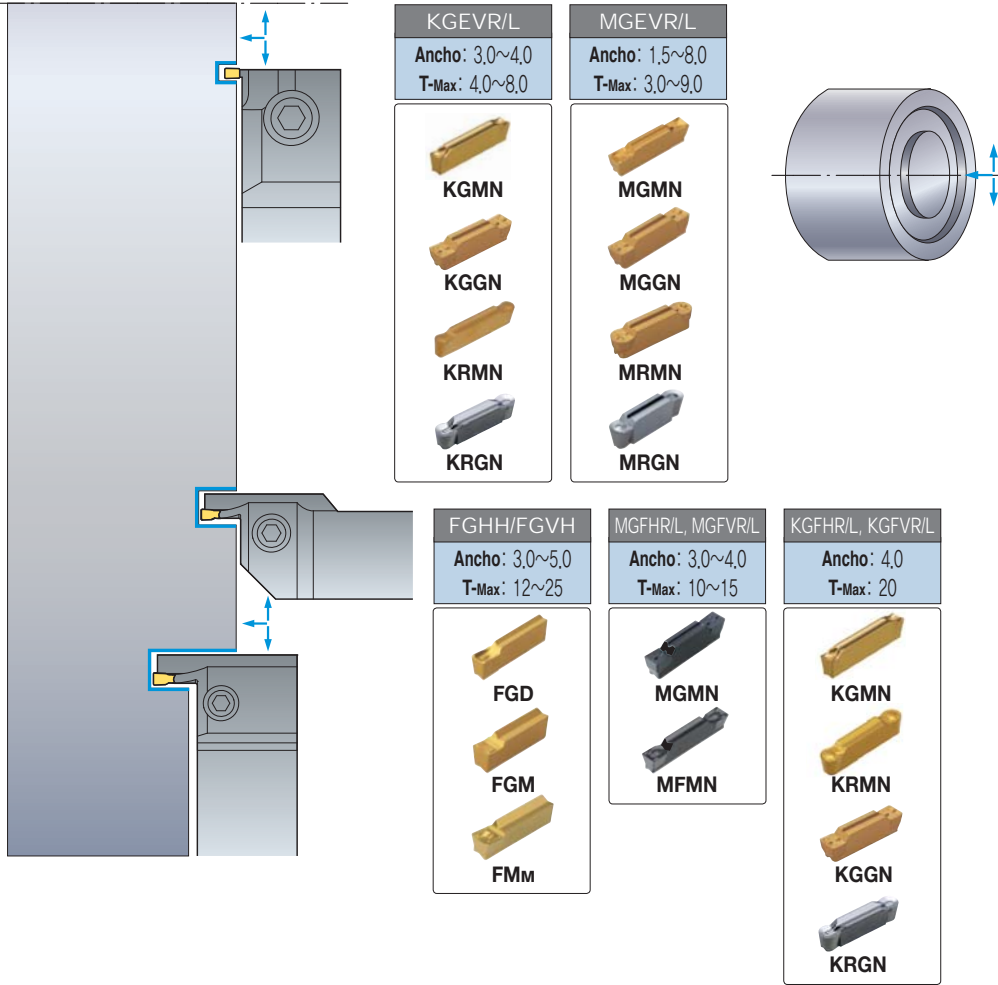
## Para Maquinado Interno

| NFTIH                              | GFIK                             | GFIP                             | IGH                               | KGIVR/L                          | MGIVR/L                         | KGIUR/L                  | MGIUR/L                          |
|------------------------------------|----------------------------------|----------------------------------|-----------------------------------|----------------------------------|---------------------------------|--------------------------|----------------------------------|
| Ancho: 0,75~4,02<br>T-Max: 1,3~4,6 | Ancho: 2,0~8,0<br>T-Max: 2,0~8,0 | Ancho: 1,1~8,0<br>T-Max: 2,1~9,0 | Ancho: 1,25~2,8<br>T-Max: 1,5~2,3 | Ancho: 2,0~4,0<br>T-Max: 7,0~8,0 | Ancho: 1,5~8,0<br>T-Max: 4,0~10 | Ancho: 3,0<br>T-Max: 3,0 | Ancho: 3,0~8,0<br>T-Max: 3,5~6,5 |
| NFTG<br>NFTF<br>NFTT               | GR                               | GW<br>BF                         | IG                                | KGMI<br>KGMN<br>KRMN<br>KGGN     | MRMN<br>MGGN<br>MRGN            | KRMN<br>KRGN             | MRMN                             |

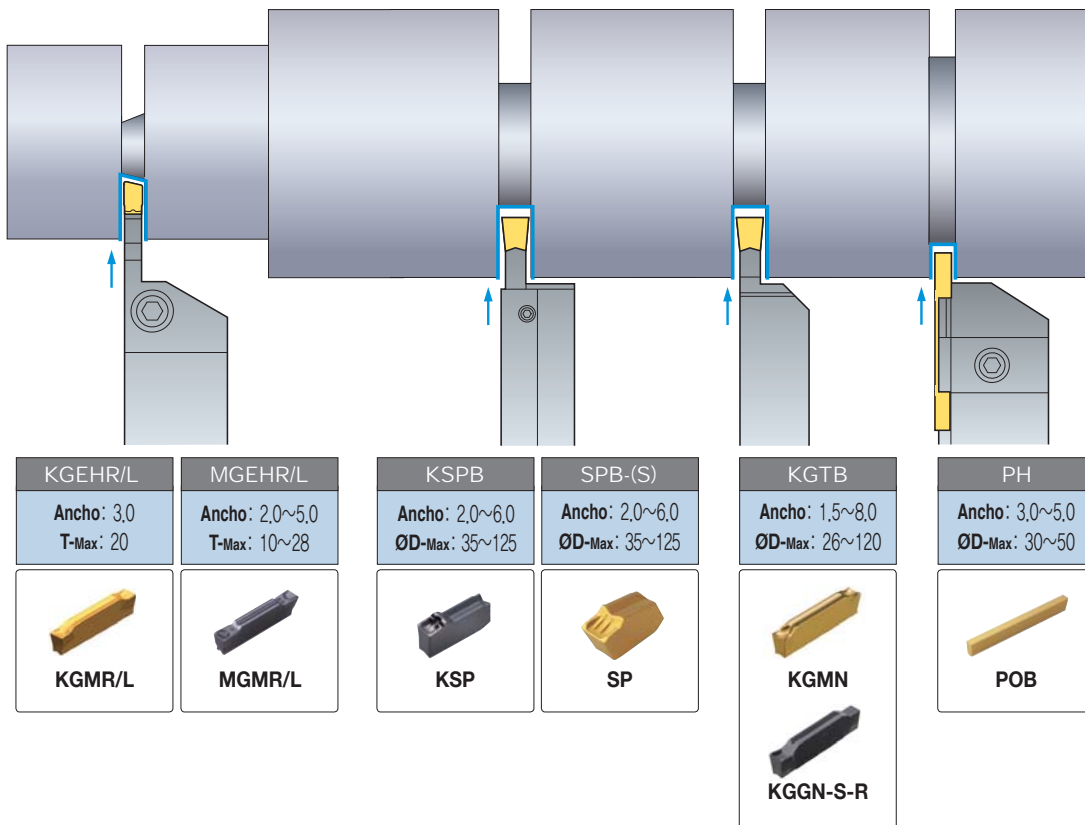




**Ranurado Frontal**



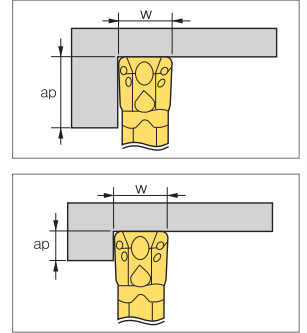
**Tonzado**



## Torneado y Ranurado

### Selección del inserto

- Avance
  - Decidir el avance máximo después de tener en cuenta las características de la placa y de las características de la máquina ( $F_{max} = W \times 0.075$ )
  - El avance máximo no puede ser mayor que el radio de punta de la placa.
  - En ranurado, los problemas en la evacuación de la viruta pueden ser resueltos interrumpiendo el avance a pequeños intervalos.
- Profundidad de Corte
  - La profundidad mínima de corte debe ser mayor que el radio de punta de la placa
  - Al decidir la profundidad de corte máxima por favor tener en cuenta la carga sobre la máquina
  - La flexión de la pieza de trabajo y el ángulo de flexión se pueden cambiar dependiendo de la forma de la placa elegida.

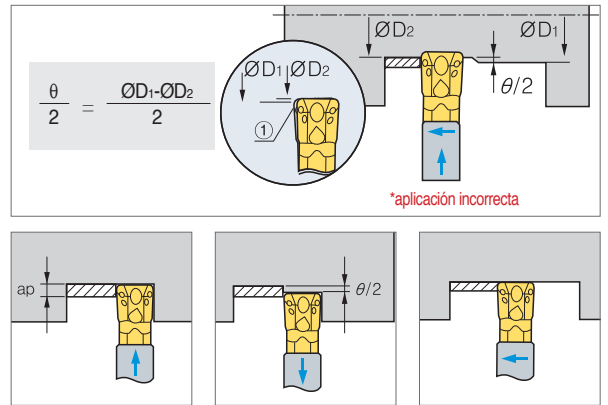


### Aviso para torneado

- Las herramientas KGT/MGT están diseñadas para soportar la fuerza de corte lateral producida por el ángulo de flexión; esta característica ofrece una ventaja sobre las placas ISO estándar.
- La placa estándar MGT También ofrece un efecto "wiper" que mejora la superficie de acabado

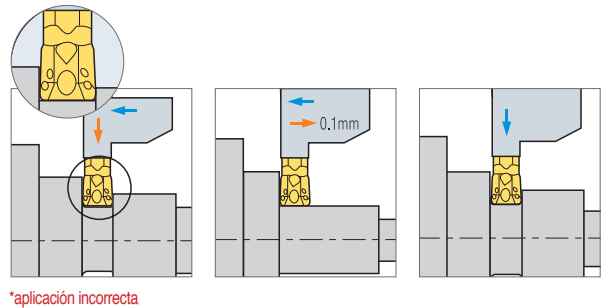
### Aviso para acabado (compensación necesaria)

- Una vez alcanzado el diámetro a ranurar, la operación de cilindrado puede causar flexión en la pieza de trabajo. En estos casos siga la formula mostrada, compensando estos factores conseguirá el diámetro deseado.
- Para eliminar la diferencia en el diámetro usando el ángulo de flexión (que se produce generalmente durante la operación final de cilindrado) seguir las instrucciones del párrafo superior cuando mecanice. Para obtener una buena superficie de acabado sin compensar en la aplicación siga las instrucciones siguientes:
  - 1) Ranure hasta el diámetro deseado
  - 2) Retire la herramienta hasta una distancia igual a  $\theta/2$
  - 3) Siga con la operación de cilindrado hasta el diámetro deseado

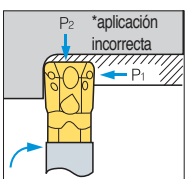


### Aviso para las aplicaciones de torneado MGT

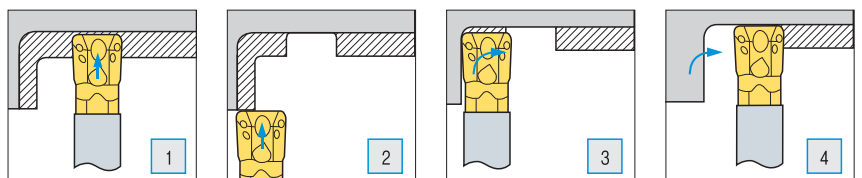
- Las herramientas KGT/MGT están disponibles para ranurado y cilindrado como solución multifuncional. Al usar la herramienta M.G.T tenga en cuenta que la herramienta imita el comportamiento de una herramienta ISO estándar. En la operación de cilindrado se aprovecha el ángulo de flexión teniendo en cuenta la fuerza de corte y la profundidad de pasada. Esto posibilita un desgaste normal en la placa, después del cilindrado un proceso de ranurado puede no cumplir con el diámetro deseado en la pieza de trabajo. Para corregir este efecto ajuste la herramienta 0.01mm y vuelva a la posición original de la aplicación de ranurado.



### Mecanizado de una pieza con un radio mayor que el radio del inserto



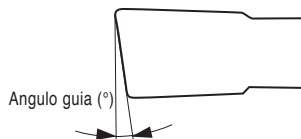
Estabilizar la presión de la herramienta. Las herramientas KGT/MGT generan una presión excesiva de corte cuando se mecaniza una pieza con un radio mayor al de la herramienta. La fuerza de corte desigual podría romper la placa o el soporte



## Torneado y Ranurado

### Inserto

#### Aplicaciones del ángulo frontal



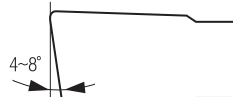
- 4°- Tubos (Tuberías y barra perforada)
- 6°- Tubos y barras macizas
- 8°- Barras macizas
- 15°- Barras macizas de pequeño diámetro

#### Ángulo frontal 0° (Neutral)



- Tronzado en barras macizas
- Queda un tetón central al separarse
- Previene la flexión de la pieza debida a la dirección de corte durante el tronzado
- Aplicable a tronzado profundo

#### Ángulo frontal 4°~8°



- Reduce el tetón central al tronzar barras macizas.
- Reduce la rebaba en el tronzado de tubo o barra perforada

#### Ángulo frontal 8°~15°

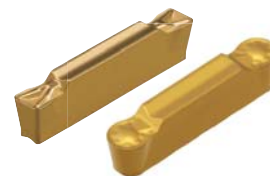


- Tronzado de barras de diámetro pequeño y barra perforada
- Reduce la rebaba y el tetón central en el tronzado de barras de pequeño diámetro o barra perforada

※ Insertos disponibles: MGMR/L□□□ - □□ - LP/RP, KGMR/L□□□ - □□ - PS/PT  
(Angulo frontal) (Angulo frontal)

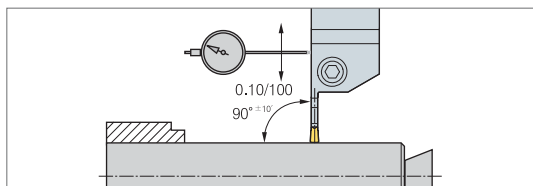
### Selección del inserto

- Para una buena aplicación de la placa, se deben tener en cuenta los siguientes factores
  - Ancho de la placa
  - Rompevirutas
  - Calidad y radio de punta R
- La relación entre el ancho de la placa y la profundidad de corte
  - Las placas tipo neutro, con 0-grados de ángulo frontal son la mejor solución en aplicaciones de máxima profundidad
  - En acero de uso corriente, la profundidad de corte máxima =  $W \times 0.8$
- Placas con ángulo frontal
  - Para reducir rebabas, recomendamos usar placas con ángulo frontal.
  - Las placas con ángulo frontal grande reduce la formación de rebabas, pero también la vida de la placa
  - En el caso que las rebabas sean aceptables, recomendamos usar una placa neutra



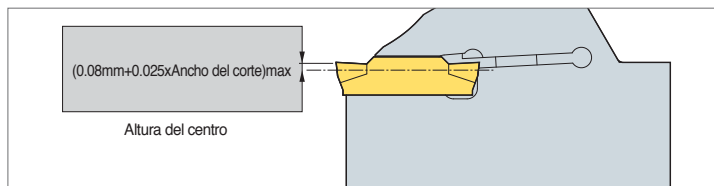
### Ajuste del soporte

- La posición de la arista de corte debe ser fijada en la posición exacta del eje de corte a fin de obtener una dirección de corte perpendicular a 90° que minimice la vibración durante el mecanizado.



### Ajuste para el tronzado

- En general la altura de la arista de corte debe estar entre  $\pm 0.1\text{mm}$  respecto al centro
  - La operación de tronzado debe realizarse lo más cerca posible del plato para minimizar vibraciones



### Aviso

- Mantener la velocidad de corte y el avance constantes
- Usar la cantidad correcta de refrigerante para un mejor rendimiento
- Limpiar correctamente el alojamiento del soporte antes de montar la placa

### USO

- Si la placa está gastada, cambie inmediatamente la placa para prevenir posibles daños en la pieza de trabajo
- Si el asiento del soporte está deformado o dañado, reemplácelo por uno nuevo inmediatamente para obtener una fijación estable
- No modifique o rectifique el asiento del soporte.


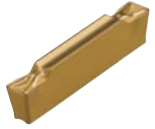

### Selección del rompevirutas

- Nuestros rompevirutas están diseñados para reducir el tamaño de las virutas en operaciones de ranurado. Las virutas pequeñas ofrecen las siguientes ventajas:
  - Disminuye el contacto entre la viruta y la pieza. Esto generalmente ofrece un mejor acabado superficial
  - Con un mejor flujo de viruta, el operario puede aumentar los avances debido a la disminución de la carga de corte.

## Herramientas para ranurado frontal

### Para ranurado poco profundo

- Herramientas económicas debido al uso de placas con dos puntas
- Nuevo diseño de rompevirutas con mayor control en diversos procesos de ranurado frontal
- El sistema de ranurado frontal KORLOY ofrece varias familias de soportes para un mejor aprovechamiento y beneficio

|   |   |   |   |
|---|---|---|---|
| <b>MFMN300</b>  | <b>MGMN400</b>  | <b>Horizontal MGFHR</b>   | <b>Vertical MGFVR</b>   |
|  |  |  |  |
| Ancho de corte 3mm  | Ancho de corte 4mm  | Dia.mecanizado Ø24~200mm  | Dia.mecanizado Ø24~60mm   |
| <b>KGMM300~600</b>  |   | <b>Horizontal KGFHR</b>   | <b>Vertical KGFVR</b>   |
|  |   |  |  |
| Ancho de corte 3-6mm  |   | Dia.mecanizado Ø34~220mm  | Dia.mecanizado Ø44~200mm  |

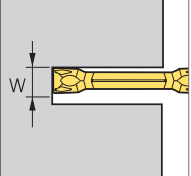
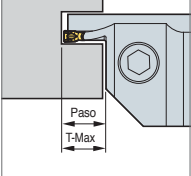
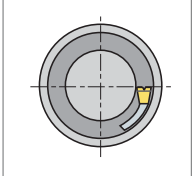
### Para ranurado profundo

- Estas herramientas se usan en ranurado profundo con placas de una sola punta (Tmax 25mm)
- La variedad de rompevirutas permite al operario aplicar varias estrategias de mecanizado
- La variedad de soportes permiten cubrir una amplia gama de aplicaciones

|  |  |  |  |  |
|--|--|--|--|--|
| <b>FGD</b>   | <b>FGM</b>   | <b>FMM</b>   | <b>Horizontal FGHH</b>   | <b>Vertical FGVH</b>   |
|  |  |  |  |  |
| Ranurado frontal profundo (Clase G)  | Ranurado y torneado frontal (Clase G)  | Ranurado y torneado frontal (Clase M)  | Dia.mecanizado Ø25~140mm   | Dia.mecanizado Ø25~140mm   |

### Sistema de selección del soporte

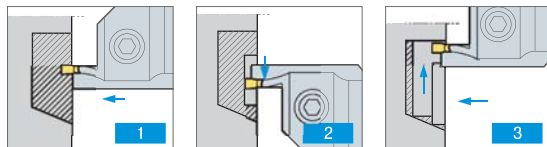
- Aplique estas tres simples indicaciones para seleccionar la placa y soporte adecuados a su necesidad

|   |  |   |   |   |   |
|---|--|---|---|---|---|
|  | <b>Inserto y soporte</b><br>Elija una placa y un soporte que se adapte a su proceso en función del ancho y la profundidad de corte necesarios. |  | <b>Soporte Tmax</b><br>Use el soporte con el menor voladizo posible que permita a la vez la profundidad deseada |  | <b>Dia. a mecanizar</b><br>Use el soporte con el mayor mango posible en función del diámetro inicial de ranurado que requiera la operación a realizar |
|---|--|---|---|---|---|

**Aviso:** Para minimizar la vibración use el soporte más corto de acuerdo con Tmax.

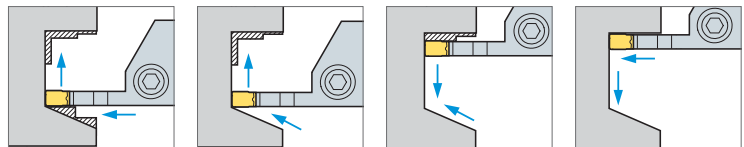
### Optimización de ranurado frontal

**Debaste:** Cuando ranure frontalmente disminuya la velocidad de corte en un 40% respecto a un refrentado normal



- Ranurando el diámetro inicial
- Refrentado alejándose del centro
- Refrentado hacia el centro

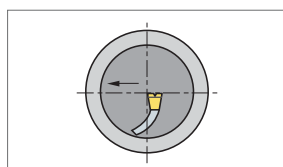
**Acabado:** Cuando ranure frontalmente disminuya la velocidad de corte en un 40% respecto a un refrentado normal



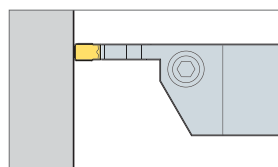
- Ranure al diámetro inicial hasta la profundidad final y refrente alejándose del centro
- Operación de copiado hasta la profundidad final
- Refrente hacia el centro
- Ranure hasta la profundidad real que necesite

### Aviso para el ranurado frontal

- Antes de proceder verifique y ajuste la siguiente posición del soporte



- Verifique la altura de la arista de corte respecto del centro de la pieza
- Mecanice hacia el centro y verifique las rebabas



- Para una mejor rugosidad superficial, posicione la placa completamente perpendicular a la superficie de trabajo

Mecanizado multifuncional con sistema de amarre reforzado y nueva tecnología

# KGT

- Insertos de doble cara de KGT que reducen el costo de mecanizado
- Fuerte sistema de sujecion asegura un mecanizado estable y preciso
- El nuevo grado y la nueva tecnologia proporcionan una vida util superior de la herramienta
- Varias soluciones de herramientas de KGT mejoran la productividad.
- Filos de corte en la parte delantera y en la cara del inserto, hacen estos insertos optimos para ranurado, tronzado y torneado logitudunal y frontal reduciendo el tiempo de maquinado.
- El rompevirutas tridimensional asegura un excelente control de viruta en varias aplicaciones
- Insertos KGT con varios rompevirutas estan disponibles para una amplia gama de aplicaciones
- Disponibles bordes de corte especiales (cotizacion especial)

## ➤ Codificación de Insertos

|  |                    |   |                           |                |                                      |                       |
|--|--------------------|---|---------------------------|----------------|--------------------------------------|-----------------------|
| KG   | M                  | N   | 300                       | (s)            | - 04                                 | - T                   |
| <b>Código de Sistema</b>                     | <b>Tolerancia</b>  | <b>Sentido corte</b>  | <b>Ancho arista corte</b> | <b>1 punta</b> | <b>Radio de punta</b>                | <b>Rompevirutas</b>   |
| KG : KORLOY Ranurado<br>KR : KORLOY Ranurado | M clase<br>G clase | N : Neutral<br>R : Derecha<br>L : Izquierda<br>I : Interior | 2.0~8.0 mm                |                | 0.2 mm<br>0.3 mm<br>0.4 mm<br>0.8 mm | L/R/T/C<br>/LP/RP/B/A |

## ➤ Sistema Codificación

|                                |   |   |                            |  |                    |                           |
|--------------------------------|---|---|----------------------------|--|--------------------|---------------------------|
| KG                             | E   | H   | R/L                        | 2525   | - 3                | T20                       |
| <b>Código de Sistema</b>       | <b>Operación</b>  | <b>Tipo soporte</b>                         | <b>Sentido corte</b>       | <b>Dimensiones</b>   | <b>Ancho corte</b> | <b>Profundidad máxima</b> |
| KG SYSTEM<br>(KORLOY Ranurado) | E: Exterior proceso<br>I: Interior proceso<br>F: Mecanizado frontal | H: Horizontal<br>V: Vertical<br>U: rebajado | R: Derecha<br>L: Izquierda | Alto: 25m<br>Ancho: 25mm<br>(En mecanizado interior : diámetro mínimo) | 2.0~8.0 mm         | 8~36 mm                   |

## ➤ Programa KGT



## Placa recomendada

| Denominación | Geometría                   | Imagen | Denominación             |          |          |                       |          |                          |          |         |                  |                     |   |
|--------------|-----------------------------|--------|--------------------------|----------|----------|-----------------------|----------|--------------------------|----------|---------|------------------|---------------------|---|
|              |                             |        | Para mecanizado exterior |          |          | Para ranurado frontal |          | Para mecanizado interior |          | Copiado | Para destalonado | Mecanizado especial |   |
|              |                             |        | Tronzado                 | Ranurado | Torneado | Ranurado              | Torneado | Ranurado                 | Torneado | Copiado | Rebajado         | Especial            |   |
| KGMN         | L<br>Ranurado ligero        |        | ○                        | ◎        |          | ○                     |          |                          |          |         |                  |                     |   |
|              | R<br>Ranurado de desbaste   |        | ○                        | ◎        |          | ○                     |          |                          |          |         |                  |                     |   |
|              | T<br>Torneado-Multiranurado |        | ○                        | ◎        | ◎        | ◎                     | ◎        |                          |          |         |                  |                     |   |
| KGMI         | T<br>Ranurado interior      |        |                          |          |          |                       |          | ◎                        | ◎        |         |                  |                     |   |
| KRMN         | C<br>Copiado                |        |                          |          |          |                       |          |                          |          | ◎       | ◎                |                     |   |
| KGMRL        | LP<br>Tronzado ligero       |        | ◎                        |          |          |                       |          |                          |          |         |                  |                     |   |
|              | RP<br>Tronzado de desbaste  |        | ◎                        |          |          |                       |          |                          |          |         |                  |                     |   |
| KGGN         | B<br>En bruto               |        |                          | ○        |          |                       |          |                          |          |         |                  |                     | ◎ |
|              | A<br>Ranurado de aluminio   |        | ○                        | ◎        | ○        |                       |          |                          |          |         |                  |                     |   |
| KRGN         | A<br>Perfilado de aluminio  |        |                          |          |          |                       |          |                          |          | ◎       | ◎                |                     |   |
| KRMI         | C<br>Copiado                |        |                          |          |          |                       |          |                          |          | ◎       | ◎                |                     |   |

◎ Primera elección, ○ Segunda elección

## Características

### Parte superior (Placa)

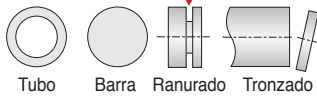
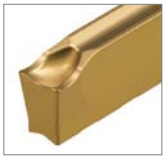


- Fijación fuerte → Mayor fiabilidad de mecanizado
- Autocentrado → Mayor precisión
- Diseño antivibración → Acabado superficial fino

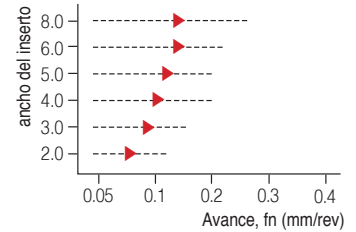


**Índice rompevirutas**

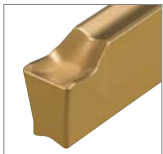
**L Para Ranurado ligero.**



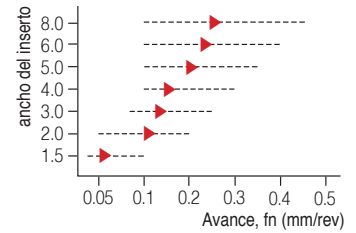
- filo de corte afilado
- mecanizado de bajo avance
- para componentes de pequeño diámetro
- acero bajo en carbono
- aleaciones de acero
- acero inox



**R Para Ranurado de desbaste.**



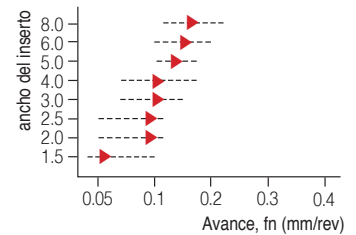
- filo fuerte
- mecanizado de gran avance
- corte interrumpido
- acero al carbono
- aleación de acero
- acero inoxidable
- fundición



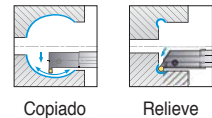
**T Para torneado y ranurado múltiple**



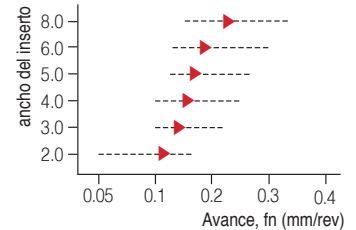
- filo agudo
- mejor control de viruta
- mecanizado de torneado y ranurado
- acero al carbono
- aleaciones de acero
- acero inoxidable
- fundición



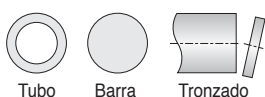
**C Para mecanizado en copiado y en relieve**



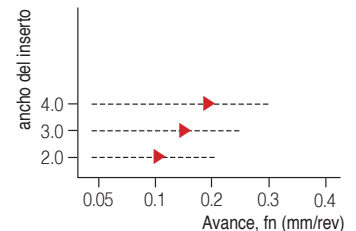
- mejor control de viruta
- copiado
- relieve
- acero al carbono
- aleación de acero
- acero inoxidable
- fundición



**LP Para Tronzado ligero**



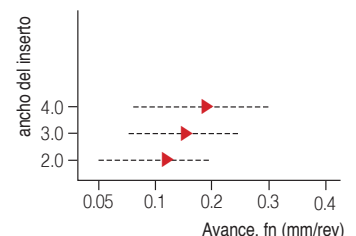
- filo agudo
- mecanizado de alto avance
- corte interrumpido
- mano derecha y izquierda
- acero al bajo carbono
- acero al carbono
- aleación de acero
- acero inoxidable



**RP Para Tronzado de desbaste**

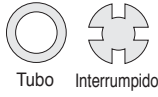


- filo fuerte
- mecanizado de alto avance
- corte interrumpido
- mano derecha y izquierda
- acero al carbono
- aleación de acero
- fundición

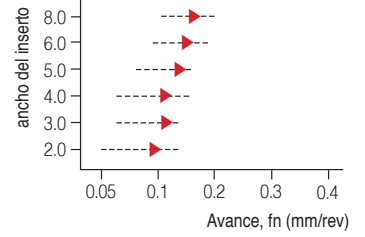


# C Información técnica para KGT

## B Para ranurado de precisión



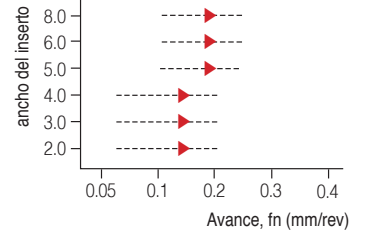
- inserto rectificado
- tolerancia precisa
- diversos radios y anchos de inserto
- acero al carbono
- aleación de acero
- acero inoxidable
- fundición



## A Para ranurado de aluminio



- filo agudo
- tolerancia precisa
- aleación de aluminio
- aleación de cobre



## Grados para el rango de aplicación recomendado

| Pieza de trabajo         | grado  | Orden de grados recomendados | Velocidad de corte recomendada (m/min) |     |     |     |     |  |
|--------------------------|--------|------------------------------|--|-----|-----|-----|-----|--|
|                          |        |                              | 50                                     | 100 | 150 | 200 | 800 |  |
| P<br>Acero<br>aleado     | PC5300 | 1                            |  | 70  | 120 |     |     |  |
|                          | NC3225 | 2                            |  |     | 130 | 220 |     |  |
|                          | NC5330 | 3                            |  |     | 120 | 200 |     |  |
|                          | PC5300 | 1                            | 60                                     | 105 |     |     |     |  |
|                          | NC3225 | 2                            |  |     | 130 | 200 |     |  |
|                          | NC5330 | 3                            |  | 90  | 180 |     |     |  |
| M<br>Acero inoxidable    | PC5300 | 1                            |  | 70  | 120 |     |     |  |
|                          | PC9030 | 2                            |  | 70  | 115 |     |     |  |
|                          | NC5330 | 3                            |  | 75  | 125 |     |     |  |
| K<br>Fundición           | PC5300 | 1                            | 55                                     | 90  |     |     |     |  |
|                          | NC5330 | 2                            |  | 95  | 160 |     |     |  |
| N<br>Material no ferroso | H01    | 1                            |  |     |     | 200 | 790 |  |
| S<br>HRSA                | PC5300 | 1                            | 20                                     | 35  |     |     |     |  |





## Ejemplos de aplicación

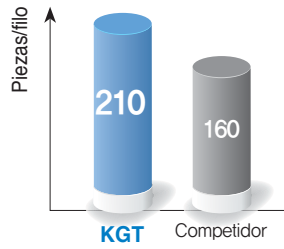
### Mecanizado multifuncional

### Repetición de torneado + ranurado

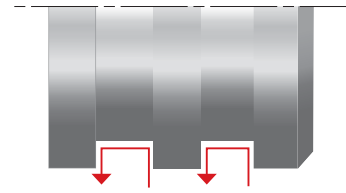
Geometría optimizada para torneado + ranurado - Alta eficiencia.

- **Pieza de trabajo** SM45C
- **Condiciones de corte**
  - vc = 170 (m/min)
  - fn = 0.15 (mm/rev)
  - ap = 2 mm
  - W = 3 mm
  - Con refrigerante

■ **Denominación** KGMN300-04-T (PC5300)



30% mayor



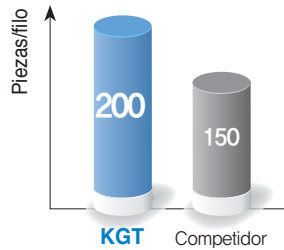
### Ranurado

### Ranurado en escuadra

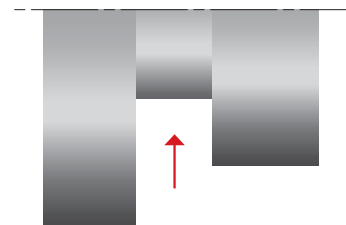
Geometría tenaz para ranurado interrumpido y profundo.

- **Pieza de trabajo** X5CrNi18-9
- **Condiciones de corte**
  - vc = 120 (m/min)
  - fn = 0.12 (mm/rev)
  - ap = 5 mm
  - W = 4 mm
  - Con refrigerante

■ **Denominación** KGMN400-03-R (PC5300)



30% mayor



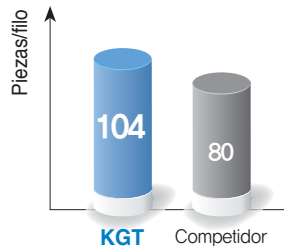
### Mecanizado de ejes

### Ranurado (desbaste) y torneado (acabado)

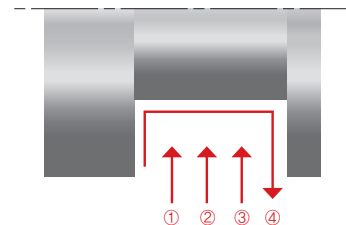
Excelente control de viruta para una mayor eficiencia.

- **Pieza de trabajo** 42CrM04
- **Condiciones de corte**
  - vc = 150 (m/min)
  - fn = 0.15 (mm/rev)
  - ap = 5 mm
  - W = 3 mm x 3
  - Con refrigerante

■ **Denominación** KGMN300-04-T (PC5300)



30% mayor



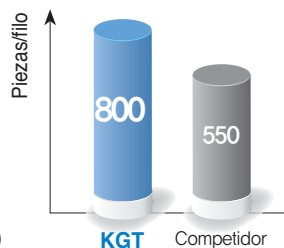
### Tronzado

### Tronzado de tubos

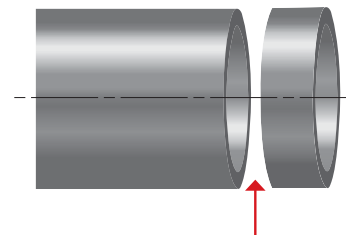
Exclusivo rompevirutas para tronzado que asegura una mayor vida útil de la herramienta. / Geometría afilada, menos rebabas.

- **Pieza de trabajo** X5CrNi18-9
- **Condiciones de corte**
  - vc = 140 (m/min)
  - fn = 0.15 (mm/rev)
  - ap = 2 mm
  - W = 3 mm
  - Con refrigerante

■ **Denominación** KGMR300-6D-LP (PC5300)


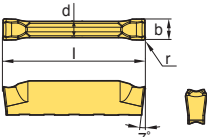

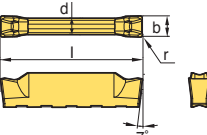

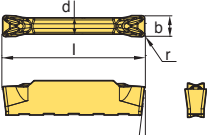

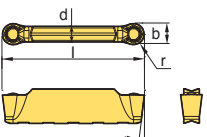

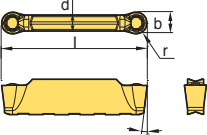

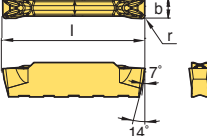

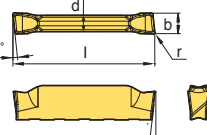

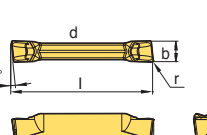


45% mayor



# C Inserto disponible para KGT

## Insertos

| Aplicación          | Imagen  | Designación  | Recubrimiento |        |        |        |        |        | Dimensiones (mm) |      |     |     |     | Configuración   | Pag.          |     |
|---------------------|---|--|---------------|--------|--------|--------|--------|--------|------------------|------|-----|-----|-----|---|---------------|-----|
|                     |   |  | NC3215        | NC3225 | NC5330 | NC6315 | PC5300 | PC9030 | b                | r    | l   | d   | α°  |   |               |     |
| Ranurado            |    | KGML 200-02-L<br>300-02-L<br>400-02-L<br>500-03-L<br>600-03-L  |               | ●      | ●      |        | ●      | ●      | 2.0              | 0.2  | 20  | 1.7 | -   |    | C14~21<br>C23 |     |
|                     |   |  |               | ●      | ●      |        | ●      | ●      | 3.0              | 0.2  | 20  | 2.3 | -   |   |               |     |
|                     |   |  |               | ●      | ●      |        | ●      | ●      | 4.0              | 0.2  | 20  | 3.3 | -   |   |               |     |
|                     |   |  |               | ●      | ●      |        | ●      | ●      | 5.0              | 0.3  | 25  | 4.1 | -   |   |               |     |
|                     |   |  |               | ●      | ●      |        | ●      | ●      | 6.0              | 0.3  | 25  | 5.1 | -   |   |               |     |
| Ranurado · Tronzado |    | KGML 150-015-R<br>200-02-R<br>300-02-R<br>400-03-R<br>500-03-R<br>600-03-R<br>800-04-R   |               | ●      | ●      |        | ●      |        | 1.5              | 0.15 | 16  | 1.2 | -   |    | C14~21<br>C23 |     |
|                     |   |  |               | ●      | ●      |        | ●      | ●      | 2.0              | 0.2  | 20  | 1.7 | -   |   |               |     |
|                     |   |  |               | ●      | ●      |        | ●      | ●      | 3.0              | 0.2  | 20  | 2.3 | -   |   |               |     |
|                     |   |  |               | ●      | ●      |        | ●      | ●      | 4.0              | 0.3  | 20  | 3.3 | -   |   |               |     |
|                     |   |  |               |        | ●      |        | ●      | ●      | 5.0              | 0.3  | 25  | 4.1 | -   |   |               |     |
|                     |   |  |               |        | ●      |        | ●      | ●      | 6.0              | 0.3  | 25  | 5.1 | -   |   |               |     |
|                     |   |  |               |        | ●      |        | ●      | ●      | 8.0              | 0.4  | 30  | 6.1 | -   |   |               |     |
| Ranurado · Torneado |   | KGML 150-015-T<br>200-02-T<br>250-02-T<br>300-02-T<br>04-T<br>400-04-T<br>08-T<br>500-04-T<br>08-T<br>600-04-T<br>08-T<br>800-08-T |               | ●      | ●      | ●      | ●      |        | 1.5              | 0.15 | 16  | 1.2 | -   |    | C14~21<br>C23 |     |
|                     |   |  |               | ●      | ●      | ●      | ●      | ●      | 2.0              | 0.2  | 20  | 1.7 | -   |   |               |     |
|                     |   |  |               | ●      | ●      |        | ●      | ●      | 2.5              | 0.2  | 20  | 2.0 | -   |   |               |     |
|                     |   |  |               | ●      | ●      | ●      | ●      | ●      | 3.0              | 0.2  | 20  | 2.3 | -   |   |               |     |
|                     |   |  |               | ●      | ●      | ●      | ●      | ●      | 3.0              | 0.4  | 20  | 2.3 | -   |   |               |     |
|                     |   |  |               | ●      | ●      | ●      | ●      | ●      | 4.0              | 0.4  | 20  | 3.3 | -   |   |               |     |
|                     |   |  |               | ●      | ●      | ●      | ●      | ●      | 4.0              | 0.8  | 20  | 3.3 | -   |   |               |     |
|                     |   |  |               | ●      | ●      | ●      | ●      | ●      | 5.0              | 0.4  | 25  | 4.1 | -   |   |               |     |
|                     |   |  |               | ●      | ●      | ●      | ●      | ●      | 5.0              | 0.8  | 25  | 4.1 | -   |   |               |     |
|                     |   |  |               | ●      | ●      | ●      | ●      | ●      | 6.0              | 0.4  | 25  | 5.1 | -   |   |               |     |
|                     |   |  |               | ●      | ●      | ●      | ●      | ●      | 6.0              | 0.8  | 25  | 5.1 | -   |   |               |     |
|                     | ●   |  | ●             | ●      |        | 8.0    | 0.8    | 30     | 6.1              | -    |     |     |     |   |               |     |
| Relieve perfilado   |  | KRML 200-C<br>300-C<br>400-C<br>500-C<br>600-C<br>800-C  |               | ●      | ●      | ●      | ●      |        | 2.0              | 1.0  | 20  | 1.7 | -   |  | C14~22        |     |
|                     |   |  |               | ●      | ●      |        | ●      |        | 3.0              | 1.5  | 20  | 2.2 | -   |   |               |     |
|                     |   |  |               | ●      | ●      | ●      | ●      |        | 4.0              | 2.0  | 20  | 3.2 | -   |   |               |     |
|                     |   |  |               | ●      | ●      | ●      | ●      |        | 5.0              | 2.5  | 25  | 4.0 | -   |   |               |     |
|                     |   |  |               | ●      | ●      | ●      | ●      |        | 6.0              | 3.0  | 25  | 5.0 | -   |   |               |     |
| Perfilado           |  | KRMI 200-C<br>300-C<br>400-C   |               |        |        |        |        |        | 2.0              | 1.0  | 20  | 1.7 | -   |  | C23           |     |
|                     |   |  |               |        |        |        |        |        |                  | 3.0  | 1.5 | 20  | 2.2 |   |               | -   |
|                     |   |  |               |        |        |        |        |        |                  |      | 4.0 | 2.0 | 20  |   |               | 3.2 |
| Ranurado · Interior |  | KGMI 200-02-T<br>300-04-T<br>400-04-T  |               |        |        |        | ●      |        | 2.0              | 0.2  | 20  | 1.7 | -   |  | C23           |     |
|                     |   |  |               |        |        |        | ●      |        | 3.0              | 0.4  | 20  | 2.3 | -   |   |               |     |
|                     |   |  |               |        |        |        | ●      |        | 4.0              | 0.4  | 20  | 3.3 | -   |   |               |     |
| Tronzado (Derecha)  |  | KGMR 200-6D-LP<br>8D-LP<br>15D-LP<br>300-6D-LP<br>15D-LP<br>400-4D-LP<br>15D-LP<br>500-4D-LP                                       |               |        | ●      |        | ●      |        | 2.0              | 0.2  | 20  | 1.7 | 6   |  | C14<br>C16    |     |
|                     |   |  |               |        |        |        |        |        |                  | 2.0  | 0.2 | 20  | 1.7 |   |               | 8   |
|                     |   |  |               |        | ●      |        | ●      |        |                  | 2.0  | 0.2 | 20  | 1.7 |   |               | 15  |
|                     |   |  |               |        | ●      |        | ●      |        |                  | 3.0  | 0.2 | 20  | 2.3 |   |               | 6   |
|                     |   |  |               |        | ●      |        | ●      |        |                  | 3.0  | 0.2 | 20  | 2.3 |   |               | 15  |
|                     |   |  |               |        | ●      |        | ●      |        |                  | 4.0  | 0.3 | 20  | 3.3 |   |               | 4   |
| Tronzado (Derecha)  |  | KGMR 200-6D-RP<br>8D-RP<br>15D-RP<br>300-6D-RP<br>15D-RP<br>400-4D-RP<br>15D-RP<br>500-4D-RP                                       |               |        | ●      |        | ●      |        | 2.0              | 0.2  | 20  | 1.7 | 6   |  | C14<br>C16    |     |
|                     |   |  |               |        |        |        |        |        |                  | 2.0  | 0.2 | 20  | 1.7 |   |               | 8   |
|                     |   |  |               |        | ●      |        | ●      |        |                  | 2.0  | 0.2 | 20  | 1.7 |   |               | 15  |
|                     |   |  |               |        | ●      |        | ●      |        |                  | 3.0  | 0.2 | 20  | 2.3 |   |               | 6   |
|                     |   |  |               |        | ●      |        | ●      |        |                  | 3.0  | 0.2 | 20  | 2.3 |   |               | 15  |
|                     |   |  |               |        | ●      |        | ●      |        |                  | 4.0  | 0.3 | 20  | 3.3 |   |               | 4   |

• Puede rectificar el rompevirutas, 'B' como desee. Si desea alguna forma especial de rompevirutas, comuníquese con su distribuidor

● : En Almacen



C

**Insertos**

| Uygulama                                       | Imagen | Designación    | Kaplama |        |        |        | Kaplama |     | Boyutlar (mm) |      |      |     |                | Configuración | Pag.          |
|--|--------|----------------|---------|--------|--------|--------|---------|-----|---------------|------|------|-----|----------------|---------------|---------------|
|  |        |                | NC3215  | NC5330 | PC5300 | PC9030 | H01     | H05 | b             | r    | l    | d   | $\alpha^\circ$ |               |               |
| Tronzado (Izquierda)                           |        | KGML 200-6D-LP |         |        |        |        |         |     | 2.0           | 0.2  | 20   | 1.7 | 6              |               | C14<br>C16    |
|  |        | 15D-LP         |         |        |        |        |         |     | 2.0           | 0.2  | 20   | 1.7 | 15             |               |               |
|  |        | 300-6D-LP      |         |        |        |        |         |     | 3.0           | 0.2  | 20   | 2.3 | 6              |               |               |
|  |        | 15D-LP         |         |        |        |        |         |     | 3.0           | 0.2  | 20   | 2.3 | 15             |               |               |
|  |        | 400-4D-LP      |         |        |        |        |         |     | 4.0           | 0.2  | 20   | 3.3 | 4              |               |               |
|  |        | 15D-LP         |         |        |        |        |         |     | 4.0           | 0.2  | 20   | 3.3 | 15             |               |               |
| Tronzado (Izquierda)                           |        | KGML 200-6D-RP |         |        |        |        |         |     | 2.0           | 0.2  | 20   | 1.7 | 6              |               | C14<br>C16    |
|  |        | 15D-RP         |         |        |        |        |         |     | 2.0           | 0.2  | 20   | 1.7 | 15             |               |               |
|  |        | 300-6D-RP      |         |        |        |        |         |     | 3.0           | 0.2  | 20   | 2.3 | 6              |               |               |
|  |        | 15D-RP         |         |        |        |        |         |     | 3.0           | 0.2  | 20   | 2.3 | 15             |               |               |
|  |        | 400-4D-RP      |         |        |        |        |         |     | 4.0           | 0.2  | 20   | 3.3 | 4              |               |               |
|  |        | 15D-RP         |         |        |        |        |         |     | 4.0           | 0.2  | 20   | 3.3 | 15             |               |               |
| Ranurado (Placa rectificada)                   |        | KGGN 265-015-B |         |        |        |        |         |     | 2.65          | 0.15 | 20   | 2.3 | -              |               | C14<br>C16~18 |
|  |        | 300-020-B      |         |        |        |        |         |     | 3.0           | 0.20 | 20   | 2.3 | -              |               |               |
|  |        | 040-B          |         |        |        |        |         |     | 3.0           | 0.40 | 20   | 2.3 | -              |               |               |
|  |        | 315-015-B      |         |        |        |        |         |     | 3.15          | 0.15 | 20   | 2.3 | -              |               |               |
|  |        | 400-040-B      |         |        |        |        |         |     | 4.0           | 0.40 | 20   | 3.3 | -              |               |               |
|  |        | 080-B          |         |        |        |        |         |     | 4.0           | 0.80 | 20   | 3.3 | -              |               |               |
|  |        | 415-015-B      |         |        |        |        |         |     | 4.15          | 0.15 | 20   | 3.3 | -              |               |               |
|  |        | 478-055-B      |         |        |        |        |         |     | 4.78          | 0.55 | 20   | 3.3 | -              |               |               |
|  |        | 500-080-B      |         |        |        |        |         |     | 5.0           | 0.80 | 25   | 4.1 | -              |               |               |
|  |        | 515-015-B      |         |        |        |        |         |     | 5.15          | 0.15 | 25   | 4.1 | -              |               |               |
|  |        | 600-080-B      |         |        |        |        |         |     | 6.0           | 0.80 | 25   | 5.1 | -              |               |               |
|  |        | 120-B          |         |        |        |        |         | 6.0 | 1.20          | 25   | 5.1  | -   |                |               |               |
|  |        | 800-080-B      |         |        |        |        |         | 8.0 | 0.80          | 30   | 6.1  | -   |                |               |               |
|  |        | 120-B          |         |        |        |        |         | 8.0 | 1.20          | 30   | 6.1  | -   |                |               |               |
| Ranurado · Tronzado (Placa rectificada)        |        | KGGN 200-02-R  |         |        |        |        |         |     | 2.0           | 0.2  | 20   | 1.7 | -              |               | C14~21        |
|  |        | 300-02-R       |         |        |        |        |         |     | 3.0           | 0.2  | 20   | 2.3 | -              |               |               |
|  |        | 400-03-R       |         |        |        |        |         |     | 4.0           | 0.3  | 20   | 3.3 | -              |               |               |
|  |        | 500-03-R       |         |        |        |        |         |     | 5.0           | 0.3  | 25   | 4.1 | -              |               |               |
|  |        | 600-03-R       |         |        |        |        |         |     | 6.0           | 0.3  | 25   | 5.1 | -              |               |               |
|  |        | 800-04-R       |         |        |        |        |         |     | 8.0           | 0.4  | 30   | 6.1 | -              |               |               |
| Ranurado · Tronzado (Inserto de un solo flor)  |        | KGGN 200S-02-R |         |        |        |        |         |     | 2.0           | 0.2  | 19.9 | 1.7 | -              |               | C24           |
|  |        | 300S-02-R      |         |        | ●      |        |         |     | 3.0           | 0.2  | 19.9 | 2.3 | -              |               |               |
|  |        | 400S-03-R      |         |        | ●      |        |         |     | 4.0           | 0.3  | 19.9 | 3.3 | -              |               |               |
|  |        | 500S-03-R      |         |        | ●      |        |         |     | 5.0           | 0.3  | 24.9 | 4.1 | -              |               |               |
|  |        | 600S-03-R      |         |        | ●      |        |         |     | 6.0           | 0.3  | 24.9 | 5.1 | -              |               |               |
|  |        | 800S-04-R      |         |        | ●      |        |         |     | 8.0           | 0.4  | 24.9 | 6.1 | -              |               |               |
| Ranurado de aluminio                           |        | KGGN 200-02-A  |         |        |        |        | ●       |     | 2.0           | 0.2  | 20   | 1.7 | -              |               | C14~21        |
|  |        | 300-02-A       |         |        |        |        | ●       |     | 3.0           | 0.2  | 20   | 2.3 | -              |               |               |
|  |        | 400-04-A       |         |        |        |        | ●       |     | 4.0           | 0.4  | 20   | 3.3 | -              |               |               |
|  |        | 500-04-A       |         |        |        |        | ●       |     | 5.0           | 0.4  | 25   | 4.1 | -              |               |               |
|  |        | 600-04-A       |         |        |        |        | ●       |     | 6.0           | 0.4  | 25   | 5.1 | -              |               |               |
| Ranurado de aluminio (Inserto de un solo flor) |        | KGGN 200S-02-A |         |        |        |        |         |     | 2.0           | 0.2  | 20   | 1.7 | -              |               | C24           |
|  |        | 300S-02-A      |         |        |        |        |         |     | 3.0           | 0.2  | 20   | 2.3 | -              |               |               |
|  |        | 400S-04-A      |         |        |        |        |         |     | 4.0           | 0.4  | 20   | 3.3 | -              |               |               |
|  |        | 500S-04-A      |         |        |        |        |         |     | 5.0           | 0.4  | 25   | 4.1 | -              |               |               |
|  |        | 600S-04-A      |         |        |        |        |         |     | 6.0           | 0.4  | 25   | 5.1 | -              |               |               |
| Ranurado de aluminio                           |        | KRGN 300-A     |         |        |        |        | ●       |     | 3.0           | 1.5  | 20   | 2.3 | -              |               | C14~21        |
|  |        | 400-A          |         |        |        |        | ●       |     | 4.0           | 2.0  | 20   | 3.3 | -              |               |               |
|  |        | 500-A          |         |        |        |        | ●       |     | 5.0           | 2.5  | 25   | 4.1 | -              |               |               |
|  |        | 600-A          |         |        |        |        | ●       |     | 6.0           | 3.0  | 25   | 5.1 | -              |               |               |
|  |        | 800-A          |         |        |        |        | ●       |     | 8.0           | 4.0  | 30   | 6.1 | -              |               |               |

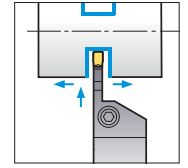
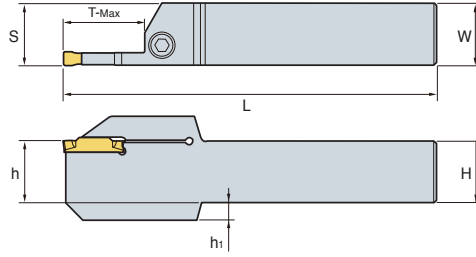
• Puede rectificar el rompevirutas, 'B' como desee. Si desea alguna forma especial de rompevirutas, comuníquese con su distribuidor

●: En Almacén



## KGEHR/L

Para ranurado, torneado, tronzado, mecanizados de desahogos



KGGN  
KGMN  
KGMR/L  
KRMN  
KRGN

• Inserto tipo R  
(mm)

| Designación                 | H = (h) | W  | L   | S    | h1 | T-Max | Insertos  | Tornillo | Llave |
|-----------------------------|---------|----|-----|------|----|-------|---|----------|-------|
| <b>KGEHR/L</b> 1616-1.5-T14 | 16      | 16 | 100 | 16.2 | -  | 14    | KGMN150-□-□   | MHA0512  | HW40L |
| 2020-1.5-T14                | 20      | 20 | 125 | 20.2 | -  | 14    |   |          |       |
| 2525-1.5-T14                | 25      | 25 | 150 | 25.2 | -  | 14    |   |          |       |
| 1212-2-T08                  | 12      | 12 | 100 | 12.2 | -  | 8     | KGMN200-□-□<br>KGMR/L200-□-□<br>KRMN200-C<br>KGGN200-□-□              | MHA0512  | HW40L |
| 1616-2-T08                  | 16      | 16 | 100 | 16.2 | -  | 8     |   |          |       |
| 2020-2-T08                  | 20      | 20 | 125 | 20.2 | -  | 8     |   |          |       |
| 2525-2-T08                  | 25      | 25 | 150 | 25.2 | -  | 8     |   |          |       |
| 1616-2-T12                  | 16      | 16 | 100 | 16.2 | -  | 12    |   |          |       |
| 2020-2-T12                  | 20      | 20 | 125 | 20.2 | -  | 12    |   |          |       |
| 2525-2-T12                  | 25      | 25 | 150 | 25.2 | -  | 12    |   |          |       |
| 1616-2-T17                  | 16      | 16 | 100 | 16.2 | -  | 17    |   |          |       |
| 2020-2-T17                  | 20      | 20 | 125 | 20.2 | -  | 17    |   |          |       |
| 2525-2-T17                  | 25      | 25 | 150 | 25.2 | -  | 17    |   |          |       |
| 1616-2.5-T17                | 16      | 16 | 100 | 16.3 | -  | 17    | KGMN250-□-□   | MHA0512  | HW40L |
| 2020-2.5-T17                | 20      | 20 | 125 | 20.3 | -  | 17    |   |          |       |
| 2525-2.5-T17                | 25      | 25 | 150 | 25.3 | -  | 17    |   |          |       |
| 1616-3-T10                  | 16      | 16 | 100 | 16.4 | -  | 10    | KGMN300-□-□<br>KGMR/L300-□-□<br>KRMN300-C<br>KGGN300-□-□<br>KRGN300-□ | MHA0512  | HW40L |
| 2020-3-T10                  | 20      | 20 | 125 | 20.4 | -  | 10    |   |          |       |
| 2525-3-T10                  | 25      | 25 | 150 | 25.4 | -  | 10    |   |          |       |
| 3232-3-T10                  | 32      | 32 | 170 | 32.4 | -  | 10    |   |          |       |
| 1616-3-T13                  | 16      | 16 | 100 | 16.4 | -  | 13    |   |          |       |
| 2020-3-T13                  | 20      | 20 | 125 | 20.4 | -  | 13    |   |          |       |
| 2525-3-T13                  | 25      | 25 | 150 | 25.4 | -  | 13    |   |          |       |
| 1616-3-T20                  | 16      | 16 | 100 | 16.4 | -  | 20    |   |          |       |
| 2020-3-T20                  | 20      | 20 | 125 | 20.4 | -  | 20    |   |          |       |
| 2525-3-T20                  | 25      | 25 | 150 | 25.4 | -  | 20    |   |          |       |
| 3232-3-T20                  | 32      | 32 | 170 | 32.4 | -  | 20    | KGMN400-□-□<br>KGMR/L400-□-□<br>KRMN400-C<br>KGGN400-□-□<br>KRGN400-□ | BHA0616  | HW50L |
| 2525-3-T25                  | 25      | 25 | 150 | 25.4 | -  | 25    |   |          |       |
| 1616-4-T10                  | 16      | 16 | 100 | 16.4 | -  | 10    |   |          |       |
| 2020-4-T10                  | 20      | 20 | 125 | 20.4 | -  | 10    |   |          |       |
| 2525-4-T10                  | 25      | 25 | 150 | 25.4 | -  | 10    |   |          |       |
| 3232-4-T10                  | 32      | 32 | 150 | 32.4 | -  | 10    |   |          |       |
| 1616-4-T15                  | 16      | 16 | 100 | 16.4 | -  | 15    |   |          |       |
| 2020-4-T15                  | 20      | 20 | 125 | 20.4 | -  | 15    |   |          |       |
| 2525-4-T15                  | 25      | 25 | 150 | 25.4 | -  | 15    |   |          |       |
| 1616-4-T20                  | 16      | 16 | 100 | 16.4 | -  | 20    |   |          |       |
| 2020-4-T20                  | 20      | 20 | 125 | 20.4 | -  | 20    |   |          |       |
| 2525-4-T20                  | 25      | 25 | 150 | 25.4 | -  | 20    |   |          |       |
| 3232-4-T20                  | 32      | 32 | 170 | 32.4 | -  | 20    |   |          |       |
| 1616-4-T25                  | 16      | 16 | 100 | 16.4 | -  | 25    | KGMN400-□-□<br>KGMR/L400-□-□<br>KRMN400-C<br>KGGN400-□-□<br>KRGN400-□ | BHA0616  | HW50L |
| 2020-4-T25                  | 20      | 20 | 125 | 20.4 | -  | 25    |   |          |       |
| 2525-4-T25                  | 25      | 25 | 150 | 25.4 | -  | 25    |   |          |       |

Insertos Aplicable C12~C13

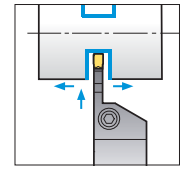
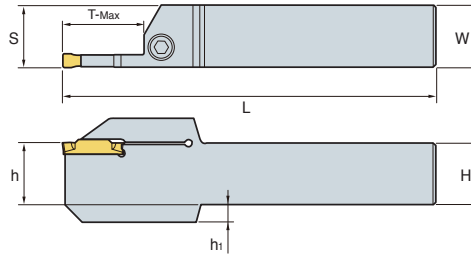
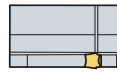


# KGEHR/L

Para ranurado, torneado, tronzado, mecanizado de desahogos



KGGN KGMN  
KGMR/L KRMN  
KRGN



• Inserto tipo R  
(mm)

| Designación |            | H = (h) | W   | L   | S     | h <sub>1</sub> | T-Max   | Insertos   | Tornillo | Llave |  |         |       |
|-------------|------------|---------|-----|-----|-------|----------------|---------|--|----------|-------|--|---------|-------|
| KGEHR/L     | 2020-5-T12 | 20      | 20  | 125 | 20.5  | -              | 12      | KGMN500-□-□<br>KRMN500-C<br>KGGN500-□-□<br>KRGN500-□ | BHA0616  | HW50L |  |         |       |
|             | 2525-5-T12 | 25      | 25  | 150 | 25.5  | -              | 12      |  |          |       |  |         |       |
|             | 2020-5-T15 | 20      | 20  | 125 | 20.55 | -              | 15      |  |          |       |  |         |       |
|             | 2525-5-T15 | 25      | 25  | 150 | 25.55 | -              | 15      |  |          |       |  |         |       |
|             | 3232-5-T15 | 32      | 32  | 170 | 32.55 | -              | 15      |  |          |       |  |         |       |
|             | 2020-5-T20 | 20      | 20  | 125 | 20.5  | -              | 20      |  |          |       |  |         |       |
|             | 2525-5-T20 | 25      | 25  | 150 | 25.5  | -              | 20      |  |          |       |  |         |       |
|             | 3232-5-T20 | 32      | 32  | 170 | 32.5  | -              | 20      |  |          |       |  |         |       |
|             | 2525-5-T32 | 25      | 25  | 150 | 25.5  | 7              | 32      |  |          |       | BHA0620  | HW50L   |       |
|             | 2020-6-T12 | 20      | 20  | 125 | 20.5  | -              | 12      |  |          |       | KGMN600-□-□<br>KRMN600-C<br>KGGN600-□-□<br>KRGN600-□ | BHA0616 | HW50L |
|             | 2525-6-T12 | 25      | 25  | 150 | 25.5  | -              | 12      |  |          |       |  |         |       |
|             | 2525-6-T15 | 25      | 25  | 150 | 25.55 | -              | 15      |  |          |       |  |         |       |
|             | 3232-6-T15 | 32      | 32  | 170 | 32.55 | -              | 15      |  |          |       |  |         |       |
|             | 2020-6-T20 | 20      | 20  | 125 | 20.5  | -              | 20      |  |          |       |  |         |       |
|             | 2525-6-T20 | 25      | 25  | 150 | 25.5  | -              | 20      |  |          |       |  |         |       |
|             | 3232-6-T20 | 32      | 32  | 170 | 32.5  | -              | 20      |  |          |       |  |         |       |
|             | 2525-6-T32 | 25      | 25  | 150 | 25.5  | 7              | 32      | BHA0620  | HW50L    |       |  |         |       |
|             | 2525-8-T16 | 25      | 25  | 150 | 26    | -              | 16      | KGMN800-□-□<br>KRMN800-C<br>KGGN800-□-□<br>KRGN800-□ | BHA0616  | HW50L |  |         |       |
|             | 3232-8-T16 | 32      | 32  | 170 | 33.05 | -              | 16      |  |          |       |  |         |       |
|             | 2525-8-T25 | 25      | 25  | 150 | 26    | -              | 25      |  |          |       |  |         |       |
| 3232-8-T25  | 32         | 32      | 170 | 33  | -     | 25             |         |  |          |       |  |         |       |
| 2525-8-T36  | 25         | 25      | 150 | 26  | 7     | 36             | BHA0620 |  |          |       | HW50L  |         |       |
| 3232-8-T36  | 32         | 32      | 170 | 33  | -     | 36             |         |  |          |       |  |         |       |

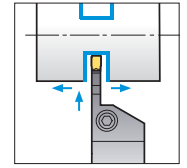
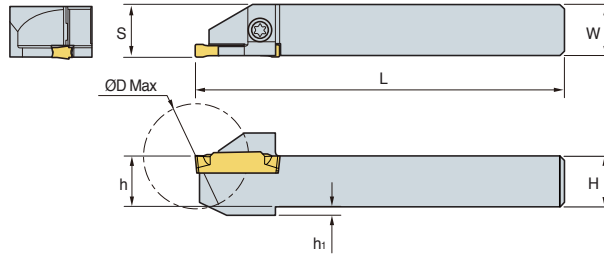
➔ Insertos Aplicable C12~C13

## KGEHR/L-D00A (Auto Tool)

Para ranurado, torneado, tronzado



KGGN KGMN  
KGMR/L KRMN



• Inserto tipo R  
(mm)

| Designación | H = (h)     | W  | L  | S   | h <sub>1</sub> | ØD Max | Insertos | Tornillo   | Llave    |       |
|-------------|-------------|----|----|-----|----------------|--------|----------|--|----------|-------|
| KGEHR/L     | 1010-2-D20A | 10 | 10 | 125 | 10.2           | 2      | 20       | KGMN200-□-□<br>KGMR/L200-□-□<br>KRMN200-C<br>KGGN200-□-□ | ETNA0412 | TW15L |
|             | 1212-2-D25A | 12 | 12 | 125 | 12.2           | 2      | 25       |  |          |       |
|             | 1414-2-D25A | 14 | 14 | 125 | 14.2           | -      | 25       |  |          |       |
|             | 1616-2-D32A | 16 | 16 | 125 | 16.2           | -      | 32       |  |          |       |
|             | 1212-3-D25A | 12 | 12 | 125 | 12.4           | 2      | 25       |  |          |       |
|             | 1616-3-D32A | 16 | 16 | 125 | 16.4           | -      | 32       |  |          |       |

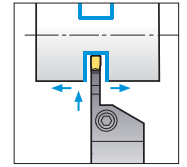
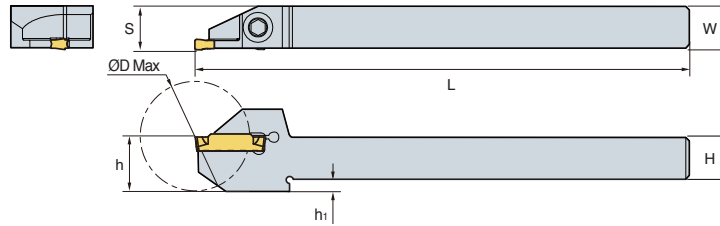
➔ Insertos Aplicable C12~C13

## KGEHR/L-D00B (Auto Tool)

Para ranurado, Torneado, tronzado



KGGN KGMN  
KRMN KGMR/L



• Inserto tipo R  
(mm)

| Designación | H = (h)     | W  | L  | S   | h <sub>1</sub> | ØD Max | Insertos | Tornillo   | Llave   |       |
|-------------|-------------|----|----|-----|----------------|--------|----------|--|---------|-------|
| KGEHR/L     | 1010-2-D30B | 10 | 10 | 140 | 10.2           | 6.6    | 30       | KGMN200-□-□<br>KGMR/L200-□-□<br>KRMN200-C<br>KGGN200-□-□ | MHA0512 | HW40L |
|             | 1212-2-D25B | 12 | 12 | 140 | 12.5           | 3.5    | 25       |  |         |       |
|             | 1212-2-D30B | 12 | 12 | 140 | 12.2           | 3.5    | 30       |  |         |       |
|             | 1616-2-D25B | 16 | 16 | 140 | 16.2           | -      | 25       |  |         |       |
|             | 1616-2-D32B | 16 | 16 | 140 | 16.2           | -      | 32       |  |         |       |
|             | 1212-3-D25B | 12 | 12 | 140 | 12.4           | 3.5    | 25       |  |         |       |
|             | 1212-3-D32B | 12 | 12 | 140 | 12.4           | 3.5    | 32       |  |         |       |
|             | 1616-3-D25B | 16 | 16 | 140 | 16.4           | -      | 25       |  |         |       |
|             | 1616-3-D32B | 16 | 16 | 140 | 16.4           | -      | 32       |  |         |       |

➔ Insertos Aplicable C12~C13

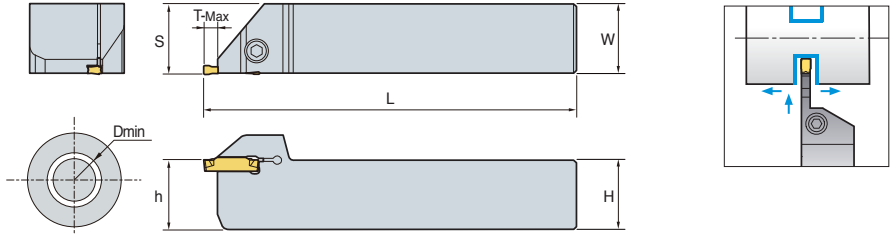


# KGEHR/L-T00

Para ranurado, torneado, ranurado frontal



KGMN KRMN  
KGGN KRGN



• Inserto tipo R  
(mm)

| Designación               | H = (h) | W  | L   | S    | ØD Min | T-Max | Insertos   | Tornillo | Llave |
|---------------------------|---------|----|-----|------|--------|-------|--|----------|-------|
| <b>KGEHR/L 1616-3-T00</b> | 16      | 16 | 100 | 16.4 | 80     | 4.8   | KGMN300-□-□<br>KRMN300-C<br>KGGN300-□-□<br>KRGN300-□ | MHA0512  | HW40L |
|                           | 20      | 20 | 125 | 20.4 | 80     | 4.8   |  |          |       |
|                           | 25      | 25 | 150 | 25.4 | 80     | 4.8   |  |          |       |
| <b>1616-4-T00</b>         | 16      | 16 | 100 | 16.4 | 80     | 4.8   | KGMN400-□-□<br>KRMN400-C<br>KGGN400-□-□<br>KRGN400-□ | BHA0616  | HW50L |
|                           | 20      | 20 | 125 | 20.4 | 80     | 4.8   |  |          |       |
|                           | 25      | 25 | 150 | 25.4 | 80     | 4.8   |  |          |       |
| <b>2020-6-T00</b>         | 20      | 20 | 125 | 20.5 | 80     | 6.0   | KGMN600-□-□<br>KRMN600-C<br>KGGN600-□-□<br>KRGN600-□ | BHA0616  | HW50L |
|                           | 25      | 25 | 150 | 25.5 | 80     | 6.0   |  |          |       |

↻ Insertos Aplicable C12~C13



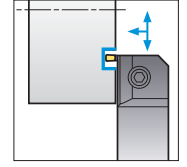
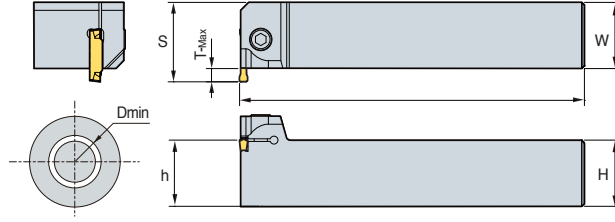
## KGEVR/L-T00

Para ranurado, torneado, ranurado frontal



KGMN  
KRGV

KRMN  
KGGN



• Inserto tipo R

(mm)

| Designación                  | H = (h) | W  | L   | S    | ØD Min | T-Max | Insertos   | Tornillo | Llave |
|------------------------------|---------|----|-----|------|--------|-------|--|----------|-------|
| <b>KGEVR/L</b> 2020-1.5 -T00 | 20      | 20 | 125 | 23.5 | 120    | 3     | KGMN150-□-□  | MHA0512  | HW40L |
|                              | 25      | 25 | 150 | 28.5 | 120    | 3     |  |          |       |
|                              | 32      | 32 | 170 | 35.5 | 120    | 3     |  |          |       |
| 2020-2 -T00                  | 20      | 20 | 125 | 23.5 | 120    | 3     | KGMN200-□-□<br>KRMN200-C<br>KGGN200-□-□-□            | MHA0512  | HW40L |
|                              | 25      | 25 | 150 | 28.5 | 120    | 3     |  |          |       |
|                              | 32      | 32 | 170 | 35.5 | 120    | 3     |  |          |       |
| 2020-2.5 -T00                | 20      | 20 | 125 | 24.5 | 80     | 4     | KGMN250-□□   | MHA0512  | HW40L |
|                              | 25      | 25 | 150 | 29.5 | 80     | 4     |  |          |       |
|                              | 32      | 32 | 170 | 36.5 | 80     | 4     |  |          |       |
| 2020-3-T00                   | 20      | 20 | 125 | 25   | 80     | 4.8   | KGMN300-□-□<br>KRMN300-C<br>KGGN300-□-□<br>KRGV300-□ | MHA0512  | HW40L |
|                              | 25      | 25 | 150 | 30   | 80     | 4.8   |  |          |       |
|                              | 32      | 32 | 170 | 37   | 80     | 4.8   |  |          |       |
| 2020-4-T00                   | 20      | 20 | 125 | 25   | 80     | 4.8   | KGMN400-□-□<br>KRMN400-C<br>KGGN400-□-□<br>KRGV400-□ | BHA0616  | HW50L |
|                              | 25      | 25 | 150 | 30   | 80     | 4.8   |  |          |       |
|                              | 32      | 32 | 170 | 37   | 80     | 4.8   |  |          |       |
| 2020-5 -T00                  | 20      | 20 | 125 | 29.5 | 60     | 6     | KGMN500-□-□<br>KRMN500-C<br>KGGN500-□-□<br>KRGV500-□ | BHA0616  | HW50L |
|                              | 25      | 25 | 150 | 31.5 | 60     | 6     |  |          |       |
|                              | 32      | 32 | 170 | 38.5 | 60     | 6     |  |          |       |
| 2020-6 -T00                  | 20      | 20 | 125 | 26.5 | 60     | 6     | KGMN600-□-□<br>KRMN600-C<br>KGGN600-□-□<br>KRGV600-□ | BHA0616  | HW50L |
|                              | 25      | 25 | 150 | 31.5 | 80     | 6     |  |          |       |
|                              | 32      | 32 | 170 | 38.5 | 60     | 6     |  |          |       |
| 2525-8 -T00                  | 25      | 25 | 150 | 33.5 | 50     | 8     | KGMN800-□-□<br>KRMN800-C<br>KGGN800-□-□<br>KRGV800-□ | BHA0616  | HW50L |
|                              | 32      | 32 | 170 | 38.5 | 50     | 8     |  |          |       |
|                              | 32      | 32 | 170 | 38.5 | 50     | 8     |  |          |       |

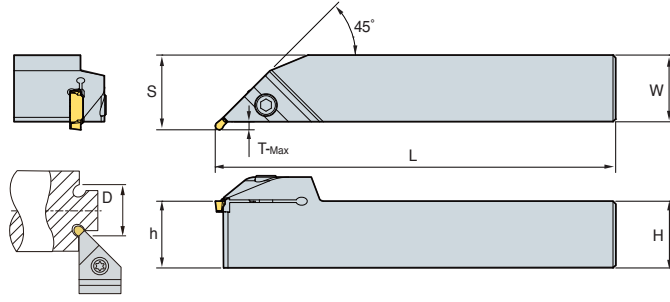
➔ Insertos Aplicable C12~C13



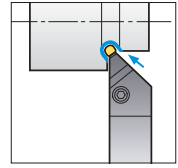
# KGEUR/L













KRMN  
KRGN



Para destalonado



• Inserto tipo R  
(mm)

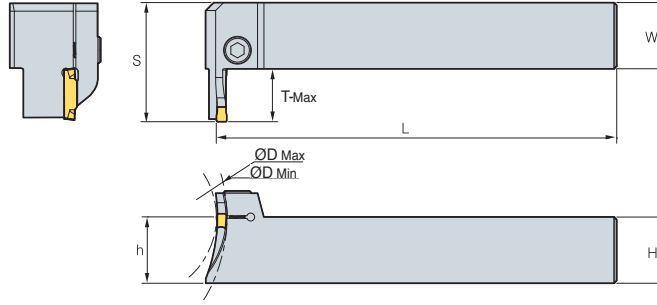
| Designación              | H = (h) | W  | L   | S    | ØD Min | T-Max | Insertos               | Tornillo  | Llave   |     |
|--------------------------|---------|----|-----|------|--------|-------|------------------------|---|---|-----|
| <b>KGEUR/L</b><br>1616-3 | 16      | 16 | 100 | 19   | 40     | 2.8   | KRMN300-C<br>KRGN300-□ |  |  |     |
|                          | 2020-3  | 20 | 20  | 125  | 23     | 40    |                        |   |   | 2.8 |
|                          | 2525-3  | 25 | 25  | 150  | 28     | 40    |                        |   |   | 2.8 |
|                          | 3232-3  | 32 | 32  | 170  | 35     | 40    |                        |   |   | 2.8 |
| 1616-4                   | 16      | 16 | 100 | 19   | 40     | 2.8   | KRMN400-C<br>KRGN400-□ |  |  |     |
|                          | 2020-4  | 20 | 20  | 125  | 23     | 40    |                        |   |   | 2.8 |
|                          | 2525-4  | 25 | 25  | 150  | 28     | 40    |                        |   |   | 2.8 |
|                          | 3232-4  | 32 | 32  | 170  | 35     | 40    |                        |   |   | 2.8 |
| 2020-5                   | 20      | 20 | 125 | 23.5 | 50     | 3.3   | KRMN500-C<br>KRGN500-□ |  |  |     |
|                          | 2525-5  | 25 | 25  | 150  | 28.5   | 50    |                        |   |   | 3.3 |
|                          | 3232-5  | 32 | 32  | 170  | 35.5   | 50    |                        |   |   | 3.3 |
| 2020-6                   | 20      | 20 | 125 | 23.5 | 50     | 3.3   | KRMN600-C<br>KRGN600-□ |  |  |     |
|                          | 2525-6  | 25 | 25  | 150  | 28.5   | 50    |                        |   |   | 3.3 |
|                          | 3232-6  | 32 | 32  | 170  | 35.5   | 50    |                        |   |   | 3.3 |
| 2525-8                   | 25      | 25 | 150 | 28.5 | 65     | 3.3   | KRMN800-C<br>KRGN800-□ |  |  |     |
| 3232-8                   | 32      | 32 | 170 | 35.5 | 65     | 3.3   |                        |   |   |     |

➔ Insertos Aplicable C12~C13

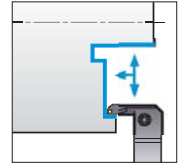
## KGFVR/L



KGMN KRMN  
KGGN KRGN



Para ranurado frontal



• Inserto tipo R

(mm)

| Designación                  | H = (h)     | W  | L   | S   | T-Max | ØD  |     | Insertos   | Tornillo | Llave |     |
|------------------------------|-------------|----|-----|-----|-------|-----|-----|--|----------|-------|-----|
|                              |             |    |     |     |       | Min | Max |  |          |       |     |
| <b>KGFVR/L 325-34/50-T10</b> | 25          | 25 | 150 | 36  | 10    | 34  | 50  | KGMN300-□-□<br>KRMN300-C<br>KGGN300-□-□<br>KRGN300-□ | MHA0512  | HW40L |     |
|                              | 44/60-T15   | 25 | 25  | 150 | 41    | 15  | 44  | 60   |          |       |     |
|                              | 54/85-T15   | 25 | 25  | 150 | 41    | 15  | 54  | 85   |          |       |     |
| <b>425-32/50-T15</b>         | 25          | 25 | 150 | 41  | 15    | 32  | 50  | KGMN400-□-□<br>KRMN400-C<br>KGGN400-□-□<br>KRGN400-□ | BHA0616  | HW50L |     |
|                              | 42/60-T15   | 25 | 25  | 150 | 41    | 15  | 42  |  |          |       | 60  |
|                              | 44/70-T20   | 25 | 25  | 150 | 45.5  | 20  | 44  |  |          |       | 70  |
|                              | 52/85-T15   | 25 | 25  | 150 | 41    | 15  | 52  |  |          |       | 85  |
|                              | 60/120-T20  | 25 | 25  | 150 | 45.5  | 20  | 60  |  |          |       | 120 |
| <b>525-50/80-T20</b>         | 25          | 25 | 150 | 46  | 20    | 50  | 80  | KGMN500-□-□<br>KRMN500-C<br>KGGN500-□-□<br>KRGN500-□ | BHA0616  | HW50L |     |
|                              | 70/110-T20  | 25 | 25  | 150 | 46    | 20  | 70  |  |          |       | 110 |
|                              | 100/150-T20 | 25 | 25  | 150 | 46    | 20  | 100 |  |          |       | 150 |
|                              | 140/200-T20 | 25 | 25  | 150 | 46    | 20  | 140 |  |          |       | 200 |
|                              | 200-T20     | 25 | 25  | 150 | 46    | 20  | 200 |  |          |       | ∞   |
| <b>625-48/85-T20</b>         | 25          | 25 | 150 | 46  | 20    | 48  | 85  | KGMN600-□-□<br>KRMN600-C<br>KGGN600-□-□<br>KRGN600-□ | BHA0616  | HW50L |     |
|                              | 73/150-T20  | 25 | 25  | 150 | 46    | 20  | 73  |  |          |       | 150 |
|                              | 138/250-T20 | 25 | 25  | 150 | 46    | 20  | 138 |  |          |       | 250 |
|                              | 250-T20     | 25 | 25  | 150 | 46    | 20  | 250 |  |          |       | ∞   |

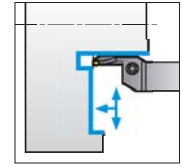
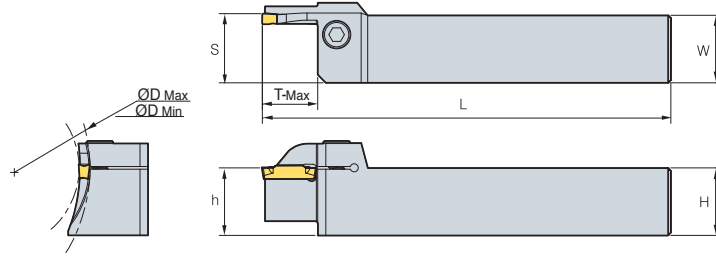
Insertos Aplicable C12~C13

# KGFHR/L

Para ranurado frontal



KGMN KRMN  
KGGN KRGN



• Inserto tipo R  
(mm)

| Designación                  | H = (h)     | W  | L   | S    | T-Max | ØD  |     | Insertos   | Tornillo | Llave |     |
|------------------------------|-------------|----|-----|------|-------|-----|-----|--|----------|-------|-----|
|                              |             |    |     |      |       | Min | Max |  |          |       |     |
| <b>KGFHR/L 320-34/50-T10</b> | 20          | 20 | 150 | 20.5 | 10    | 34  | 50  | KGMN300-□-□<br>KRMN300-C<br>KGGN300-□-□<br>KRGN300-□ | MHA0512  | HW40L |     |
|                              | 44/70-T15   | 20 | 20  | 150  | 20.5  | 15  | 44  |  |          |       | 70  |
|                              | 64/100-T15  | 20 | 20  | 150  | 20.5  | 15  | 64  |  |          |       | 100 |
| <b>325-34/50-T10</b>         | 25          | 25 | 150 | 25.5 | 10    | 34  | 50  | KGMN300-□-□<br>KRMN300-C<br>KGGN300-□-□<br>KRGN300-□ | MHA0512  | HW40L |     |
|                              | 44/70-T15   | 25 | 25  | 150  | 25.5  | 15  | 44  |  |          |       | 70  |
|                              | 64/100-T15  | 25 | 25  | 150  | 25.5  | 15  | 64  |  |          |       | 100 |
| <b>420-34/50-T16</b>         | 20          | 20 | 150 | 20.5 | 16    | 34  | 50  | KGMN400-□-□<br>KRMN400-C<br>KGGN400-□-□<br>KRGN400-□ | BHA0616  | HW50L |     |
|                              | 42/70-T16   | 20 | 20  | 150  | 20.5  | 16  | 42  |  |          |       | 70  |
|                              | 62/120-T16  | 20 | 20  | 150  | 20.5  | 16  | 62  |  |          |       | 120 |
|                              | 112/200-T16 | 20 | 20  | 150  | 20.5  | 16  | 112 |  |          |       | 200 |
| <b>425-34/50-T20</b>         | 25          | 25 | 150 | 25.6 | 20    | 34  | 50  | KGMN400-□-□<br>KRMN400-C<br>KGGN400-□-□<br>KRGN400-□ | BHA0616  | HW50L |     |
|                              | 40/60-T10   | 25 | 25  | 150  | 25.6  | 10  | 40  |  |          |       | 60  |
|                              | 44/70-T20   | 25 | 25  | 150  | 25.6  | 20  | 44  |  |          |       | 70  |
|                              | 84/92-T20   | 25 | 25  | 150  | 25.6  | 20  | 84  |  |          |       | 92  |
|                              | 60/120-T20  | 25 | 25  | 150  | 25.6  | 20  | 60  |  |          |       | 120 |
|                              | 112/200-T20 | 25 | 25  | 150  | 25.6  | 20  | 112 |  |          |       | 200 |
| <b>200-T20</b>               | 25          | 25 | 150 | 25.6 | 20    | 200 | ∞   | KGMN400-□-□<br>KRMN400-C<br>KGGN400-□-□<br>KRGN400-□ | BHA0616  | HW50L |     |
|                              | 200-T20     | 25 | 25  | 150  | 25.6  | 20  | 200 |  |          |       | ∞   |
| <b>525-50/80-T15</b>         | 25          | 25 | 150 | 25.6 | 15    | 50  | 80  | KGMN500-□-□<br>KRMN500-C<br>KGGN500-□-□<br>KRGN500-□ | BHA0616  | HW50L |     |
|                              | 50/80-T25   | 25 | 25  | 150  | 25.6  | 25  | 50  |  |          |       | 80  |
|                              | 70/110-T15  | 25 | 25  | 150  | 25.6  | 15  | 70  |  |          |       | 110 |
|                              | 70/110-T25  | 25 | 25  | 150  | 25.6  | 25  | 70  |  |          |       | 110 |
|                              | 100/150-T25 | 25 | 25  | 150  | 25.6  | 25  | 100 |  |          |       | 150 |
|                              | 140/200-T25 | 25 | 25  | 150  | 25.6  | 25  | 140 |  |          |       | 200 |
|                              | 190/220-T10 | 25 | 25  | 150  | 25.6  | 10  | 190 |  |          |       | 200 |
| <b>200-T25</b>               | 25          | 25 | 150 | 25.6 | 25    | 200 | ∞   | KGMN500-□-□<br>KRMN500-C<br>KGGN500-□-□<br>KRGN500-□ | BHA0616  | HW50L |     |
|                              | 200-T25     | 25 | 25  | 150  | 25.6  | 25  | 200 |  |          |       | ∞   |
| <b>625-170/190-T10</b>       | 25          | 25 | 150 | 25.6 | 10    | 170 | 190 | KGMN600-□-□<br>KRMN600-C<br>KGGN600-□-□<br>KRGN600-□ | BHA0616  | HW50L |     |
|                              | 190/220-T10 | 25 | 25  | 150  | 25.6  | 10  | 190 |  |          |       | 200 |

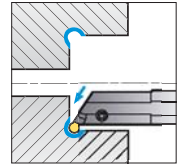
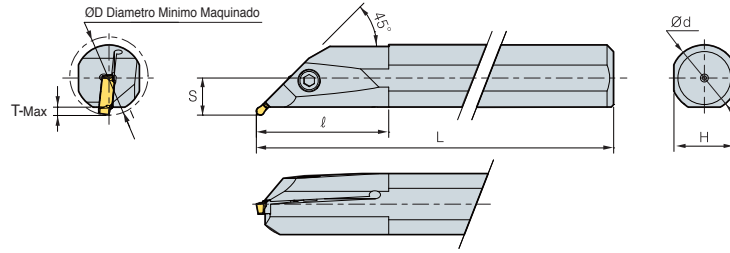
↻ Insertos Aplicable C12~C13

## KGIUR/L

Para destalonado



KRMN  
KRGN



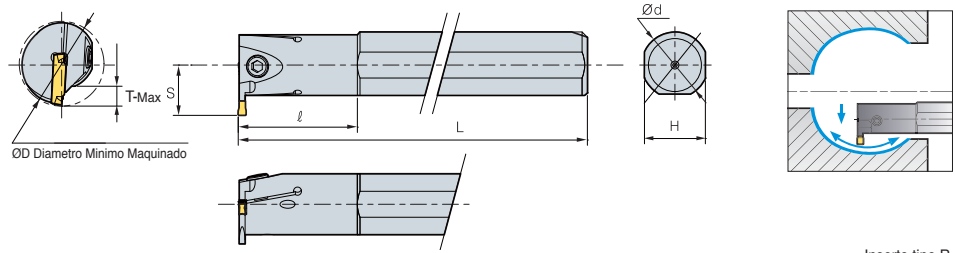
• Inserto tipo R  
(mm)

| Designación    | ØD     | Ød | L   | ℓ   | T-Max | H   | S    | Insertos               | Tornillo | Llave |
|----------------|--------|----|-----|-----|-------|-----|------|------------------------|----------|-------|
| KGIUR/L 3520-3 | 35     | 20 | 150 | 45  | 3.5   | 18  | 13   | KRMN300-C<br>KRGN300-□ | MHA0512  | HW40L |
|                | 4025-3 | 40 | 25  | 200 | 50    | 3.5 | 15.5 |                        |          |       |
| 5032-3         | 50     | 32 | 250 | 65  | 3.5   | 30  | 19   | KRMN400-C<br>KRGN400-□ | MHA0512  | HW40L |
| 3520-4         | 35     | 20 | 150 | 45  | 3.5   | 18  | 13   |                        |          |       |
| 4025-4         | 40     | 25 | 200 | 50  | 3.5   | 23  | 15.5 |                        |          |       |
| 5032-4         | 50     | 32 | 250 | 65  | 3.5   | 30  | 19   | KRMN500-C<br>KRGN500-□ | MHA0512  | HW40L |
| 4025-5         | 40     | 25 | 200 | 50  | 3.5   | 23  | 15.5 |                        |          |       |
| 5032-5         | 50     | 32 | 250 | 65  | 3.5   | 30  | 19   | KRMN600-C<br>KRGN600-□ | MHA0512  | HW40L |
| 4025-6         | 40     | 25 | 200 | 50  | 3.5   | 23  | 15.5 |                        |          |       |
| 5032-6         | 50     | 32 | 250 | 65  | 3.5   | 30  | 19   | KRMN800-C<br>KRGN800-□ | MHA0512  | HW40L |
| 4025-8         | 40     | 25 | 200 | 50  | 3.5   | 23  | 18.5 |                        |          |       |
| 5032-8         | 50     | 32 | 250 | 65  | 3.5   | 30  | 22   |                        |          |       |

➔ Insertos Aplicable C12~C13

# KGIVR/L

Para ranurado, Torneado, Perfilado



KGMI  
KGGN  
KRMN

KGMN  
KRMI

• Inserto tipo R  
(mm)

| Designación    | ØD              | Ød | L   | ℓ   | T-Max | H   | S    | Insertos                 | Tornillo                   | Llave                      |         |       |
|----------------|-----------------|----|-----|-----|-------|-----|------|--------------------------|----------------------------|----------------------------|---------|-------|
| <b>KGIVR/L</b> | <b>2016-1.5</b> | 20 | 16  | 125 | 35    | 4   | 15   | KGMN150-□-□              | MHB0410                    | HW30L                      |         |       |
|                | <b>2520-1.5</b> | 25 | 20  | 150 | 45    | 6   | 15.5 |                          | MHB0410                    |                            |         |       |
|                | <b>3225-1.5</b> | 32 | 25  | 200 | 45    | 7   | 19   |                          | MHA0512                    | HW40L                      |         |       |
|                | <b>2516-2</b>   | 25 | 16  | 125 | 35    | 6.5 | 15   | KGMI200-□-T<br>KRMI200-C | MHB0410                    | HW30L                      |         |       |
|                | <b>2520-2</b>   | 25 | 20  | 150 | 45    | 6.5 | 18   |                          | 15.5                       | MHB0512                    | HW40L   |       |
|                | <b>3225-2</b>   | 32 | 25  | 200 | 45    | 7   | 23   | 19                       | KGMN250-□-□                | MHB0410                    | HW30L   |       |
|                | <b>2516-2.5</b> | 25 | 16  | 125 | 35    | 6.5 | 15   | 14                       |                            | MHB0410                    | HW30L   |       |
|                | <b>2520-2.5</b> | 25 | 20  | 150 | 45    | 6.5 | 18   | 15.5                     |                            | MHA0512                    | HW40L   |       |
|                | <b>3225-2.5</b> | 32 | 25  | 200 | 45    | 7   | 23   | 19                       | KGMI300-□-T<br>KRMI300-C   | MHB0410                    | HW30L   |       |
|                | <b>2520-3</b>   | 25 | 20  | 150 | 45    | 6.5 | 18   | 15.5                     |                            | MHA0512                    | HW40L   |       |
|                | <b>3225-3</b>   | 32 | 25  | 200 | 45    | 7   | 23   | 19                       |                            | BHA0616                    | HW50L   |       |
|                | <b>4032-3</b>   | 40 | 32  | 250 | 55    | 7.5 | 30   | 22.5                     | KGMI400-□-T<br>KRMI400-C   | MHB0410                    | HW30L   |       |
|                | <b>2520-4</b>   | 25 | 20  | 150 | 45    | 6.5 | 18   | 15.5                     |                            | MHA0512                    | HW40L   |       |
|                | <b>3225-4</b>   | 32 | 25  | 200 | 45    | 7   | 23   | 19                       |                            | BHA0616                    | HW50L   |       |
|                | <b>4032-4</b>   | 40 | 32  | 250 | 55    | 7.5 | 30   | 22.5                     | KGMN500-□-□<br>KRMN500-C   | MHA0512                    | HW40L   |       |
|                | <b>3225-5</b>   | 32 | 25  | 200 | 45    | 7.5 | 23   | 19.5                     |                            | KGGN500-□-R<br>KGGN500-□-A | BHA0616 | HW50L |
|                | <b>4032-5</b>   | 40 | 32  | 250 | 55    | 8.5 | 30   | 23.5                     |                            | KGMN600-□-□<br>KRMN600-C   | MHA0512 | HW40L |
|                | <b>3225-6</b>   | 32 | 25  | 200 | 45    | 7.5 | 23   | 19.5                     | KGGN600-□-R<br>KGGN600-□-A |                            | BHA0616 | HW50L |
|                | <b>4032-6</b>   | 40 | 32  | 250 | 55    | 8.5 | 30   | 23.5                     | KGMN800-□-□<br>KRMN800-C   | MHA0512                    | HW40L   |       |
|                | <b>4032-8</b>   | 40 | 32  | 250 | 55    | 8.5 | 30   | 23.5                     |                            | BHA0616                    | HW50L   |       |
| <b>4540-8</b>  | 45              | 40 | 300 | 70  | 8.5   | 37  | 26.5 | KGGN800-□-R              | BHA0616                    | HW50L                      |         |       |

➔ Insertos Aplicable C12~C13

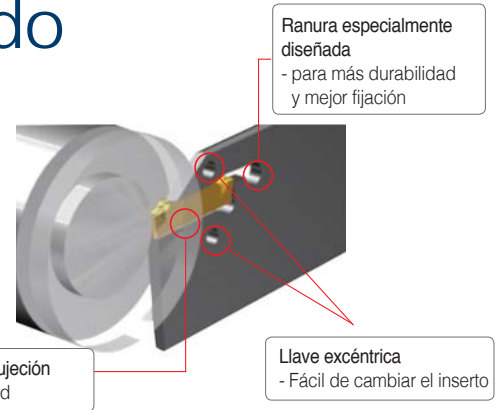
• 200, 300, 400 Insertos : Insertos Internales, KGMI o KRMLV



## Sistema KGT para tronzado

### Características

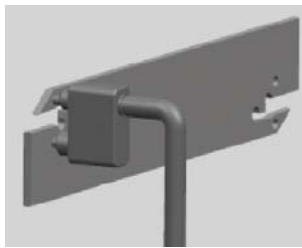
- Tronzado usando las placas KGT ya existentes
- Mecanizado más económico con las placas de doble cara
- Diseño especial de la ranura para mejor fijación
- Llave especial para el cambio fácil de placa



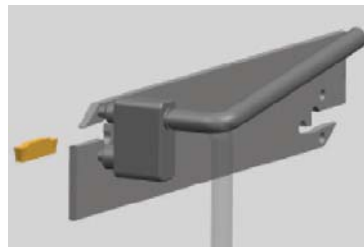
### Sistema de codificación



### Cómo fijar la placa



① Inserto el pin de la llave en el agujero de la lama

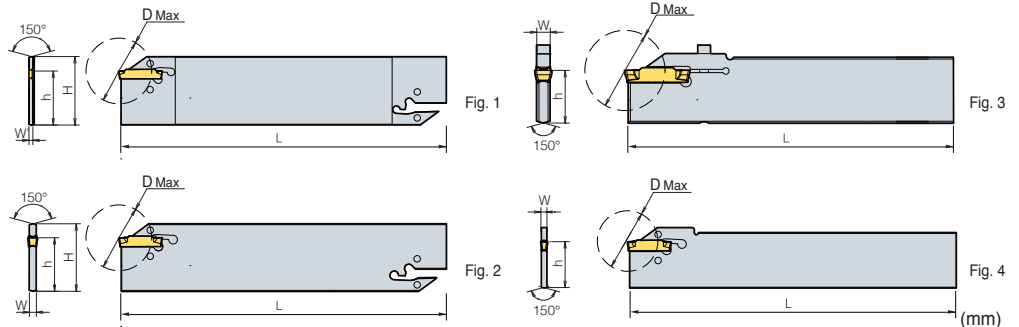


② Gire la llave en 45-160 para abrir el asiento e inserte la placa



③ Gire la llave nuevamente a la posición original para fijar la placa

## KGTB



| Designación | H                    | W  | W'  | L   | h   | ØD Max <sup>(2)</sup> | ØD Max <sup>(3)</sup> | Insertos | Llave                          | Fig.  |
|-------------|----------------------|----|-----|-----|-----|-----------------------|-----------------------|----------|--------------------------------|-------|
| KGTB        | 1526S                | 26 | 2.4 | 1.0 | 150 | 21                    | -                     | 26       | EW1203<br>(Pedir por separado) | 4     |
|             | 1532                 | 32 | 2.4 | 1   | 150 | 25                    | -                     | 26       |                                | 1     |
|             | 2026S                | 26 | 2.4 | 1.8 | 150 | 21                    | 50                    | 39       |                                | 4     |
|             | 2032                 | 32 | 2.4 | 1.8 | 150 | 25                    | 50                    | 39       |                                | 1     |
|             | 3026S                | 26 | 2.4 | -   | 150 | 21                    | 100                   | 39       |                                | 4     |
|             | 3032                 | 32 | 2.4 | -   | 150 | 25                    | 100                   | 39       |                                | 2     |
|             | 4026S                | 26 | 3.2 | -   | 150 | 21                    | 100                   | 39       |                                | 4     |
|             | 4032                 | 32 | 3.2 | -   | 150 | 25                    | 100                   | 39       |                                | 2     |
|             | 5032                 | 32 | 4   | -   | 150 | 25                    | 120                   | 49       |                                | 2     |
|             | 6032                 | 32 | 5.2 | -   | 150 | 25                    | 120                   | 49       |                                | 2     |
|             | 8032S <sup>(1)</sup> | 32 | 6.2 | -   | 150 | 25                    | 80                    | 59       |                                | HW30L |

Insertos Applicable C12~C13

(1) Tornillo de fijación (2) 1 asiento (3) 2 asientos (4) Placa de una punta

Insertos disponibles con 2 filos, para un maquinado más económico.

# MGT

- Insertos disponibles con 2 filos, para un maquinado más económico
- Operaciones Multifuncionales : Reduce el tiempo del ciclo y aumenta la productividad con la capacidad de: Ranurar, Carear, Copiar o Tornear en una sola aplicación
- Reducción de costos y tiempos : El sistema MGT de Korloy permite al operador usar una herramienta para diferentes aplicaciones, reduciendo así el número de herramientas a utilizar
- Filos de corte planos : Las herramientas MGT tienen una geometría plana en el filo de corte, asegurando así una excelente terminación. Aún en aplicaciones de gran avance al usar la función Wiper, Korloy asegura una excelente calidad superficial incluso en operaciones de desbaste

## Codificación de Insertos

|   |                         |   |                                |                                      |                     |
|---|-------------------------|---|--------------------------------|--------------------------------------|---------------------|
| MG  | M                       | N   | 300                            | - 04                                 | - T                 |
| <b>Código de Sistema</b>                            | <b>Tolerancia</b>       | <b>Sentido corte</b>                                    | <b>Ancho del filo de corte</b> | <b>Radio de punta</b>                | <b>Rompevirutas</b> |
| MG: ranurado múltiple<br>MR: ranurado punta redonda | M: Pressed<br>G: Ground | N: neutral<br>R: Derecha<br>L: Izquierda<br>I: Interior | 1.5~8.0 mm                     | 0.2 mm<br>0.3 mm<br>0.4 mm<br>0.8 mm | L/R/T/M/<br>PS/PT/A |

## Sistema Codificación

|                          |  |   |                            |   |                    |                           |
|--------------------------|--|---|----------------------------|---|--------------------|---------------------------|
| MG                       | E  | H   | R/L                        | 2525  | - 3                | T15                       |
| <b>Código de Sistema</b> | <b>Aplicación</b>                          | <b>Tipo soporte</b>                         | <b>Sentido corte</b>       | <b>Dimensiones</b>  | <b>Ancho corte</b> | <b>Profundidad máxima</b> |
| MG: ranurado múltiple    | E: Exterior proceso<br>I: interior proceso | H: Horizontal<br>V: Vertical<br>U: rebajado | R: Derecha<br>L: Izquierda | Alto: 25mm<br>Ancho: 25mm<br>(En mecanizado interior : diámetro mínimo) | 1.5~8.0 mm         | 15~25 mm                  |

## Geometrias y Rompevirutas

|   |  |  |   |
|---|--|--|---|
| <b>MGM(G)N-M</b><br><br><ul style="list-style-type: none"> <li>• Rompevirutas especialmente diseñado que permite un flujo de viruta más suave en comparación con las geometrías convencionales de superficie plana mediante el uso de un rompevirutas central</li> <li>• Los puntos/aristas convexas especialmente colocados ayudan con el control de viruta en el mecanizado externo, para un flujo de viruta más suave</li> <li>• Rompeviruta diseñado para aplicaciones de torneado y ranurado</li> </ul> | <b>MGMN-G</b><br><br><ul style="list-style-type: none"> <li>• Rompeviruta que permite que los fragmentos pequeños sean evacuados con mayor rapidez</li> <li>• Diseñada especialmente para las aplicaciones de ranurado</li> </ul>   | <b>MRMN-M</b><br><br><ul style="list-style-type: none"> <li>• Geometría con radio para las aplicaciones que requieren perfiles</li> <li>• Disponible para maquinado en contorno</li> </ul>   | <b>MFMN300</b><br><br><ul style="list-style-type: none"> <li>• Rompeviruta especialmente diseñada que permite que los fragmentos pequeños sean evacuados de forma más rápida</li> <li>• Rompeviruta diseñada especialmente para careado frontal</li> </ul> |
| <b>MRGN-A</b><br><br><ul style="list-style-type: none"> <li>• Geometría diseñada para el maquinado en aluminio</li> <li>• Esta rompeviruta brinda un excelente control de virutas debido a su ángulo de incidencia</li> </ul>  | <b>MGMR-PS</b><br><br><ul style="list-style-type: none"> <li>• Diseño de filo vivo</li> <li>• Recomendado para el mecanizado de acero bajo en carbono y acero inoxidable.</li> <li>• El rompevirutas especialmente diseñado permite arrancar virutas más finas más promoviendo un mejor flujo de virutas.</li> <li>• Capaz de mecanizar a altos avances y cortes de diámetro pequeño</li> </ul> | <b>MGMR-PT</b><br><br><ul style="list-style-type: none"> <li>• Filo resistente para aplicaciones más tenaces.</li> <li>• Capaz de maquinar con un rango alto de avance</li> <li>• Rompeviruta que permite que los fragmentos más pequeños sean evacuados con mayor eficiencia</li> </ul> | <b>MGGN-A</b><br><br><ul style="list-style-type: none"> <li>• Reduce la adherencia de material en el filo de corte</li> <li>• Control y flujo de virutas mejorados</li> </ul>  |
| <b>MGMN-L</b><br><br><ul style="list-style-type: none"> <li>• Filo de corte agudo</li> <li>• Baja resistencia en el corte</li> <li>• Para maquinado en CNC</li> <li>• Para procesos de Diámetros pequeños</li> </ul>   | <b>MGMN-R</b><br><br><ul style="list-style-type: none"> <li>• Filo de corte resistente al desgaste</li> <li>• Para maquinar con un rango alto en el avance processing</li> </ul>  | <b>MGMN-T</b><br><br><ul style="list-style-type: none"> <li>• Para Torneado y Ranurado</li> <li>• Reduce el ancho de la viruta y proporciona un flujo suave de viruta gracias a la geometría con aristas que parten del centro a las puntas</li> </ul>                                   |   |

## Tronzado (MGMN/MGMR/L)

| Pza. Trabajo                          | Velocidad de Corte (vc = m/min) |        |        |        |        |        |        |        |          | Avance (fn = mm/rev) |           |           |           |           |           |
|---------------------------------------|---------------------------------|--------|--------|--------|--------|--------|--------|--------|----------|----------------------|-----------|-----------|-----------|-----------|-----------|
|                                       | CVD                             |        |        |        | PVD    |        |        |        | Sin Rec. | Altura de Corte (mm) |           |           |           |           |           |
|                                       | NC3120                          | NC3030 | NCM325 | NC5330 | PC230  | PC8110 | PC5300 | PC6510 | ST30A    | 2                    | 3         | 4         | 5         | 6         |           |
| SM□□C                                 | 80~180                          |        |        | 80~180 | 80~180 |        |        |        |          |                      | 0.02~0.15 | 0.03~0.20 | 0.08~0.30 | 0.10~0.40 | 0.12~0.50 |
| SCM                                   | 70~150                          | 70~150 | 70~150 | 70~150 | 70~150 |        |        |        |          |                      | 0.02~0.15 | 0.03~0.20 | 0.08~0.30 | 0.10~0.40 | 0.12~0.50 |
| GC/GCD                                |                                 |        |        | 50~100 |        |        |        | 50~100 | 50~100   |                      | 0.05~0.12 | 0.10~0.25 | 0.10~0.30 | 0.10~0.35 | 0.10~0.40 |
| STS                                   |                                 |        | 50~120 | 50~120 |        | 50~120 | 60~140 |        |          |                      | 0.02~0.10 | 0.03~0.15 | 0.08~0.25 | 0.10~0.35 | 0.12~0.40 |
| Metales No-Ferrosos (Aluminio, Cobre) |                                 |        |        |        |        |        |        |        | 200~450  |                      | 0.05~0.10 | 0.05~0.20 | 0.05~0.25 | 0.05~0.30 | 0.05~0.35 |

## Careado (FGD/FGM/FMM/MFMN/MGMN)

| Pza. Trabajo                          | Velocidad de Corte (vc = m/min) |        |         |         |         |                 |          | Avance (fn = mm/rev) |           |           |
|---------------------------------------|---------------------------------|--------|---------|---------|---------|-----------------|----------|----------------------|-----------|-----------|
|                                       | CVD                             |        |         |         | PVD     |                 | Sin Rec. | Altura de Corte (mm) |           |           |
|                                       | NC6110                          | NC3030 | NC5330  | NC3120  | PC215K  | PC8110 / PC5300 | H01      | 3                    | 4         | 5         |
| SM□□C                                 |                                 |        | 100~160 | 100~160 |         |                 |          | 0.05~0.10            | 0.05~0.12 | 0.05~0.15 |
| SCM                                   |                                 | 50~130 | 50~130  | 50~130  |         |                 | 200~800  | 0.05~0.10            | 0.05~0.12 | 0.05~0.15 |
| GC/GCD                                | 120~150                         |        | 120~150 |         | 120~150 |                 |          | 0.05~0.10            | 0.05~0.12 | 0.05~0.15 |
| STS                                   |                                 |        | 60~150  |         |         | 60~150          |          | 0.05~0.10            | 0.05~0.12 | 0.05~0.15 |
| Metales No-Ferrosos (Aluminio, Cobre) |                                 |        |         |         |         |                 |          | 0.05~0.15            | 0.08~0.15 | 0.08~0.15 |

## Ranurado, Torneado (MGMN/MRMN)

| Pza. Trabajo                          | Velocidad de Corte (vc = m/min) |        |        |         |        |        |        |        |          |        | Avance (fn = mm/rev) |           |           |           |           |           |
|---------------------------------------|---------------------------------|--------|--------|---------|--------|--------|--------|--------|----------|--------|----------------------|-----------|-----------|-----------|-----------|-----------|
|                                       | CVD                             |        |        | PVD     |        |        | Cermet |        | Sin Rec. |        | Altura de Corte (mm) |           |           |           |           |           |
|                                       | NC3120                          | NC3030 | NC5330 | PC215K  | PC5300 | PC230  | CN20   | CT10   | ST30A    | ST20   | 0.5~1.0              | 1.0~2.0   | 2~3       | 3~4       | 4~5       | 6~8       |
| SM□□C                                 | 80~200                          |        | 80~200 |         | 80~180 | 80~200 | 80~120 | 80~120 |          | 80~120 | 0.03~0.08            | 0.04~0.09 | 0.05~0.1  | 0.05~0.12 | 0.05~0.15 | 0.05~0.2  |
| SCM                                   | 80~180                          | 80~180 | 80~180 |         | 80~160 | 80~180 | 80~120 |        | 80~120   | 80~120 | 0.03~0.07            | 0.04~0.08 | 0.05~0.08 | 0.05~0.1  | 0.05~0.12 | 0.05~0.15 |
| GC/GCD                                |                                 |        | 60~130 |         | 60~130 |        |        |        |          |        | 0.03~0.07            | 0.04~0.08 | 0.05~0.08 | 0.05~0.1  | 0.05~0.10 | 0.05~0.12 |
| STS                                   |                                 |        | 60~100 | 60~100  |        |        |        |        | 60~100   |        | 0.03~0.08            | 0.04~0.09 | 0.05~0.10 | 0.05~0.12 | 0.05~0.12 | 0.05~0.15 |
| Metales No-Ferrosos (Aluminio, Cobre) |                                 |        |        | 150~300 |        |        |        |        | 150~400  |        | 0.05~0.12            | 0.05~0.15 | 0.05~0.15 | 0.08~0.15 | 0.08~0.15 | 0.10~0.20 |



**Insertos**


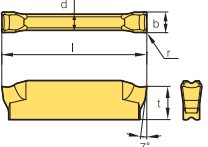

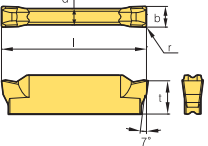

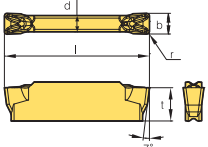

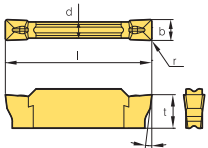
| Aplicación          | Imagen | Designación | Recubierta |        |        |        |        |        |        | Sin Rec. | Dimensiones (mm) |     |     |      |      | Configuración | Pag. |            |      |      |      |      |
|---------------------|--------|-------------|------------|--------|--------|--------|--------|--------|--------|----------|------------------|-----|-----|------|------|---------------|------|------------|------|------|------|------|
|                     |        |             | NC3120     | NC3225 | NC3030 | NC5330 | NC6315 | PC5300 | PC8110 |          | PC9030           | H01 | b   | r    | l    |               |      | d          | t    |      |      |      |
| Ranurado frontal    | FGD    | FGD         | 300R-03    |        |        |        |        |        |        |          |                  | 3.0 | 0.3 | 15.0 | 2.0  | 4.0           |      | C36        |      |      |      |      |
|                     |        | 400R-04     |            |        |        |        |        |        |        |          |                  | 4.0 | 0.4 | 15.0 | 3.0  | 4.5           |      | C37        |      |      |      |      |
|                     |        | 500R-04     |            |        |        |        |        |        |        |          |                  | 5.0 | 0.4 | 15.0 | 4.0  | 5.0           |      |            |      |      |      |      |
|                     | FGM    | FGM         | 300R-03    |        |        |        |        |        |        |          |                  |     | 3.0 | 0.3  | 15.0 | 2.0           | 4.0  |            | C36  |      |      |      |
|                     |        | 400R-04     |            |        |        |        |        |        |        |          |                  | 4.0 | 0.4 | 15.0 | 3.0  | 4.5           | C37  |            |      |      |      |      |
|                     |        | 500R-04     |            |        |        |        |        |        |        |          |                  | 5.0 | 0.4 | 15.0 | 4.0  | 5.0           |      |            |      |      |      |      |
|                     | FMM    | FMM         | 300R-03    |        |        |        |        |        |        | ●        |                  |     | 3.0 | 0.3  | 15.0 | 2.0           | 3.91 |            | C36  |      |      |      |
|                     |        | 400R-04     |            |        |        |        |        |        |        |          |                  |     | 4.0 | 0.4  | 15.0 | 3.0           | 3.96 |            | C37  |      |      |      |
|                     |        | 500R-04     |            |        |        |        |        |        |        |          |                  |     | 5.0 | 0.4  | 15.0 | 4.0           | 4.42 |            |      |      |      |      |
| Ranurado Frontal    | MFMN   | MFMN        | 300        |        |        |        | ●      |        |        |          |                  | 3.0 | 0.2 | 18.0 | 2.0  | 3.0           |      | C35<br>C41 |      |      |      |      |
| Ranurado · Torneado | MGGN-M | MGGN-M      | 300-02-M   |        |        |        |        |        |        |          |                  | 3.0 | 0.2 | 21.0 | 2.35 | 4.83          |      | C30        |      |      |      |      |
|                     |        |             | 04-M       |        |        |        |        |        |        |          |                  |     | 3.0 | 0.4  | 21.0 | 2.35          |      | 4.83       | C32  |      |      |      |
|                     |        |             | 08-M       |        |        |        |        |        |        |          |                  |     |     | 3.0  | 0.8  | 21.0          |      | 2.35       | 4.83 | C34  |      |      |
|                     |        |             | 400-02-M   |        |        |        |        |        |        |          |                  |     |     | 4.0  | 0.2  | 21.0          |      | 3.3        | 4.83 | C41  |      |      |
|                     |        |             | 04-M       |        |        |        |        |        |        |          |                  |     |     | 4.0  | 0.4  | 21.0          |      | 3.3        | 4.83 |      |      |      |
|                     |        |             | 08-M       |        |        |        |        |        |        |          |                  |     |     | 4.0  | 0.8  | 21.0          |      | 3.3        | 4.83 |      |      |      |
|                     |        |             | 500-02-M   |        |        |        |        |        |        |          |                  |     |     | 5.0  | 0.2  | 26.0          |      | 4.1        | 5.82 |      |      |      |
|                     |        |             | 04-M       |        |        |        |        |        |        |          |                  |     |     | 5.0  | 0.4  | 26.0          |      | 4.1        | 5.82 |      |      |      |
|                     |        |             | 08-M       |        |        |        |        |        |        |          |                  |     |     | 5.0  | 0.8  | 26.0          |      | 4.1        | 5.82 |      |      |      |
|                     |        |             | 600-02-M   |        |        |        |        |        |        |          |                  |     |     |      | 6.0  | 0.2           |      | 26.0       | 5.0  | 5.81 |      |      |
|                     |        |             | 04-M       |        |        |        |        |        |        |          |                  |     |     | 6.0  | 0.4  | 26.0          |      | 5.0        | 5.81 |      |      |      |
|                     |        |             | 08-M       |        |        |        |        |        |        |          |                  |     |     | 6.0  | 0.8  | 26.0          |      | 5.0        | 5.81 |      |      |      |
| Ranurado            | MGMN-G | MGMN-G      | MGMN       | 150-G  |        | ●      | ●      |        |        | ●        | ●                | ●   |     | 1.5  | 0.15 | 16.0          | 1.2  | 3.5        |      | C30  |      |      |
|                     |        |             | 200-G      | ●      | ●      | ●      |        |        |        | ●        | ●                | ●   |     | 2.0  | 0.2  | 16.0          | 1.6  | 3.5        |      | C32  |      |      |
|                     |        |             | 250-G      |        | ●      | ●      |        |        |        |          | ●                | ●   | ●   |      | 2.5  | 0.2           | 18.5 | 2.0        |      | 3.85 | C34  |      |
|                     |        |             | 300-G      | ●      | ●      | ●      | ●      |        |        |          | ●                | ●   | ●   |      | 3.0  | 0.3           | 21.0 | 2.35       |      | 4.83 | C41  |      |
|                     |        |             | 400-G      | ●      |        |        |        |        |        |          | ●                | ●   | ●   |      | 4.0  | 0.3           | 21.0 | 3.3        |      | 4.83 |      |      |
|                     |        |             | 500-G      |        |        |        |        |        |        |          |                  | ●   | ●   | ●    |      | 5.0           | 0.5  | 26.0       |      | 4.1  | 5.82 |      |
|                     |        |             | 600-G      |        |        |        |        |        |        |          |                  |     | ●   | ●    | ●    |               | 6.0  | 0.8        |      | 26.0 | 5.0  | 5.81 |
| Ranurado · Torneado | MGMN-M | MGMN-M      | MGMN       | 200-M  | ●      | ●      | ●      | ●      |        | ●        | ●                | ●   | ●   | 2.0  | 0.2  | 16.0          | 1.6  | 3.5        |      | C30  |      |      |
|                     |        |             | 250-M      | ●      | ●      | ●      |        |        |        | ●        | ●                | ●   |     | 2.5  | 0.2  | 18.5          | 2.0  | 3.85       |      | C32  |      |      |
|                     |        |             | 300-02-M   |        |        |        | ●      |        |        |          |                  |     |     |      | 3.0  | 0.2           | 21.0 | 2.35       |      | 4.83 | C34  |      |
|                     |        |             | 300-M      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●                | ●   | ●   | ●    | 3.0  | 0.4           | 21.0 | 2.35       |      | 4.83 | C41  |      |
|                     |        |             | 350-03-M   |        |        |        |        |        |        |          |                  |     |     |      | 3.5  | 0.3           | 21.0 | 2.9        |      | 4.83 |      |      |
|                     |        |             | 400-02-M   |        |        |        |        |        |        |          |                  |     |     |      | 4.0  | 0.2           | 21.0 | 3.3        |      | 4.83 |      |      |
|                     |        |             | 400-M      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●                | ●   | ●   | ●    | 4.0  | 0.4           | 21.0 | 3.3        |      | 4.83 |      |      |
|                     |        |             | 500-04-M   |        |        |        |        |        |        |          |                  |     |     |      | 5.0  | 0.4           | 26.0 | 4.1        |      | 5.82 |      |      |
|                     |        |             | 500-M      | ●      | ●      | ●      | ●      | ●      |        |          |                  | ●   | ●   | ●    |      | 5.0           | 0.8  | 26.0       |      | 4.1  | 5.82 |      |
|                     |        |             | 600-M      | ●      | ●      | ●      | ●      | ●      |        |          |                  |     |     |      |      | 6.0           | 0.8  | 26.0       |      | 5.0  | 5.81 |      |
| 800-M               |        |             |            | ●      |        |        |        |        |        |          |                  |     | 8.0 | 0.8  | 31.0 | 6.0           | 6.52 |            |      |      |      |      |

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# C Inserto disponible para MGT


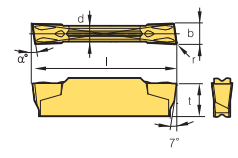

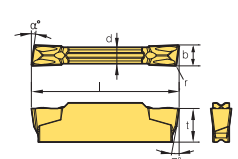

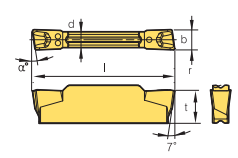

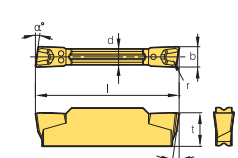

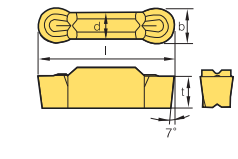

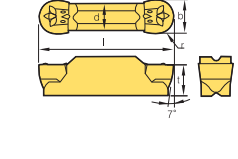
## Insertos

| Aplicación          | Imagen  | Designación    | Recubierto |        |        |        |        |        |        | Sin Rec. |     | Dimensiones (mm) |      |      |      |      |   | Configuración   | Pag.                     |
|---------------------|---|----------------|------------|--------|--------|--------|--------|--------|--------|----------|-----|------------------|------|------|------|------|---|---|--------------------------|
|                     |   |                | NC3120     | NC3225 | NC3030 | NC5330 | NC6315 | PC5300 | PC8100 | PC9030   | H01 | H05              | b    | r    | l    | d    | t |   |                          |
| Ranurado            | MGMN-L<br>   | MGMN 200-02-L  |            |        |        |        |        |        |        |          |     | 2.0              | 0.2  | 16   | 1.6  | 3.5  | - |    | C30<br>C32<br>C34<br>C35 |
|                     |   | 04-L           |            |        |        |        |        |        |        |          |     | 2.0              | 0.4  | 20   | 1.7  | 3.5  | - |   |                          |
|                     |   | 250-02-L       |            |        |        |        |        |        |        |          |     | 2.5              | 0.2  | 18.5 | 2.0  | 3.85 | - |   |                          |
|                     |   | 300-02-L       |            |        |        |        |        |        |        |          |     | 3.0              | 0.2  | 21   | 2.35 | 4.83 | - |   |                          |
|                     |   | 04-L           |            |        |        |        |        |        |        |          |     | 3.0              | 0.4  | 20   | 2.3  | 4.83 | - |   |                          |
|                     |   | 400-02-L       |            |        |        |        |        |        |        |          |     | 4.0              | 0.2  | 21   | 3.3  | 4.83 | - |   |                          |
|                     |   | 04-L           |            |        |        |        |        |        |        |          |     | 4.0              | 0.4  | 20   | 3.3  | 4.83 | - |   |                          |
|                     |   | 500-03-L       |            |        |        |        |        |        |        |          |     | 5.0              | 0.3  | 26   | 4.1  | 5.82 | - |   |                          |
| 04-L                |   |                |            |        |        |        |        |        |        | 5.0      | 0.4 | 26               | 4.1  | 5.82 | -    |      |   |   |                          |
| Ranurado · Tronzado | MGMN-R<br> | MGMN 150-015-R |            |        |        |        |        |        |        |          |     | 1.5              | 0.15 | 16   | 1.2  | 3.5  | - |   | C30<br>C32<br>C34<br>C35 |
|                     |   | 200-02-R       |            |        |        |        |        |        |        |          |     | 2.0              | 0.2  | 16   | 1.6  | 3.5  | - |   |                          |
|                     |   | 04-R           |            |        |        |        |        |        |        |          |     | 2.0              | 0.4  | 20   | 1.7  | 3.5  | - |   |                          |
|                     |   | 250-02-R       |            |        |        |        |        |        |        |          |     | 2.5              | 0.2  | 18.5 | 2.0  | 3.85 | - |   |                          |
|                     |   | 300-02-R       |            |        |        |        |        |        |        |          |     | 3.0              | 0.2  | 21   | 2.35 | 4.83 | - |   |                          |
|                     |   | 04-R           |            |        |        |        |        |        |        |          |     | 3.0              | 0.4  | 20   | 2.3  | 4.83 | - |   |                          |
|                     |   | 400-02-R       |            |        |        |        |        |        |        |          |     | 4.0              | 0.2  | 21   | 3.3  | 4.83 | - |   |                          |
|                     |   | 04-R           |            |        |        |        |        |        |        |          |     | 4.0              | 0.4  | 20   | 3.3  | 4.83 | - |   |                          |
| 500-04-R            |   |                |            |        |        |        |        |        |        | 5.0      | 0.4 | 26               | 4.1  | 5.82 | -    |      |   |   |                          |
| 08-R                |   |                |            |        |        |        |        |        |        | 5.0      | 0.4 | 26               | 4.1  | 5.82 | -    |      |   |   |                          |
| 600-04-R            |   |                |            |        |        |        |        |        |        | 6.0      | 0.4 | 26               | 5.0  | 5.81 | -    |      |   |   |                          |
| 08-R                |   |                |            |        |        |        |        |        |        | 6.0      | 0.8 | 26               | 5.0  | 5.81 | -    |      |   |   |                          |
| Ranurado · Torneado | MGMN-T<br> | MGMN 150-015-T |            |        |        |        |        |        |        |          |     | 1.5              | 0.15 | 16   | 1.2  | 3.5  | - |  | C30<br>C32<br>C34<br>C35 |
|                     |   | 200-T          |            |        |        |        |        |        |        |          |     | 2.0              | 0.2  | 16   | 1.6  | 3.5  | - |   |                          |
|                     |   | 300-T          |            |        |        |        |        |        |        |          |     | 3.0              | 0.4  | 21   | 2.35 | 4.83 | - |   |                          |
|                     |   | 400-T          |            |        |        |        |        |        |        |          |     | 4.0              | 0.4  | 21   | 3.3  | 4.83 | - |   |                          |
|                     |   | 500-04-T       |            |        |        |        |        |        |        |          |     | 5.0              | 0.4  | 26   | 4.1  | 5.82 | - |   |                          |
|                     |   | 500-T          |            |        |        |        |        |        |        |          |     | 5.0              | 0.8  | 26   | 4.1  | 5.82 | - |   |                          |
| 600-08-T            |   |                |            |        |        |        |        |        |        | 6.0      | 0.8 | 26               | 5.0  | 5.81 | -    |      |   |   |                          |
| Ranurado            | MGGN-A<br> | MGGN 300-02-A  |            |        |        |        |        |        |        |          |     | 3.0              | 0.2  | 21   | 2.35 | 4.83 | - |  | C28<br>C30<br>C32<br>C41 |
|                     |   | 04-A           |            |        |        |        |        |        |        |          |     | 3.0              | 0.4  | 21   | 2.35 | 4.83 | - |   |                          |
|                     |   | 08-A           |            |        |        |        |        |        |        |          |     | 3.0              | 0.8  | 21   | 2.35 | 4.83 | - |   |                          |
|                     |   | 400-02-A       |            |        |        |        |        |        |        |          |     | 4.0              | 0.2  | 21   | 3.3  | 4.83 | - |   |                          |
|                     |   | 04-A           |            |        |        |        |        |        |        |          |     | 4.0              | 0.4  | 21   | 3.3  | 4.83 | - |   |                          |
|                     |   | 08-A           |            |        |        |        |        |        |        |          |     | 4.0              | 0.8  | 21   | 3.3  | 4.83 | - |   |                          |
|                     |   | 500-02-A       |            |        |        |        |        |        |        |          |     | 5.0              | 0.2  | 26   | 4.1  | 5.82 | - |   |                          |
|                     |   | 04-A           |            |        |        |        |        |        |        |          |     | 5.0              | 0.4  | 26   | 4.1  | 5.82 | - |   |                          |
| 08-A                |   |                |            |        |        |        |        |        |        | 5.0      | 0.8 | 26               | 4.1  | 5.82 | -    |      |   |   |                          |

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**Insertos**

| Aplicación        | Imagen   | Designación    | Recubierto |        |        |        |        |        | Sin Rec. |        | Dimensiones (mm) |     |      |      |      |      | Configuración   | Pag.  |                   |
|-------------------|--|----------------|------------|--------|--------|--------|--------|--------|----------|--------|------------------|-----|------|------|------|------|---|---|-------------------|
|                   |  |                | NC3030     | NC3120 | NC3030 | NC5330 | NC6315 | PC5300 | PC8100   | PC9030 | H01              | H05 | b    | r    | l    | d    |   |   | t                 |
| Tronzado          | MGMR-PS<br>   | MGMR 300-6D-PS |            |        |        |        |        |        |          |        | 3.0              | 0.2 | 21   | 2.35 | 4.83 | 6    |    | C30<br>C32  |                   |
|                   |  | 8D-PS          |            |        |        |        |        |        |          |        | 3.0              | 0.2 | 21   | 2.35 | 4.83 | 5    |   |   |                   |
|                   |  | 15D-PS         |            |        |        |        |        |        |          |        | 3.0              | 0.2 | 21   | 2.35 | 4.83 | 15   |   |   |                   |
|                   |  | 400-4D-PS      |            |        |        |        |        |        |          |        | 4.0              | 0.3 | 21   | 3.3  | 4.83 | 4    |   |   |                   |
|                   |  | 500-4D-PS      |            |        |        |        |        |        |          |        | 5.0              | 0.3 | 26   | 4.1  | 5.82 | 4    |   |   |                   |
|                   |  |                |            |        |        |        |        |        |          |        |                  |     |      |      |      |      |   |   |                   |
| Tronzado          | MGML-PS<br>   | MGML 300-6D-PS |            |        |        |        |        |        |          |        | 3.0              | 0.2 | 21.0 | 2.35 | 4.83 | 6    |    | C30<br>C32  |                   |
|                   |  | 8D-PS          |            |        |        |        |        |        |          |        | 3.0              | 0.2 | 21.0 | 2.35 | 4.83 | 5    |   |   |                   |
|                   |  | 15D-PS         |            |        |        |        |        |        |          |        | 3.0              | 0.2 | 21.0 | 2.35 | 4.83 | 15   |   |   |                   |
|                   |  |                |            |        |        |        |        |        |          |        |                  |     |      |      |      |      |   |   |                   |
|                   |  |                |            |        |        |        |        |        |          |        |                  |     |      |      |      |      |   |   |                   |
|                   |  |                |            |        |        |        |        |        |          |        |                  |     |      |      |      |      |   |   |                   |
| Tronzado          | MGMR-PT<br>  | MGMR 200-6D-PT |            |        |        |        |        |        |          |        | 2.0              | 0.2 | 16   | 1.6  | 3.5  | 6    |   | C30<br>C32  |                   |
|                   |  | 300-6D-PT      |            |        |        |        |        |        |          |        | 3.0              | 0.2 | 21   | 2.35 | 4.83 | 6    |   |   |                   |
|                   |  | 8D-PT          |            |        | ●      |        |        |        |          |        | 3.0              | 0.2 | 21   | 2.35 | 4.83 | 8    |   |   |                   |
|                   |  | 15D-PT         |            |        |        |        |        |        |          |        | 3.0              | 0.2 | 21   | 2.35 | 4.83 | 15   |   |   |                   |
|                   |  | 400-4D-PT      |            |        |        |        |        |        |          |        | 4.0              | 0.3 | 21   | 3.3  | 4.83 | 4    |   |   |                   |
|                   |  | 500-4D-PT      |            |        |        |        |        |        |          |        | 5.0              | 0.3 | 26   | 4.1  | 5.82 | 4    |   |   |                   |
| Tronzado          | MGML-PT<br> | MGML 200-6D-PT |            |        |        |        |        |        |          |        | 2.0              | 0.2 | 16   | 1.6  | 3.50 | 6    |  | C30<br>C32  |                   |
|                   |  | 300-6D-PT      |            |        |        | ●      |        |        |          |        | 3.0              | 0.2 | 21   | 2.35 | 4.83 | 6    |   |   |                   |
|                   |  | 8D-PT          |            |        |        |        |        |        |          |        | 3.0              | 0.2 | 21   | 2.35 | 4.83 | 8    |   |   |                   |
|                   |  | 15D-PT         |            |        |        |        |        |        |          |        | 3.0              | 0.2 | 21   | 2.35 | 4.83 | 15   |   |   |                   |
|                   |  | 400-4D-PT      |            |        |        |        |        |        |          |        | 4.0              | 0.3 | 21   | 3.30 | 4.83 | 4    |   |   |                   |
|                   |  | 500-4D-PT      |            |        |        |        |        |        |          |        | 5.0              | 0.3 | 26   | 4.1  | 5.82 | 4    |   |   |                   |
| Aluminio          | MRGN-A<br>  | MRGN 300-A     |            |        |        |        |        |        |          |        | 3.0              | 1.5 | 21.0 | 2.35 | 4.83 | -    |  | C30<br>C31<br>C33<br>C34  |                   |
|                   |  | 400-A          |            |        |        |        |        |        | ●        |        | 4.0              | 2.0 | 21.0 | 3.3  | 4.83 | -    |   |   |                   |
|                   |  | 500-A          |            |        |        |        |        |        |          | ●      |                  | 5.0 | 2.5  | 26.0 | 4.1  | 5.82 |   |   | -                 |
|                   |  | 600-A          |            |        |        |        |        |        |          | ●      |                  | 6.0 | 3.0  | 26.0 | 5.0  | 5.81 |   |   | -                 |
|                   |  | 800-A          |            |        |        |        |        |        |          | ●      |                  | 8.0 | 4.0  | 31.0 | 6.0  | 6.52 |   |   | -                 |
|                   |  |                |            |        |        |        |        |        |          |        |                  |     |      |      |      |      |   |   |                   |
| Relieve perfilado | MRMN-M<br>  | MRMN 200-M     | ●          | ●      | ●      |        |        |        |          | ●      |                  | 2.0 | 1.0  | 16.0 | 1.5  | 3.5  | -   |  | C30<br>~34<br>C41 |
|                   |  | 300-M          | ●          | ●      | ●      | ●      |        |        | ●        | ●      |                  | 3.0 | 1.5  | 21.0 | 2.35 | 4.83 | -   |   |                   |
|                   |  | 400-M          | ●          | ●      | ●      | ●      |        |        |          | ●      |                  | 4.0 | 2.0  | 21.0 | 3.3  | 4.83 | -   |   |                   |
|                   |  | 500-M          | ●          |        |        |        |        |        | ●        |        |                  | 5.0 | 2.5  | 26.0 | 4.1  | 5.82 | -   |   |                   |
|                   |  | 600-M          | ●          | ●      | ●      |        |        |        |          |        |                  | 6.0 | 3.0  | 26.0 | 5.0  | 5.81 | -   |   |                   |
|                   |  | 800-M          | ●          |        | ●      |        |        |        |          |        |                  | 8.0 | 4.0  | 31.0 | 6.0  | 6.52 | -   |   |                   |

●: En Almacen



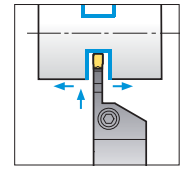
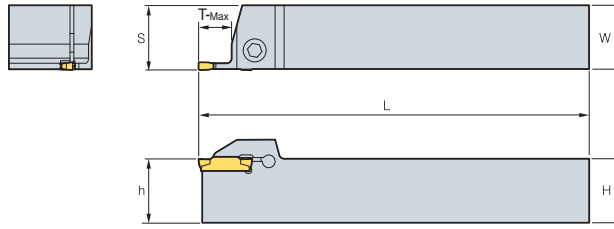
## MGEHR/L

Para Ranurado, Torneado, Tronzado, Perfilado, Relieve



MGMN  
MGGN  
MRGN

MGMR  
MRMN



• Inserto tipo R

(mm)

| Designación    | H = (h) | W  | L   | S     | T-Max | Insertos  | Tornillo | Llave |
|----------------|---------|----|-----|-------|-------|---|----------|-------|
| <b>MGEHR/L</b> |         |    |     |       |       |   |          |       |
| 1616-1.5       | 16      | 16 | 100 | 16.2  | 14    | MGMN150-G   | LTX0514  | TW20L |
| 2020-1.5       | 20      | 20 | 125 | 20.2  | 14    |   |          |       |
| 2525-1.5       | 25      | 25 | 150 | 25.2  | 14    |   |          |       |
| 1212-2         | 12      | 12 | 100 | 14.25 | 14    | MGMN200-G<br>MGMN200-M<br>MGMR200-□□-□□                                     | MHA0512  | HW40L |
| 1616-2         | 16      | 16 | 100 | 16.25 | 14    |   |          |       |
| 2020-2         | 20      | 20 | 125 | 20.25 | 14    |   |          |       |
| 2525-2         | 25      | 25 | 150 | 25.25 | 14    | MGMN250-G<br>MGMN250-M  | MHA0512  | HW40L |
| 1616-2.5       | 16      | 16 | 100 | 16.30 | 16    |   |          |       |
| 2020-2.5       | 20      | 20 | 125 | 20.30 | 16    |   |          |       |
| 2525-2.5       | 25      | 25 | 150 | 25.30 | 16    | MGMN300-M/T<br>MGGN300-□□-M<br>MRMN300-M<br>MGMR300-□□-□□<br>MGMN300-□□-L/R | BHA0616  | HW50L |
| 1616-3         | 16      | 16 | 100 | 16.35 | 18    |   |          |       |
| 2020-3-T10     | 20      | 20 | 125 | 20.4  | 10    |   |          |       |
| 2020-3         | 20      | 20 | 125 | 20.4  | 18    | MGMN400-M/T<br>MGGN400-□□-M<br>MRMN400-M<br>MGMR400-□□-□□<br>MGMN400-□□-L/R | BHA0616  | HW50L |
| 2525-3-T10     | 25      | 25 | 150 | 25.4  | 10    |   |          |       |
| 2525-3         | 25      | 25 | 150 | 25.4  | 18    |   |          |       |
| 3232-3-T10     | 32      | 32 | 170 | 32.4  | 10    | MGMN500-M/T<br>MGGN500-□□-M<br>MRMN500-M<br>MGMR500-□□-□□<br>MGMN500-□□-L/R | BHA0616  | HW50L |
| 3232-3         | 32      | 32 | 170 | 32.4  | 18    |   |          |       |
| 2020-4-T10     | 20      | 20 | 125 | 20.4  | 10    |   |          |       |
| 2020-4         | 20      | 20 | 125 | 20.4  | 18    | MGMN600-M<br>MGGN600-□□-M<br>MRMN600-M                                      | BHA0616  | HW50L |
| 2525-4-T10     | 25      | 25 | 150 | 25.4  | 10    |   |          |       |
| 2525-4         | 25      | 25 | 150 | 25.4  | 18    |   |          |       |
| 3232-4-T10     | 32      | 32 | 170 | 32.4  | 10    | MRMN800-M<br>MGMN800-M  | BHA0616  | HW50L |
| 3232-4         | 32      | 32 | 170 | 32.4  | 18    |   |          |       |
| 2020-5-T15     | 20      | 20 | 150 | 20.5  | 15    |   |          |       |
| 2020-5         | 20      | 20 | 150 | 20.5  | 23    | MRMN800-M<br>MGMN800-M  | BHA0616  | HW50L |
| 2525-5-T15     | 25      | 25 | 150 | 25.5  | 15    |   |          |       |
| 2525-5         | 25      | 25 | 150 | 25.5  | 23    |   |          |       |
| 3232-5-T15     | 32      | 32 | 170 | 32.5  | 15    | MRGN600-A   | BHA0616  | HW50L |
| 3232-5         | 32      | 32 | 170 | 32.5  | 23    |   |          |       |
| 2020-6-T15     | 20      | 20 | 125 | 20.6  | 15    |   |          |       |
| 2020-6         | 20      | 20 | 125 | 20.6  | 23    | MRGN800-A   | BHA0616  | HW50L |
| 2525-6-T15     | 25      | 25 | 150 | 25.6  | 15    |   |          |       |
| 2525-6         | 25      | 25 | 150 | 25.6  | 23    |   |          |       |
| 3232-6-T15     | 32      | 32 | 170 | 32.6  | 15    | MRGN800-A   | BHA0616  | HW50L |
| 3232-6         | 32      | 32 | 170 | 32.6  | 23    |   |          |       |
| 2525-8-T15     | 25      | 25 | 150 | 26.1  | 15    |   |          |       |
| 2525-8         | 25      | 25 | 150 | 26.1  | 28    | MRGN800-A   | BHA0616  | HW50L |
| 3232-8-T15     | 32      | 32 | 170 | 33.1  | 16    |   |          |       |
| 3232-8         | 32      | 32 | 170 | 33.1  | 28    |   |          |       |
| 2525-6A-T15    | 25      | 25 | 150 | 25.6  | 15    | MRGN800-A   | BHA0616  | HW50L |
| 2525-6A        | 25      | 25 | 150 | 25.6  | 23    |   |          |       |
| 3232-6A-T15    | 32      | 32 | 170 | 32.6  | 15    |   |          |       |
| 3232-6A        | 32      | 32 | 170 | 32.6  | 23    | MRGN800-A   | BHA0616  | HW50L |
| 2525-8A-T15    | 25      | 25 | 150 | 26.1  | 16    |   |          |       |
| 2525-8A        | 25      | 25 | 150 | 26.1  | 28    |   |          |       |
| 3232-8A-T15    | 32      | 32 | 170 | 33.1  | 15    | MRGN800-A   | BHA0616  | HW50L |
| 3232-8A        | 32      | 32 | 170 | 33.1  | 28    |   |          |       |

Insertos Aplicable C27~C29

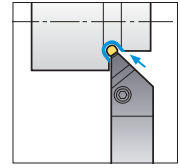
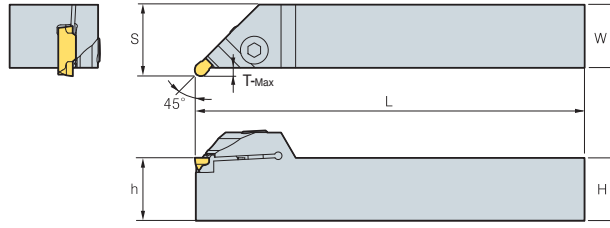


Para Perfilado, Maquinado de Relieve

# MGEUR/L



MRMN  
MRGN



• Inserto tipo R  
(mm)

| Designación    | H = (h)        | W  | L  | S   | T-Max | Insertos | Tornillo  | Llave   |       |
|----------------|----------------|----|----|-----|-------|----------|-----------|---------|-------|
| <b>MGEUR/L</b> | <b>2020-3</b>  | 20 | 20 | 125 | 23    | 3        | MRMN300-M | BHA0616 | HW50L |
|                | <b>2525-3</b>  | 25 | 25 | 150 | 28    | 3        |           |         |       |
|                | <b>3232-3</b>  | 32 | 32 | 170 | 35    | 3        |           |         |       |
|                | <b>2020-4</b>  | 20 | 20 | 125 | 23    | 3        | MRMN400-M |         |       |
|                | <b>2525-4</b>  | 25 | 25 | 150 | 28    | 3        |           |         |       |
|                | <b>3232-4</b>  | 32 | 32 | 170 | 35    | 3        |           |         |       |
|                | <b>2020-5</b>  | 20 | 20 | 125 | 24    | 4        | MRMN500-M |         |       |
|                | <b>2525-5</b>  | 25 | 25 | 150 | 29    | 4        |           |         |       |
|                | <b>3232-5</b>  | 32 | 32 | 170 | 36    | 4        |           |         |       |
|                | <b>2020-6</b>  | 20 | 20 | 125 | 24    | 4        | MRMN600-M |         |       |
|                | <b>2525-6</b>  | 25 | 25 | 150 | 29    | 4        |           |         |       |
|                | <b>3232-6</b>  | 32 | 32 | 170 | 36    | 4        |           |         |       |
|                | <b>2525-8</b>  | 25 | 25 | 150 | 30    | 5        | MRMN800-M |         |       |
|                | <b>3232-8</b>  | 32 | 32 | 170 | 37    | 5        |           |         |       |
|                | <b>2525-6A</b> | 25 | 25 | 150 | 29    | 4        | MRGN600-A |         |       |
|                | <b>3232-6A</b> | 32 | 32 | 170 | 36    | 4        |           |         |       |
|                | <b>2525-8A</b> | 25 | 25 | 150 | 30    | 5        | MRGN800-A |         |       |
|                | <b>3232-8A</b> | 32 | 32 | 170 | 37    | 5        |           |         |       |

➔ Insertos Aplicable C27~C29

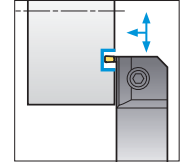
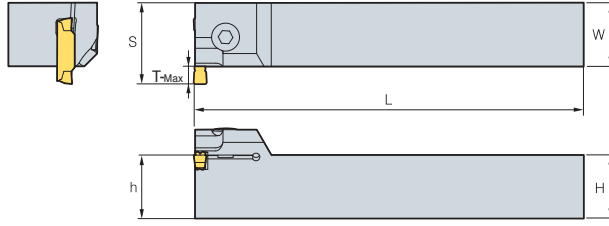


## MGEVR/L

Para Ranurado, Torneado, Perfilado



MGMN MGN  
MRMN MRGN



• Inserto tipo R

(mm)

| Designación    | H = (h) | W  | L   | S    | T-Max | Min. machining Dia. (ØD) | Insertos   | Tornillo | Llave |
|----------------|---------|----|-----|------|-------|--------------------------|--|----------|-------|
| <b>MGEVR/L</b> |         |    |     |      |       |                          |  |          |       |
| 2020-1.5       | 20      | 20 | 125 | 23   | 3     | 85                       | MGMN150-G  | LTX0514  | TW20L |
| 2525-1.5       | 25      | 25 | 150 | 28   | 3     | 85                       |  |          |       |
| 3232-1.5       | 32      | 32 | 170 | 35   | 3     | 85                       |  |          |       |
| 2020-2         | 20      | 20 | 125 | 23.5 | 3.5   | 65                       | MGMN200-M<br>MGMN200-G                                     |          |       |
| 2525-2         | 25      | 25 | 150 | 28.5 | 3.5   | 65                       |  |          |       |
| 3232-2         | 32      | 32 | 170 | 35.5 | 3.5   | 65                       |  |          |       |
| 2020-2.5       | 20      | 20 | 125 | 24   | 4     | 65                       | MGMN250-M<br>MGMN250-G                                     |          |       |
| 2525-2.5       | 25      | 25 | 150 | 29   | 4     | 65                       |  |          |       |
| 3232-2.5       | 32      | 32 | 170 | 36   | 4     | 65                       |  |          |       |
| 2020-3         | 20      | 20 | 125 | 25.5 | 5     | 75                       | MGMN300-M/T<br>MGGN300-□□-M<br>MRMN300-M<br>MGMN300-□□-L/R |          |       |
| 2525-3         | 25      | 25 | 150 | 30.5 | 5     | 75                       |  |          |       |
| 3232-3         | 32      | 32 | 170 | 37.5 | 5     | 75                       |  |          |       |
| 2020-4         | 20      | 20 | 125 | 25.5 | 5     | 70                       |  |          |       |
| 2525-4         | 25      | 25 | 150 | 30.5 | 5     | 70                       | MGMN400-M/T<br>MGGN400-□□-M<br>MRMN400-M<br>MGMN400-□□-L/R | BHA0616  | HW50L |
| 3232-4         | 32      | 32 | 170 | 37.5 | 5     | 70                       |  |          |       |
| 2020-5         | 20      | 20 | 125 | 27   | 7     | 75                       |  |          |       |
| 2525-5         | 25      | 25 | 150 | 32   | 7     | 75                       | MGMN500-M/T<br>MGGN500-□□-M<br>MRMN500-M<br>MGMN500-□□-L/R |          |       |
| 3232-5         | 32      | 32 | 170 | 39   | 7     | 75                       |  |          |       |
| 2020-6         | 20      | 20 | 125 | 27   | 7     | 70                       |  |          |       |
| 2525-6         | 25      | 25 | 150 | 32   | 7     | 70                       | MGMN600-M<br>MGGN600-□□-M<br>MRMN600-M                     |          |       |
| 3232-6         | 32      | 32 | 170 | 39   | 7     | 70                       |  |          |       |
| 2525-8         | 25      | 25 | 150 | 34   | 9     | 50                       | MRMN800-M<br>MGMN800-M                                     |          |       |
| 3232-8         | 32      | 32 | 170 | 41   | 9     | 50                       |  |          |       |
| 2525-6A        | 25      | 25 | 150 | 32   | 7     | 70                       | MRGN600-A<br>MRGN800-A                                     |          |       |
| 3232-6A        | 32      | 32 | 170 | 39   | 7     | 70                       |  |          |       |
| 2525-8A        | 25      | 25 | 150 | 34   | 9     | 45                       |  |          |       |
| 3232-8A        | 32      | 32 | 170 | 41   | 9     | 45                       |  |          |       |

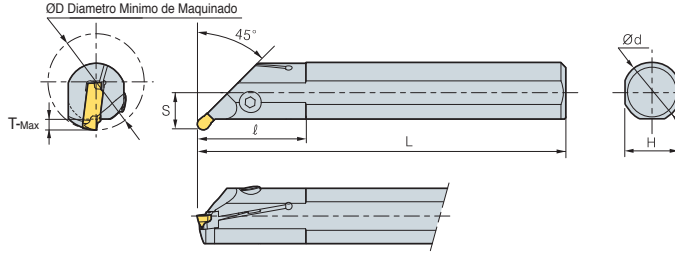
↻ Insertos Aplicable C27~C29



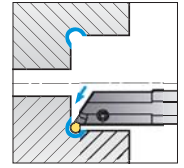
# MGIUR/L



MRMN  
MRGN



Para Perfilado, Relieve



• Inserto tipo R  
(mm)

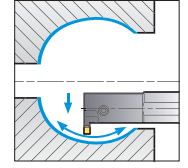
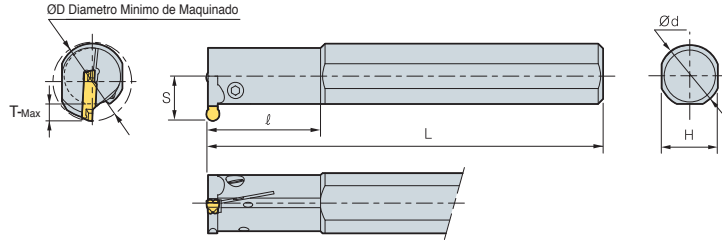
| Designación           | ØD | Ød | L   | l  | T-Max | H  | S    | Insertos  | Tornillo | Llave |
|-----------------------|----|----|-----|----|-------|----|------|-----------|----------|-------|
| <b>MGIUR/L</b> 3520-3 | 35 | 20 | 150 | 45 | 3.5   | 18 | 13   | MRMN300-M | MHA0512  | HW40L |
| 4025-3                | 40 | 25 | 200 | 45 | 3.5   | 23 | 15.5 |           |          |       |
| 5032-3                | 50 | 32 | 250 | 65 | 3.5   | 30 | 19   |           |          |       |
| 3520-4                | 35 | 20 | 150 | 45 | 3.5   | 18 | 13   | MRMN400-M |          |       |
| 4025-4                | 40 | 25 | 200 | 45 | 3.5   | 23 | 15.5 |           |          |       |
| 5032-4                | 50 | 32 | 250 | 65 | 3.5   | 30 | 19   |           |          |       |
| 4025-5                | 40 | 25 | 200 | 45 | 3.5   | 23 | 15.5 | MRMN500-M | BHA0616  | HW50L |
| 5032-5                | 50 | 32 | 250 | 65 | 3.5   | 30 | 19   |           | BHA0620  |       |
| 4025-6                | 40 | 25 | 200 | 45 | 3.5   | 23 | 19   | MRMN600-M | BHA0616  |       |
| 5032-6                | 50 | 32 | 250 | 65 | 3.5   | 30 | 19   |           | BHA0620  |       |
| 4025-8                | 40 | 25 | 200 | 45 | 6.5   | 23 | 15.5 | MRMN800-M | BHA0616  |       |
| 5032-8                | 50 | 32 | 250 | 65 | 6.5   | 30 | 19   |           | BHA0620  |       |
| 4025-6A               | 40 | 25 | 200 | 45 | 3.5   | 23 | 15.5 | MRGN600-A | BHA0616  |       |
| 5032-6A               | 50 | 32 | 250 | 65 | 3.5   | 30 | 19   |           | BHA0620  |       |
| 4025-8A               | 40 | 25 | 200 | 45 | 5.0   | 23 | 18.5 | MRGN800-A | BHA0616  |       |
| 5032-8A               | 50 | 32 | 250 | 65 | 6.5   | 30 | 22   |           | BHA0620  |       |

➔ Insertos Aplicable C27~C29



## MGIVR/L

Para Ranurado, Torneado, Perfilado



MGMN MRMN  
MGGN MRGN

• Inserto tipo R

(mm)

| Designación | ØD         | Ød | L  | ℓ   | T-Max | H   | S  | Insertos   | Tornillo | Llave |
|-------------|------------|----|----|-----|-------|-----|----|--|----------|-------|
| MGIVR/L     | 2016-1.5   | 20 | 16 | 125 | 35    | 3.5 | 15 | MGMN150-G  | MHB0310  | HW25L |
|             | 2520-1.5   | 25 | 20 | 150 | 45    | 3.5 | 18 |  | MHA0512  | HW40L |
|             | 2925-1.5   | 29 | 25 | 200 | 45    | 3.5 | 23 | MGMN200-G<br>MGMN200-M<br>MRMN200-M                          | MHB0310  | HW25L |
|             | 2016-2     | 20 | 16 | 125 | 35    | 4.5 | 15 |  | MHA0512  | HW40L |
|             | 2520-2     | 25 | 20 | 150 | 45    | 4.5 | 18 | MGMN250-G<br>MGMN250-M                                       | MHB0310  | HW25L |
|             | 2925-2     | 29 | 25 | 200 | 45    | 4.5 | 23 |  | MHA0512  | HW40L |
|             | 2016-2.5   | 20 | 16 | 125 | 35    | 4.5 | 15 | MGMN300-M/G/T<br>MGGN300-□□-M<br>MRMN300-M<br>MGMN300-□□-L/R | MHB0310  | HW25L |
|             | 2520-2.5   | 25 | 20 | 150 | 45    | 4.5 | 18 |  | MHA0512  | HW40L |
|             | 2925-2.5   | 29 | 25 | 200 | 45    | 4.5 | 23 | MGMN400-M/G/T<br>MGGN400-□□-M<br>MRMN400-M<br>MGMN400-□□-L/R | MHB0310  | HW25L |
|             | 2520-3     | 25 | 20 | 150 | 45    | 5   | 18 |  | MHA0512  | HW40L |
|             | 2520-3-T7  | 25 | 20 | 150 | 49.3  | 7   | 18 | MGMN500-M/G/T<br>MGGN500-□□-M<br>MRMN500-M<br>MGMN500-□□-L/R | MHA0512  | HW40L |
|             | 3125-3     | 31 | 25 | 200 | 45    | 6   | 23 |  | MHA0512  | HW40L |
|             | 3125-3-T10 | 31 | 25 | 200 | 45    | 10  | 23 | MGMN600-MG<br>MGGN600-□□-M<br>MRMN600-M                      | MHA0512  | HW40L |
|             | 3732-3     | 37 | 32 | 250 | 65    | 6   | 30 |  | MHA0512  | HW40L |
|             | 3732-3-T12 | 37 | 32 | 250 | 65    | 12  | 30 | MGMN800-M<br>MGMN800-M                                       | MHA0512  | HW40L |
|             | 2520-4     | 25 | 20 | 150 | 45    | 6   | 18 |  | MHA0512  | HW40L |
|             | 2520-4-T7  | 25 | 20 | 150 | 45    | 7   | 18 | MGMN800-M<br>MGMN800-M                                       | MHA0512  | HW40L |
|             | 3125-4     | 31 | 25 | 200 | 45    | 6   | 23 |  | MHA0512  | HW40L |
|             | 3125-4-T10 | 31 | 25 | 200 | 45    | 10  | 23 | MRMN800-M<br>MGMN800-M                                       | MHA0512  | HW40L |
|             | 3732-4     | 37 | 32 | 250 | 65    | 6   | 30 |  | MHA0512  | HW40L |
|             | 3732-4-T12 | 37 | 32 | 250 | 65    | 12  | 30 | MRMN800-M<br>MGMN800-M                                       | MHA0512  | HW40L |
|             | 3125-5     | 31 | 25 | 200 | 45    | 8   | 23 |  | MHA0512  | HW40L |
|             | 3732-5     | 37 | 32 | 250 | 65    | 8   | 30 | MRMN800-M<br>MGMN800-M                                       | MHA0512  | HW40L |
|             | 3125-6     | 31 | 25 | 200 | 45    | 8   | 23 |  | MHA0512  | HW40L |
|             | 3732-6     | 37 | 32 | 250 | 65    | 8   | 30 | MRMN800-M<br>MGMN800-M                                       | MHA0512  | HW40L |
|             | 3732-8     | 37 | 32 | 250 | 65    | 10  | 30 |  | MHA0512  | HW40L |
|             | 4540-8     | 45 | 40 | 300 | 70    | 10  | 37 | MRGN600-A  | MHA0512  | HW40L |
|             | 3125-6A    | 31 | 25 | 200 | 45    | 8   | 23 |  | MHA0512  | HW40L |
|             | 3732-6A    | 37 | 32 | 250 | 65    | 8   | 30 | MRGN800-A  | MHA0512  | HW40L |
|             | 3732-8A    | 37 | 32 | 250 | 65    | 10  | 30 |  | MHA0512  | HW40L |
|             | 4540-8A    | 45 | 40 | 300 | 70    | 10  | 37 | MHA0512  | HW40L    |       |

Insertos Aplicable C27~C29



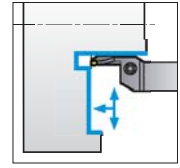
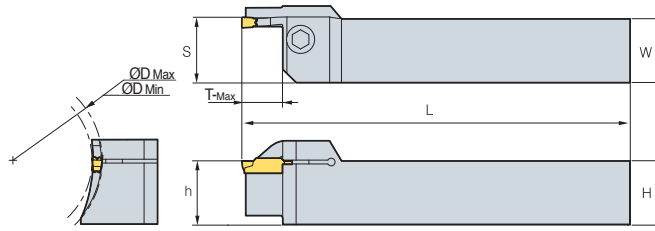


# MGFHR/L

Para Ranurado Frontal



MFMN  
MGMN



• Inserto tipo R  
(mm)

| Designación           | H = (h) | W  | L   | S    | T-Max | ØD  |     | Insertos                      | Tornillo | Llave |
|-----------------------|---------|----|-----|------|-------|-----|-----|-------------------------------|----------|-------|
|                       |         |    |     |      |       | Min | Max |                               |          |       |
| MGFHR/L 325-24/35-T10 | 25      | 25 | 150 | 25.6 | 10    | 24  | 35  | MFMN300                       | BHA0616  | HW50L |
|                       | 25      | 25 | 150 | 25.6 | 10    | 29  | 40  |                               |          |       |
|                       | 25      | 25 | 150 | 25.6 | 10    | 34  | 50  |                               |          |       |
|                       | 25      | 25 | 150 | 25.6 | 10    | 44  | 70  |                               |          |       |
|                       | 25      | 25 | 150 | 25.6 | 10    | 64  | 99  |                               |          |       |
| 425-42/63-T15         | 25      | 25 | 150 | 25.6 | 15    | 42  | 63  | MGMN400-M/T<br>MGMN400-□□-L/R | BHA0616  | HW50L |
| 62/120-T15            | 25      | 25 | 150 | 25.6 | 15    | 62  | 120 |                               |          |       |
| 112/200-T15           | 25      | 25 | 150 | 25.6 | 15    | 112 | 200 |                               |          |       |

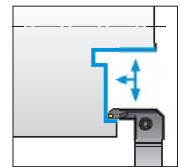
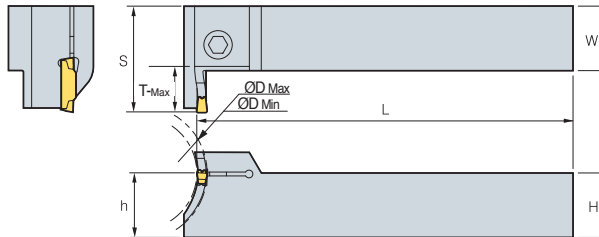
➔ Insertos Aplicable C27~C29

# MGFVR/L

Para Ranurado Frontal



MFMN  
MGMN



• Inserto tipo R  
(mm)

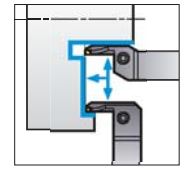
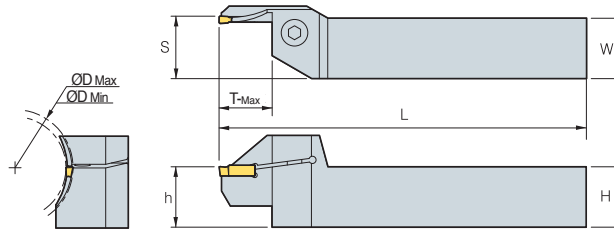
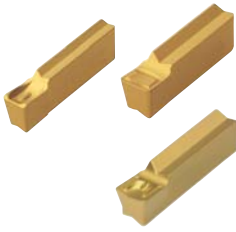
| Designación           | H = (h) | W  | L   | S  | T-Max | ØD  |     | Insertos                      | Tornillo | Llave |
|-----------------------|---------|----|-----|----|-------|-----|-----|-------------------------------|----------|-------|
|                       |         |    |     |    |       | Min | Max |                               |          |       |
| MGFVR/L 325-24/35-T10 | 25      | 25 | 150 | 36 | 10    | 24  | 35  | MFMN300                       | MHA0512  | HW40L |
|                       | 25      | 25 | 150 | 36 | 10    | 29  | 40  |                               |          |       |
|                       | 25      | 25 | 150 | 36 | 10    | 34  | 50  |                               |          |       |
|                       | 25      | 25 | 150 | 36 | 10    | 44  | 70  |                               |          |       |
|                       | 25      | 25 | 150 | 36 | 10    | 64  | 99  |                               |          |       |
| 425-44/60-T15         | 25      | 25 | 150 | 41 | 15    | 44  | 60  | MGMN400-M/T<br>MGMN400-□□-L/R | BHA0616  | HW50L |
| 60/120-T15            | 25      | 25 | 150 | 41 | 15    | 60  | 120 |                               |          |       |
| 112/200-T15           | 25      | 25 | 150 | 41 | 15    | 112 | 200 |                               |          |       |

➔ Insertos Aplicable C27~C29

# C Portaherramienta de MGT (ranurado frontal)

## FGHH

Para Ranurado Frontal, Torneado Fronta



FGD FGM FMM

• Inserto tipo R

(mm)

| Designación              | H = (h)      | W     | L   | S    | T-Max | ØD   |     | Insertos | Tornillo   | Llave      |
|--------------------------|--------------|-------|-----|------|-------|------|-----|----------|------------|------------|
|                          |              |       |     |      |       | Min  | Max |          |            |            |
| <b>FGHH</b> 320R - 25/30 | 30/35        | 20    | 20  | 125  | 20.6  | 12   | 25  | 30       | FMm300R-03 |            |
|                          | 35/48        | 20    | 20  | 125  | 20.6  | 12   | 35  | 48       |            |            |
|                          | 48/60        | 20    | 20  | 125  | 20.6  | 22   | 48  | 60       |            |            |
|                          | 60/75        | 20    | 20  | 125  | 20.6  | 22   | 60  | 75       |            |            |
|                          | 75/100       | 20    | 20  | 125  | 20.6  | 22   | 75  | 100      |            |            |
|                          | 100/140      | 20    | 20  | 125  | 20.6  | 22   | 100 | 140      |            |            |
|                          | 325R - 25/30 | 25    | 25  | 150  | 25.6  | 12   | 25  | 30       |            |            |
| 30/35                    | 25           | 25    | 150 | 25.6 | 12    | 30   | 35  |          |            |            |
| 35/48                    | 25           | 25    | 150 | 25.6 | 12    | 35   | 48  |          |            |            |
| 48/60                    | 25           | 25    | 150 | 25.6 | 22    | 48   | 60  |          |            |            |
| 60/75                    | 25           | 25    | 150 | 25.6 | 22    | 60   | 75  |          |            |            |
| 75/100                   | 25           | 25    | 150 | 25.6 | 22    | 75   | 100 |          |            |            |
| 100/140                  | 25           | 25    | 150 | 25.6 | 22    | 100  | 140 |          |            |            |
| 420R - 25/30             | 30/35        | 20    | 20  | 125  | 20.6  | 12   | 25  | 30       | FMm400R-04 |            |
|                          | 35/48        | 20    | 20  | 125  | 20.6  | 12   | 35  | 48       |            |            |
|                          | 48/60        | 20    | 20  | 125  | 20.6  | 25   | 48  | 60       |            |            |
|                          | 60/75        | 20    | 20  | 125  | 20.6  | 25   | 60  | 75       |            |            |
|                          | 75/100       | 20    | 20  | 125  | 20.6  | 25   | 75  | 100      |            |            |
|                          | 100/140      | 20    | 20  | 125  | 20.6  | 25   | 100 | 140      |            |            |
|                          | 425R - 25/30 | 30/35 | 25  | 25   | 150   | 25.6 | 12  | 25       |            |            |
| 35/48                    |              | 25    | 25  | 150  | 25.6  | 12   | 35  | 48       |            |            |
| 48/60                    |              | 25    | 25  | 150  | 25.6  | 25   | 48  | 60       |            |            |
| 60/75                    |              | 25    | 25  | 150  | 25.6  | 25   | 60  | 75       |            |            |
| 75/100                   |              | 25    | 25  | 150  | 25.6  | 25   | 75  | 100      |            |            |
| 100/140                  |              | 25    | 25  | 150  | 25.6  | 25   | 100 | 140      |            |            |
| 520R - 25/30             |              | 30/35 | 20  | 20   | 125   | 20.6 | 12  | 25       | 30         | FMm500R-04 |
|                          | 35/40        | 20    | 20  | 125  | 20.6  | 20   | 35  | 40       |            |            |
|                          | 40/48        | 20    | 20  | 125  | 20.6  | 20   | 40  | 48       |            |            |
|                          | 48/60        | 20    | 20  | 125  | 20.6  | 25   | 48  | 60       |            |            |
|                          | 60/75        | 20    | 20  | 125  | 20.6  | 25   | 60  | 75       |            |            |
|                          | 75/100       | 20    | 20  | 125  | 20.6  | 25   | 75  | 100      |            |            |
|                          | 100/140      | 20    | 20  | 125  | 20.6  | 25   | 100 | 140      |            |            |
| 525R - 25/30             | 30/35        | 25    | 25  | 150  | 25.6  | 12   | 25  | 30       | FMm500R-04 |            |
|                          | 35/40        | 25    | 25  | 150  | 25.6  | 20   | 35  | 40       |            |            |
|                          | 40/48        | 25    | 25  | 150  | 25.6  | 20   | 40  | 48       |            |            |
|                          | 48/60        | 25    | 25  | 150  | 25.6  | 25   | 48  | 60       |            |            |
|                          | 60/75        | 25    | 25  | 150  | 25.6  | 25   | 60  | 75       |            |            |
|                          | 75/100       | 25    | 25  | 150  | 25.6  | 25   | 75  | 100      |            |            |
|                          | 100/140      | 25    | 25  | 150  | 25.6  | 25   | 100 | 140      |            |            |

Insertos Aplicable C27~C29



C

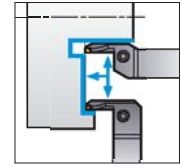
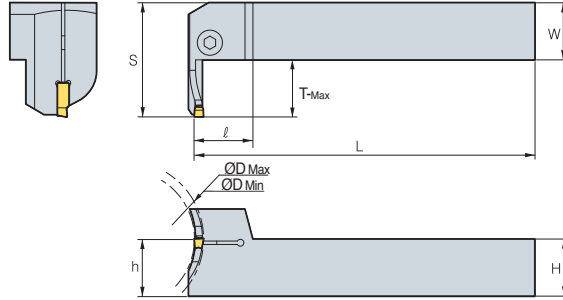
Çok Amaçlı Takımlar

## FGVH



FGD FGM FMm

Para Ranurado Frontal, Torneado Frontal



• Inserto tipo R  
(mm)

| Designación                 | H = (h) | W  | L   | S    | T-Max | ØD  |     | Insertos   | Tornillo                 | Llave |                          |
|-----------------------------|---------|----|-----|------|-------|-----|-----|------------|--------------------------|-------|--------------------------|
|                             |         |    |     |      |       | Min | Max |            |                          |       |                          |
| <b>FGVH</b><br>320R - 25/30 | 20      | 20 | 125 | 20.6 | 12    | 25  | 30  | FMm300R-03 | BHA0616                  | HW50L |                          |
|                             | 30/35   | 20 | 20  | 125  | 20.6  | 12  | 30  |            |                          |       | 35                       |
|                             | 35/48   | 20 | 20  | 125  | 20.6  | 12  | 35  |            |                          |       | 48                       |
|                             | 48/60   | 20 | 20  | 125  | 20.6  | 22  | 48  | 60         |                          |       | FGD300R-03<br>FGM300R-03 |
|                             | 60/75   | 20 | 20  | 125  | 20.6  | 22  | 60  | 75         |                          |       |                          |
|                             | 75/100  | 20 | 20  | 125  | 20.6  | 22  | 75  | 100        |                          |       |                          |
|                             | 100/140 | 20 | 20  | 125  | 20.6  | 22  | 100 | 140        |                          |       |                          |
| 325R - 25/30                | 25      | 25 | 150 | 25.6 | 12    | 25  | 30  | FMm300R-03 |                          |       |                          |
|                             | 30/35   | 25 | 25  | 150  | 25.6  | 12  | 30  |            |                          |       | 35                       |
|                             | 35/48   | 25 | 25  | 150  | 25.6  | 12  | 35  |            |                          |       | 48                       |
|                             | 48/60   | 25 | 25  | 150  | 25.6  | 22  | 48  | 60         |                          |       | FGD300R-03<br>FGM300R-03 |
|                             | 60/75   | 25 | 25  | 150  | 25.6  | 22  | 60  | 75         |                          |       |                          |
|                             | 75/100  | 25 | 25  | 150  | 25.6  | 22  | 75  | 100        |                          |       |                          |
|                             | 100/140 | 25 | 25  | 150  | 25.6  | 22  | 100 | 140        |                          |       |                          |
| 420R - 25/30                | 20      | 20 | 125 | 20.6 | 12    | 25  | 30  | FMm400R-04 |                          |       |                          |
|                             | 30/35   | 20 | 20  | 125  | 20.6  | 12  | 30  |            | 35                       |       |                          |
|                             | 35/48   | 20 | 20  | 125  | 20.6  | 12  | 35  |            | 48                       |       |                          |
|                             | 48/60   | 20 | 20  | 125  | 20.6  | 25  | 48  | 60         | FGD400R-04<br>FGM400R-04 |       |                          |
|                             | 60/75   | 20 | 20  | 125  | 20.6  | 25  | 60  | 75         |                          |       |                          |
|                             | 75/100  | 20 | 20  | 125  | 20.6  | 25  | 75  | 100        |                          |       |                          |
|                             | 100/140 | 20 | 20  | 125  | 20.6  | 25  | 100 | 140        |                          |       |                          |
| 425R - 25/30                | 25      | 25 | 150 | 25.6 | 12    | 25  | 30  | FMm400R-04 |                          |       |                          |
|                             | 30/35   | 25 | 25  | 150  | 25.6  | 12  | 30  |            | 35                       |       |                          |
|                             | 35/48   | 25 | 25  | 150  | 25.6  | 12  | 35  |            | 48                       |       |                          |
|                             | 48/60   | 25 | 25  | 150  | 25.6  | 25  | 48  | 60         | FGD400R-04<br>FGM400R-04 |       |                          |
|                             | 60/75   | 25 | 25  | 150  | 25.6  | 25  | 60  | 75         |                          |       |                          |
|                             | 75/100  | 25 | 25  | 150  | 25.6  | 25  | 75  | 100        |                          |       |                          |
|                             | 100/140 | 25 | 25  | 150  | 25.6  | 25  | 100 | 140        |                          |       |                          |
| 520R - 25/30                | 20      | 20 | 125 | 20.6 | 12    | 25  | 30  | FMm500R-04 |                          |       |                          |
|                             | 30/35   | 20 | 20  | 125  | 20.6  | 12  | 30  |            | 35                       |       |                          |
|                             | 35/40   | 20 | 20  | 125  | 20.6  | 20  | 35  |            | 40                       |       |                          |
|                             | 40/48   | 20 | 20  | 125  | 20.6  | 20  | 40  | 48         | FGD500R-04<br>FGM500R-04 |       |                          |
|                             | 48/60   | 20 | 20  | 125  | 20.6  | 25  | 48  | 60         |                          |       |                          |
|                             | 60/75   | 20 | 20  | 125  | 20.6  | 25  | 60  | 75         |                          |       |                          |
|                             | 75/100  | 20 | 20  | 125  | 20.6  | 25  | 75  | 100        |                          |       |                          |
| 525R - 25/30                | 20      | 20 | 125 | 20.6 | 25    | 100 | 140 | FMm500R-04 |                          |       |                          |
|                             | 30/35   | 25 | 25  | 150  | 25.6  | 12  | 30  |            | 35                       |       |                          |
|                             | 35/40   | 25 | 25  | 150  | 25.6  | 20  | 35  |            | 40                       |       |                          |
|                             | 40/48   | 25 | 25  | 150  | 25.6  | 20  | 40  | 48         | FGD500R-04<br>FGM500R-04 |       |                          |
|                             | 48/60   | 25 | 25  | 150  | 25.6  | 25  | 48  | 60         |                          |       |                          |
|                             | 60/75   | 25 | 25  | 150  | 25.6  | 25  | 60  | 75         |                          |       |                          |
|                             | 75/100  | 25 | 25  | 150  | 25.6  | 25  | 75  | 100        |                          |       |                          |
| 100/140                     | 25      | 25 | 150 | 25.6 | 25    | 100 | 140 |            |                          |       |                          |

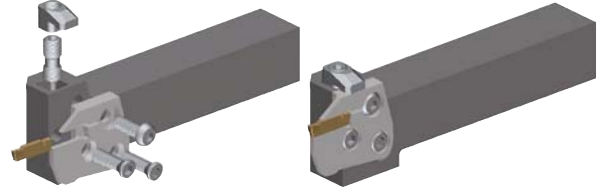
➔ Insertos Aplicable C27~C29

## Tipo de cartucho KGT/MGT

### Figura

- Compatibles y económica gracias al cartucho dividido y sistema de soporte Exclusivo de sistema existente solo cuerpo
- Cartucho Intercambiable
  - Varios montaje depende de estilo de trabajo
  - Reduce los costos de herramienta de corte más de un 30%
  - Marco con el tornillo de la abrazadera superior y lateral
- Ajuste fuerte y estable
  - Montaje simultáneo de insertar el cartucho y
  - Fácil montaje y cambio de herramienta
- Estable sistema de montaje
  - Simple y Superior sistema de ajuste

Ensamblado estable gracias a la doble tornillo y la abrazadera



Sistema simple y resistente ayarlama

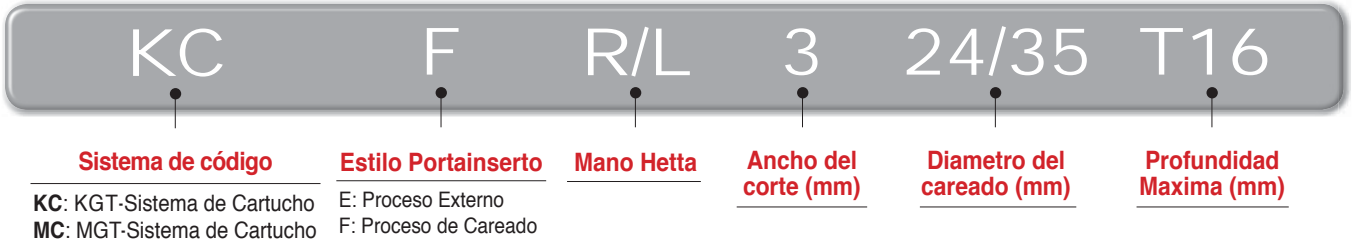
### Sistema de Codificación



### Portainserto



### Sistema de códigos



### Cartucho

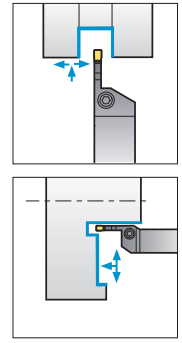
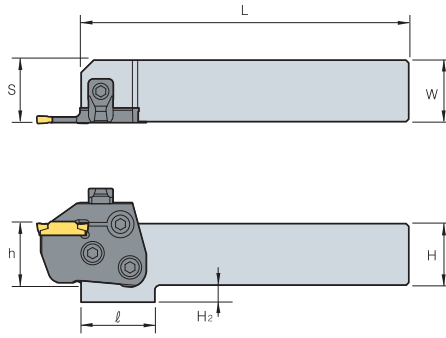
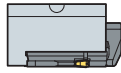


# MCHR/L (Portainserto)

Para Ranurado, Torneado, Tronzado, Perfilado, Relieve.



MCER/L  
MCFR/L



• Inserto tipo R

(mm)

| Designación | H = (h) | W  | L  | S   | ϕ    | H <sub>2</sub> | Cartucho | Brida                                  | Tornillo Brida | Cartucho Tornillos | Tornillo Cartucho | Llave    |       |
|-------------|---------|----|----|-----|------|----------------|----------|--|----------------|--------------------|-------------------|----------|-------|
| MCHR/L      | 2020    | 20 | 20 | 133 | 20.7 | 30             | 12       | KCER/L,<br>KCFR/L<br>MCER/L,<br>MCFR/L | CXH8N          | DHA0818F           | RHA0613           | FHGA0618 | HW40L |
|             | 2525    | 25 | 25 | 133 | 25.7 | 30             | 7        |  |                |                    |                   |          |       |
|             | 3232    | 32 | 32 | 153 | 32.7 | -              | -        |  |                |                    |                   |          |       |

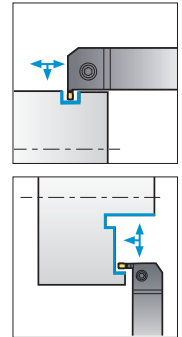
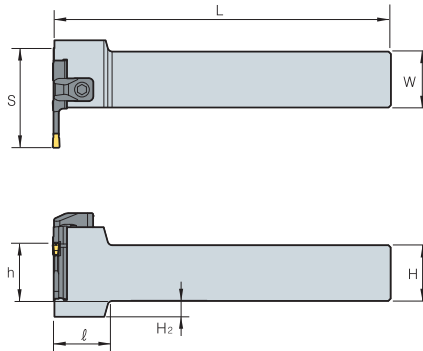
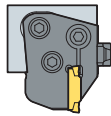
↻ Cartucho aplicable C40~C41

# MCVR/L (Portainserto)

Para Ranurado, Torneado.



MCER/L  
MCFR/L



• Inserto tipo R

(mm)

| Designación | H = (h) | W  | L  | S   | ϕ  | H <sub>2</sub> | Cartucho | Brida                                  | Tornillo Brida | Cartucho Tornillos | Tornillo Cartucho | Llave    |       |
|-------------|---------|----|----|-----|----|----------------|----------|--|----------------|--------------------|-------------------|----------|-------|
| MCVR/L      | 2020    | 20 | 20 | 150 | 38 | 30             | 12       | KCER/L,<br>KCFR/L<br>MCER/L,<br>MCFR/L | CXH8N          | DHA0818F           | RHA0613           | FHGA0618 | HW40L |
|             | 2525    | 25 | 25 | 150 | 43 | 30             | 7        |  |                |                    |                   |          |       |
|             | 3232    | 32 | 32 | 170 | 50 | -              | -        |  |                |                    |                   |          |       |

↻ Cartucho aplicable C40~C41

# C Tipo de cartucho KGT

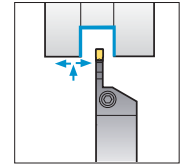
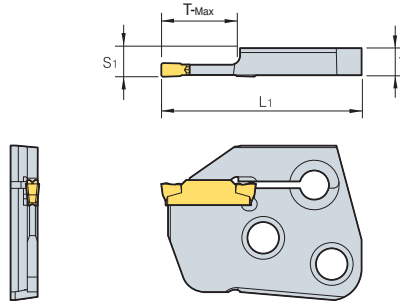
## KCER/L (Cartucho)

Para Ranurado, Torneado, Tronzado, Perfilado



KGMN  
KGGN

KGMR/L  
KRMN



• Inserto tipo R  
(mm)

| Designación   | T            | L <sub>1</sub> | S <sub>1</sub> | T-Max | Insertos |             | Portainsero  |
|---------------|--------------|----------------|----------------|-------|----------|-------------|--|
|               |              |                |                |       | Ancho    | Designación |  |
| <b>KCER/L</b> | <b>3-T16</b> | 5.97           | 44.5           | 6.35  | 16       | 3           | KGMN<br>KGMR/L<br>KGGN<br>KRMN<br><br>MCVR/L<br>MCHR/L |
|               | <b>4-T16</b> | 5.97           | 44.5           | 6.35  | 16       | 4           |  |
|               | <b>5-T20</b> | 5.87           | 48.5           | 6.35  | 20       | 5           |  |
|               | <b>6-T20</b> | 5.82           | 48.5           | 6.35  | 20       | 6           |  |

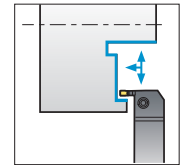
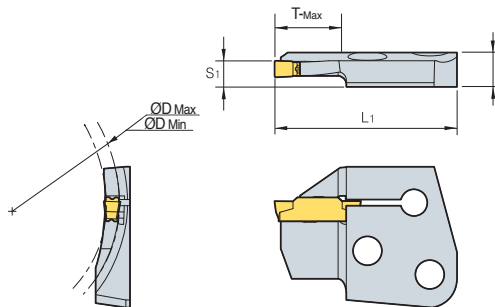
➔ Insertos Aplicable C27~C29

## KCFR/L (Cartucho)

Para Ranurado frontal, Torneado



KGMN  
KGMI



• Inserto tipo R  
(mm)

| Designación   | T                  | L <sub>1</sub> | S <sub>1</sub> | T-Max | ØD  |     | Insertos |             | Portainsero                                  |
|---------------|--------------------|----------------|----------------|-------|-----|-----|----------|-------------|--|
|               |                    |                |                |       | Min | Max | Ancho    | Designación |  |
| <b>KCFR/L</b> | <b>3-34/50-T16</b> | 8.35           | 44.5           | 6.35  | 16  | 34  | 50       | 3           | KGMN<br>KRMN<br>KGGN<br><br>MCVR/L<br>MCHR/L |
|               | <b>44/70-T16</b>   | 8.35           | 44.5           | 6.35  | 16  | 44  | 70       | 3           |  |
|               | <b>64/99-T16</b>   | 8.35           | 44.5           | 6.35  | 16  | 64  | 99       | 3           |  |
|               | <b>4-44/60-T16</b> | 8.35           | 44.5           | 6.35  | 16  | 44  | 60       | 4           |  |
|               | <b>60/120-T16</b>  | 8.35           | 44.5           | 6.35  | 16  | 60  | 120      | 4           |  |
|               | <b>112/200-T16</b> | 8.35           | 44.5           | 6.35  | 16  | 112 | 200      | 4           |  |

➔ Insertos Aplicable C27~C29



C

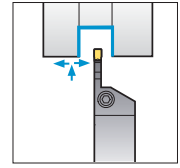
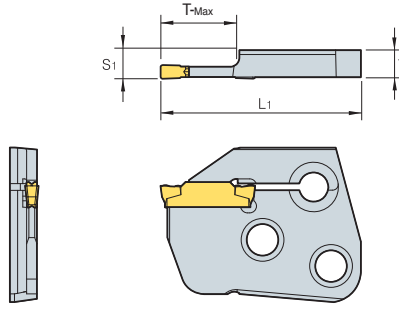
Çok Amaçlı Takımlar

## MCER/L (Cartucho)

Para Ranurado, Torneado, Tronzado, Perfilado



MGMN MGMR  
MGGN MRMN



• Inserto tipo R  
(mm)

| Designación | T     | L <sub>1</sub> | S <sub>1</sub> | T-Max | Insertos |             | Portainsero  |
|-------------|-------|----------------|----------------|-------|----------|-------------|--|
|             |       |                |                |       | Ancho    | Designación |  |
| MCER/L      | 3-T16 | 6.00           | 44.5           | 6.35  | 16       | 3           | MGMN<br>MGMR/L<br>MGGN<br>MRMN<br>MCVR/L<br>MCHR/L |
|             | 4-T16 | 5.97           | 44.5           | 6.35  | 16       | 4           |  |
|             | 5-T20 | 5.87           | 48.5           | 6.35  | 20       | 5           |  |
|             | 6-T20 | 5.82           | 48.5           | 6.35  | 20       | 6           |  |

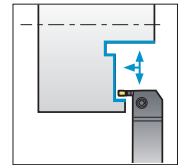
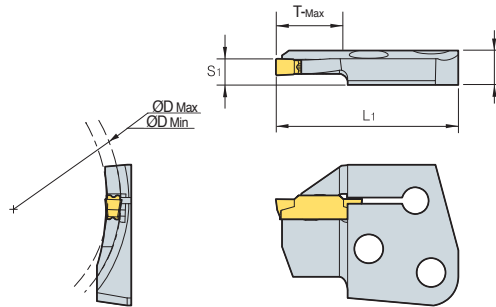
↻ Insertos Aplicable C27~C29

## MCFR/L (Cartucho)

Para Ranurado frontal, Torneado



MFNM  
MGMN



• Inserto tipo R  
(mm)

| Designación | T           | L <sub>1</sub> | S <sub>1</sub> | T-Max | ØD  |     | Insertos |             | Portainsero                            |
|-------------|-------------|----------------|----------------|-------|-----|-----|----------|-------------|--|
|             |             |                |                |       | Min | Max | Ancho    | Designación |  |
| MCFR/L      | 3-24/35-T16 | 8.00           | 44.5           | 6.35  | 16  | 24  | 35       | 3           | MFNM300<br>MGMN400<br>MCVR/L<br>MCHR/L |
|             | 29/40-T16   | 8.00           | 44.5           | 6.35  | 16  | 29  | 40       | 3           |  |
|             | 34/50-T16   | 8.00           | 44.5           | 6.35  | 16  | 34  | 50       | 3           |  |
|             | 44/70-T16   | 8.00           | 44.5           | 6.35  | 16  | 44  | 70       | 3           |  |
|             | 64/99-T16   | 8.00           | 44.5           | 6.35  | 16  | 64  | 99       | 3           |  |
| 4-          | 44/60-T16   | 7.97           | 44.5           | 6.35  | 16  | 44  | 60       | 4           |  |
|             | 60/120-T16  | 7.97           | 44.5           | 6.35  | 16  | 60  | 120      | 4           |  |
|             | 112/200-T16 | 7.97           | 44.5           | 6.35  | 16  | 112 | 200      | 4           |  |

↻ Insertos Aplicable C27~C29

## Información técnica para MGT Rueda de aluminio

- Características**
- Insertos diseñados para un maquinado óptimo en Rines de Aluminio.
  - Mayor tiempo de vida de la herramienta cuando se ajusta con el menor grado para la aplicación.
  - Mecanismo unico de sujeción que brinda firmeza al inserto
  - Una variedad de tipos de insertos para aplicaciones multiples

### Codificación de Insertos

|   |                   |                   |                                |   |                     |
|---|-------------------|-------------------|--------------------------------|---|---------------------|
| MR  | G                 | N                 | 6                              | - | A                   |
| <b>Sistema de código</b>  | <b>Tolerancia</b> | <b>Mano Hetta</b> | <b>Ancho del filo de corte</b> |   | <b>Rompevirutas</b> |
| MR: ranurado múltiple con punta redonda<br>MR: ranurado múltiple con punta en "V" | G: Ground         | N: neutral        | 6 mm, 8 mm                     |   | A/AM/AP/A5          |

### Sistema Codificación

|                          |  |  |                            |   |                    |                       |                                       |
|--------------------------|--|--|----------------------------|---|--------------------|-----------------------|---------------------------------------|
| MG                       | E  | H  | R/L                        | 25N - 8   | A - MR             |                       |                                       |
| <b>Sistema de código</b> | <b>Tipo de Trabajo</b>                     | <b>Tipo de soporte</b>                                     | <b>Mano Hetta</b>          | <b>Dimensiones</b>  | <b>Ancho corte</b> | <b>Ancho de corte</b> | <b>Tipo Inserto</b>                   |
| MG: ranurado múltiple    | E: Exterior proceso<br>I: Interior proceso | H: Horizontal<br>V: Vertical<br>U: Rebajado<br>X: Especial | R: Derecha<br>L: Izquierda | Alto: 25mm<br>Ancho: 25mm<br>(En mecanizado interior : diámetro mínimo) | 1.5~8.0 mm         | A/AM/AP/A5            | MR: punta redonda<br>MV: punta en "V" |

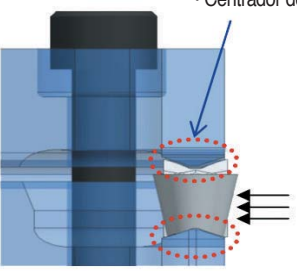
### Tipos de Insertos

MRGN Tip: Tamamen "Yuvarlak" geometry

| MRGN-A(para general)  | MRGN-A5(Para Copiado)   | MRGN-AM(Acabado Medio)  | MRGN-AP(PCD)   | MVGN-A(Para Acabado Fino)   |
|---|---|---|--|---|
|  |  |  |  |  |
| Angulo Agudo de incidencia, Filovivo  | Fuerza de brida reforzada   | Para fundicion Ductil   | Control de Virutas Mejorado  | Alto Angulo de incidencia y Relieve   |

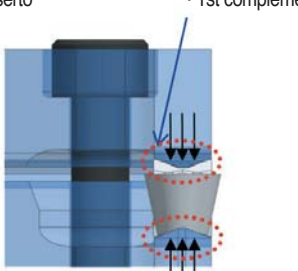
### Nuevo sistema de Brida

• Centrador del Inserto



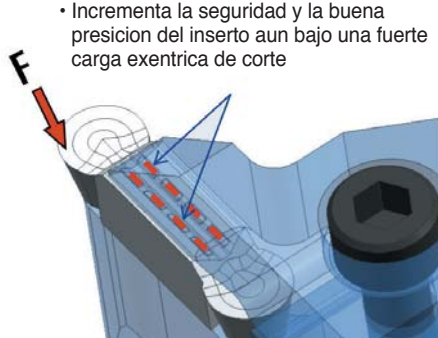
**Antes de Apretar**

• 1st complemento de la brida


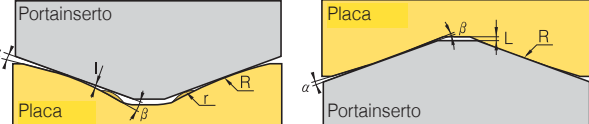


**Despues de Apretar**

• Incrementa la seguridad y la buena precision del inserto aun bajo una fuerte carga exentrica de corte

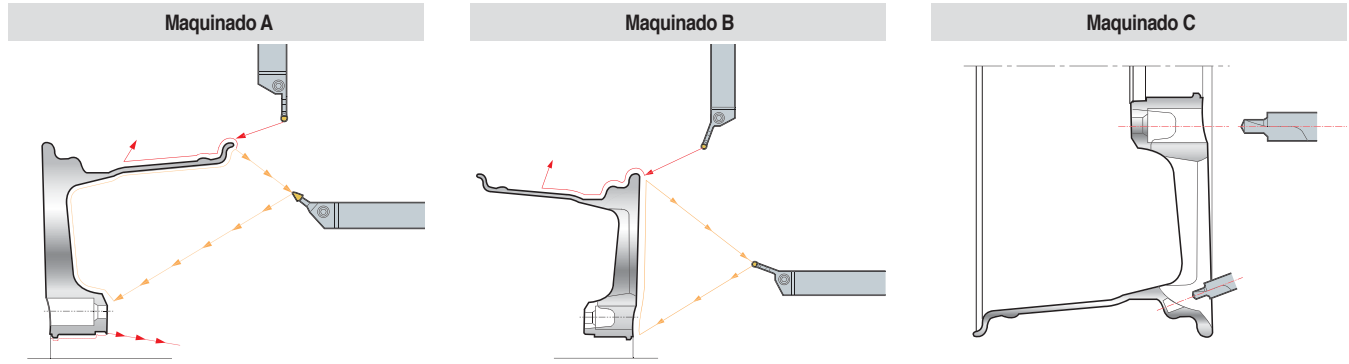


• Reforzada fuerza de de fijacion debido al diseño de el lado de latapa y de la parte inferior del inserto y del punto convexo en la parte superior del inserto




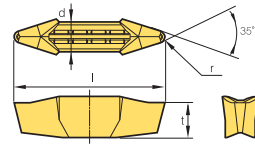

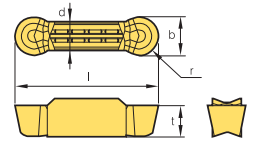
## Aplicación en Rines de Aluminio



## Condición de Corte Recomendada

| Pza.Trabajo                    |               | Dureza Brinell (HB) | kc (MPa)  | vc (m/min)    | fn (mm/rev) |
|--------------------------------|---------------|---------------------|-----------|---------------|-------------|
| Aleación de Aluminio (Forjada) | Sin Endurecer | 50 ~ 70             | 500 ~ 600 | 1,000 ~ 2,500 | 0.1 ~ 0.6   |
|                                | Endurecido    | 90 ~ 110            | 700 ~ 900 | 300 ~ 1,000   | 0.1 ~ 0.5   |
| Aleación de Aluminio (Fundido) | Sin Endurecer | 70 ~ 80             | 700 ~ 800 | 300 ~ 1,000   | 0.1 ~ 0.5   |
|                                | Endurecido    | 80 ~ 110            | 800 ~ 950 | 200 ~ 600     | 0.1 ~ 0.4   |
| Aleación de Cobre              |               | 90 ~ 110            | 700 ~ 900 | 300 ~ 800     | 0.1 ~ 0.5   |
| Aleación de Manganeseo         |               | 70 ~ 80             | 700 ~ 800 | 300 ~ 1,000   | 0.1 ~ 0.5   |

## Insertos

| Aplicación             | Imagen  | Designación            | Recubierto | Sin Rec. | Dimensiones (mm) |     |      |      |     | Configuración   | Pag.  |            |
|------------------------|---|------------------------|------------|----------|------------------|-----|------|------|-----|---|---|------------|
|                        |   |                        | DP150      | G10      | b                | r   | l    | d    | t   |   |   |            |
| Para Rines de Aluminio |  | MVGN                   |            |          | -                | 1.2 | 30.0 | 6.0  | 6.9 |  | C45   |            |
|                        |   | 8N-A-R1.2<br>8N-A-R1.6 |            |          | -                | 1.6 | 30.0 | 6.0  | 6.9 |   |   |            |
|                        |  | MRGN                   | 6N-A       |          | ●                | 6.0 | 3.0  | 26.0 | 5.0 | 5.9   |  | C44<br>C45 |
|                        |   |                        | 6N-AM      |          |                  | 6.0 | 3.0  | 26.0 | 5.0 | 5.9   |   |            |
|                        |   |                        | 6N-AP      |          |                  | 6.0 | 3.0  | 26.0 | 5.0 | 5.9   |   |            |
|                        |   |                        | 6N-A5      |          | ●                | 6.0 | 3.0  | 26.0 | 5.0 | 5.9   |   |            |
|                        |   |                        | 8N-A       |          |                  | 8.0 | 4.0  | 30.0 | 6.0 | 6.5   |   |            |
|                        |   |                        | 8N-AM      |          |                  | 8.0 | 4.0  | 30.0 | 6.0 | 6.5   |   |            |
|                        |   |                        | 8N-AP      |          |                  | 8.0 | 4.0  | 30.0 | 6.0 | 6.5   |   |            |
|                        |   |                        | 8N-A5      |          | ●                | 8.0 | 4.0  | 30.0 | 6.0 | 6.5   |   |            |

●: En Almacen

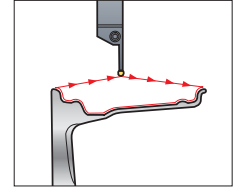
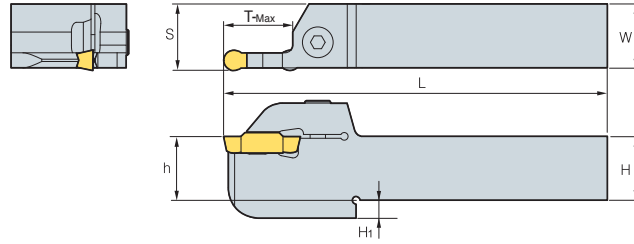


# C MGT para rueda de aluminio

## MGEHR/L



MRGN



• Inserto tipo R  
(mm)

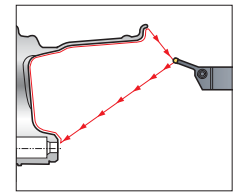
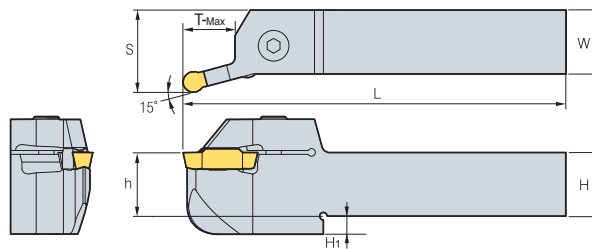
| Designación    | H = (h)        | H1 | W | L  | S   | T-Max | Insertos | Tornillo | Llave |
|----------------|----------------|----|---|----|-----|-------|----------|----------|-------|
|                |                |    |   |    |     |       |          |          |       |
| <b>MGEHR/L</b> | <b>25N-6A</b>  | 25 | 7 | 25 | 150 | 25.55 | 23.5     | BHA0620  | HW50L |
|                | <b>32N-6A</b>  | 32 | 8 | 32 | 150 | 32.55 | 27       |          |       |
|                | <b>25N-8A</b>  | 25 | 7 | 25 | 150 | 25.55 | 23.5     |          |       |
|                | <b>32N-8A</b>  | 32 | 8 | 32 | 150 | 32.55 | 27       |          |       |
|                | <b>25N-6A5</b> | 25 | 7 | 25 | 150 | 25.55 | 23.5     |          |       |
|                | <b>32N-6A5</b> | 32 | 8 | 32 | 150 | 32.55 | 27       |          |       |
|                | <b>25N-8A5</b> | 25 | 7 | 25 | 150 | 25.55 | 23.5     |          |       |
|                | <b>32N-8A5</b> | 32 | 8 | 32 | 150 | 32.55 | 27       |          |       |

➔ Insertos Applicable C43

## MGEHR/L-15



MRGN



• Inserto tipo R  
(mm)

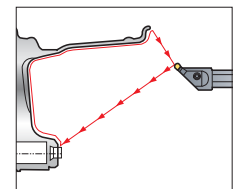
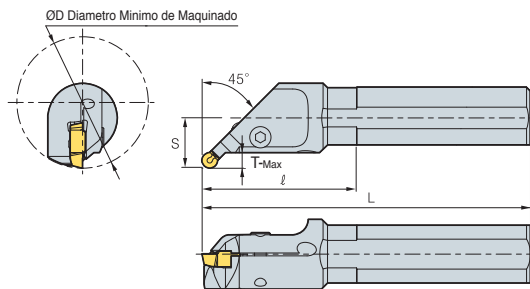
| Designación    | H = (h)           | H1 | W | L  | S   | T-Max | Insertos | Tornillo | Llave |
|----------------|-------------------|----|---|----|-----|-------|----------|----------|-------|
|                |                   |    |   |    |     |       |          |          |       |
| <b>MGEHR/L</b> | <b>25N-6A-15</b>  | 25 | 7 | 25 | 150 | 32.2  | 20       | BHA0620  | HW50L |
|                | <b>32N-6A-15</b>  | 32 | 8 | 32 | 150 | 39.2  | 25       |          |       |
|                | <b>25N-8A-15</b>  | 25 | 7 | 25 | 150 | 32.2  | 20       |          |       |
|                | <b>32N-8A-15</b>  | 32 | 8 | 32 | 150 | 39.2  | 25       |          |       |
|                | <b>25N-6A5-15</b> | 25 | 7 | 25 | 150 | 32.2  | 20       |          |       |
|                | <b>32N-6A5-15</b> | 32 | 8 | 32 | 150 | 39.2  | 25       |          |       |
|                | <b>25N-8A5-15</b> | 25 | 7 | 25 | 150 | 32.2  | 20       |          |       |
|                | <b>32N-8A5-15</b> | 32 | 8 | 32 | 150 | 39.2  | 25       |          |       |

➔ Insertos Applicable C43

## MGIUR/L-MR



MRGN



• Inserto tipo R  
(mm)

| Designación    | ØD                 | Ød | L  | ℓ   | T-Max | H | S  | Insertos | Tornillo | Llave |
|----------------|--------------------|----|----|-----|-------|---|----|----------|----------|-------|
|                |                    |    |    |     |       |   |    |          |          |       |
| <b>MGIUR/L</b> | <b>6832-8A-MR</b>  | 68 | 32 | 170 | 65    | 7 | 30 | 26       | BHA0620  | HW50L |
|                | <b>6832-8A5-MR</b> | 68 | 32 | 170 | 65    | 7 | 30 | 26       |          |       |

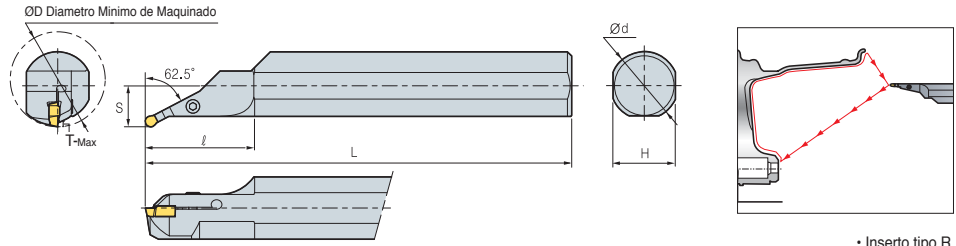
➔ Insertos Applicable C43



## MGIXR/L-MR



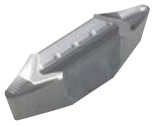
MRGN



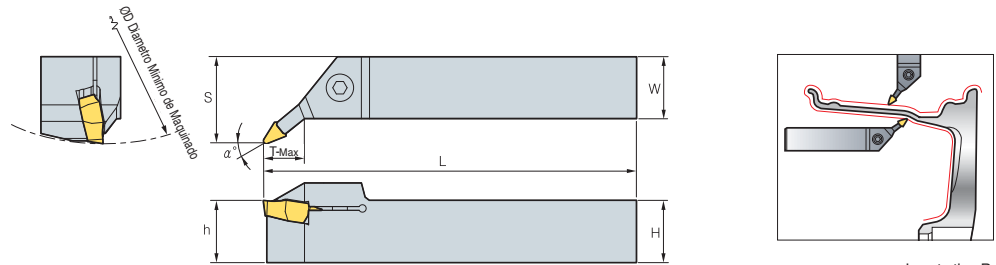
| Designación        | ØD | Ød | L   | l  | T-Max | H  | S    | Insertos       | Tornillo | Llave |
|--------------------|----|----|-----|----|-------|----|------|----------------|----------|-------|
| MGIXR/L 7050-8A-MR | 70 | 50 | 350 | 80 | 5.5   | 46 | 30.2 | MRGN8N-A/AM/AP | BHA0620  | HW50L |
| 7050-8A5-MR        | 70 | 50 | 350 | 80 | 5.5   | 46 | 30.2 | MRGN8N-A5      |          |       |

Insertos Applicable C43

## MGEXR/L



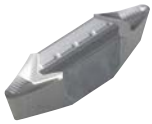
MVGN



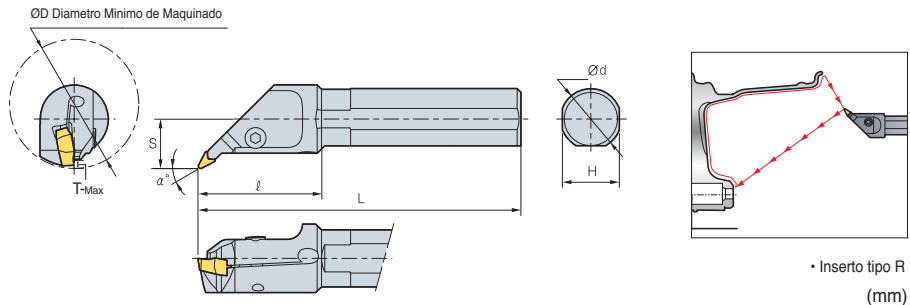
| Designación       | H = (h) | W  | L   | S  | T-Max | α°   | Insertos      | Tornillo | Llave |
|-------------------|---------|----|-----|----|-------|------|---------------|----------|-------|
| MGEXR/L 25N-8A-5V | 25      | 25 | 150 | 29 | 23.5  | 5    | MVGN8N-A-R1.2 | BHA0620  | HW50L |
| 25N-8A-22.5V      | 25      | 25 | 150 | 35 | 27    | 22.5 | MVGN8N-A-R1.6 |          |       |

Insertos Applicable C43

## MGIUR/L-MV



MVGN



| Designación        | ØD | Ød | L   | l  | T-Max | H  | S  | α°   | Insertos      | Tornillo | Llave |
|--------------------|----|----|-----|----|-------|----|----|------|---------------|----------|-------|
| MGIUR/L 6832-8A-MV | 68 | 32 | 170 | 65 | 4.5   | 30 | 26 | 27.5 | MVGN8N-A-R1.2 | BHA0620  | HW50L |
|                    |    |    |     |    |       |    |    |      | MVGN8N-A-R1.6 |          |       |

Insertos Applicable C43

# C Información técnica para TB/TB-M

## Inserto de 3 puntas para ranurado de alta precisión más económico TB/TB-M

- Inserto de 3 puntas para ranurado más económico
- Rango de tamaños del filo de 1.25~4.5 mm
- Insertos rectificadas con gran exactitud para mecanizado de alta precisión
- Control de la viruta optimizado para procesos automáticos de ranurado



### ⌚ Sistema de codificación de insertos

|                           |   |                       |   |   |                    |   |                     |
|---------------------------|---|-----------------------|---|---|--------------------|---|---------------------|
| TB                        | 5   | 150                   | N                                       | - | 010                | - | M                   |
| <b>Inserto triangular</b> | <b>Círculo inscrito</b>                   | <b>Ancho del filo</b> | <b>Mano</b>                             |   | <b>Radio punta</b> |   | <b>Rompevirutas</b> |
|                           | 3: 9.525 mm<br>4: 12.7 mm<br>5: 15.875 mm | 0.5~4.5 mm            | N: Neutra<br>R: Derecha<br>L: Izquierda |   | 0.00~0.40 mm       |   | Ninguno<br>M        |

### ⌚ Sistema codificación del porta herramientas

|   |   |                         |                  |
|---|---|-------------------------|------------------|
| TBH   | 5   | 25                      | R                |
| <b>Porta herramientas para inserto triangular</b> | <b>Círculo inscrito</b>                   | <b>Tamaño del mango</b> | <b>Mano</b>      |
|   | 3: 9.525 mm<br>4: 12.7 mm<br>5: 15.875 mm | 10~25 mm                | R: Sağ<br>L: Sol |

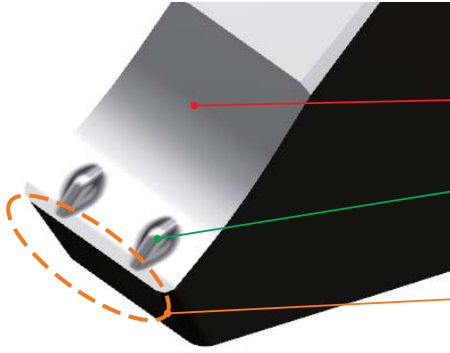
### ⌚ TB/TB-M

| Especificación          | TB3000R/L, TB4000R/L  | TB4000R-M  | TB5000N-000-M  |             |
|-------------------------|---|--|--|-------------|
| Designación             | TB3125R/L~TB3430R/L<br>(círculo inscrito de 9.525 mm)<br>TB4125R/L~TB4430R/L<br>(círculo inscrito de 12.7 mm) | TB4150R-M<br>~TB4450R-M<br>(círculo inscrito de 12.7 mm) | TB5050N-000-M<br>~TB5318N-020-M<br>(círculo inscrito de 15.875 mm) |             |
| Forma de la inserto     |   |  |  |             |
| Características         | Rompe virutas   | Rompe virutas rectificado                                | Rompe virutas sinterizado  |             |
|                         | mano  | Derecha / Izquierda                                      | Derecha  | Neutra      |
|                         | Ancho del filo (b)  | TB3000: 1.25 ~ 4.3 mm<br>TB4000: 1.25 ~ 4.5 mm           | 1.5~4.5 mm   | 0.5~3.18 mm |
|                         | Profundidad de Corte (T-MAX)  | TB3000: ~ 3.5 mm<br>TB4000: ~ 5.0 mm                     | ~ 5.0 mm   | ~ 6.5 mm    |
|                         | Forma   | ○  | X  | X           |
|                         | Ancho del filo  | ○  | ○  | ○           |
| Forma del rompe virutas |   |  |  |             |
| Rango de aplicación     | P   | P, M, K  | P, M, K  |             |
| Calidad                 | CN2000, PC5300  | CN2000, PC5300   | PC5300   |             |



## 🔗 TB-M Características

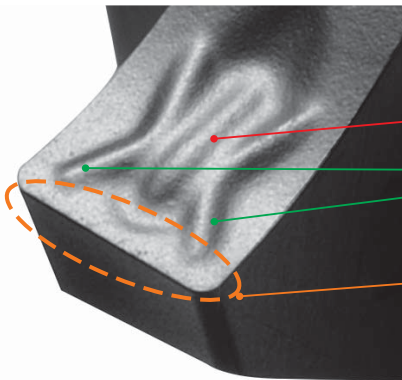
- Fuerza de corte minimizada a la alta velocidad y en gran avance → Una lisa evacuación de viruta afuera de cada ranura
- Rendimiento de corte de alta precisión → Un excepcional acabado superficial y dimensión precisa
- Un excelente flujo de viruta y resultado de corte → Ideal para automatizado y no tripulado



### Rompevirutas TB5-M

- **Cara trasera rebajada:** reduce la carga mecánica minimizando la fricción de la viruta
- **Rompeviruta con geometría de doble estríabiselado:** proporciona una evacuación suave de las virutas hacia el exterior. Minimiza la carga el corte en el mecanizado de alta profundidad. Formación de virutas manteniendo un tamaño regular
- **Vaciado del filo de corte:** evita el astillamiento del filo de corte y mejora la estabilidad del mecanizado en corte interrumpido
- **Uso:** para ranurado y tronzado de profundidad máxima inferior a 6.5mm

| Designación        | TB5050N-M<br>~ TB5120N-M | TB5140N-M<br>~ TB5178N-M | TB5196N-M<br>~ TB5239N-M | TB5247N-M<br>~ TB5287N-M | TB5300N-M<br>~ TB5318N-M |
|--------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Forma              |                          |                          |                          |                          |                          |
| Ancho de corte (b) | 0.5~1.2 mm               | 1.40~1.78 mm             | 1.96~2.39 mm             | 2.47~2.87 mm             | 3.0~3.18 mm              |



### Rompevirutas TB4-M

- **Estrías centrales:** Controlan la estabilidad de las virutas en mecanizado de alto avance
- **Estrías principales:** Muy buen control de viruta en operaciones de torneado y mecanizado de chaflanes. Facilitan la evacuación de la viruta fuera de la ranura a mecanizar
- **Filos de corte agudos:** Ofrecen un muy buen rendimiento de corte y una calidad muy definida
- **Uso:** para ranurado de profundidad máxima inferior a 4.5mm y torneado

| Designación        | TB4150R-M ~ TB4185R-M | TB4200R-M ~ TB4228R-M | TB4300R-M ~ TB4350R-M | TB4400R-M ~ TB4450R-M |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Forma              |                       |                       |                       |                       |
| Ancho de corte (b) | 1.5~1.85 mm           | 2.0~2.8 mm            | 3.0~3.5 mm            | 4.0~4.5 mm            |

# C Información técnica para TB/TB-M

## Guía para insertos TB

(mm)

| TB                                |                              |       |       | TB3 / TB4                   | TB4-M | TB5-M |  |
|-----------------------------------|------------------------------|-------|-------|-----------------------------|-------|-------|--|
| Métodos de maquinado recomendados |                              |       |       |                             |       |       |  |
| Ancho del filo de corte W         | Profundidad de corte (T-MAX) |       |       | Avance recomendado (mm/rev) |       |       |  |
|                                   | TB3/TB4                      | TB4-M | TB5-M |                             |       |       |  |
| 0.50                              | -                            | -     | 2.5   | -                           | -     | ●     |  |
| 0.80                              | -                            | -     | 1.6   | -                           | -     | ●     |  |
| 1.00                              | -                            | -     | 3.5   | -                           | -     | ●     |  |
| 1.04                              | -                            | -     | 2.0   | -                           | -     | ●     |  |
| 1.20                              | -                            | -     | 2.0   | -                           | -     | ●     |  |
| 1.25                              | 2.0                          | -     | 2.0   | ●                           | -     | -     |  |
| 1.40                              | 2.0                          | -     | 6.5   | ●                           | -     | ●     |  |
| 1.45                              | 2.0                          | -     | -     | ●                           | -     | -     |  |
| 1.47                              | -                            | -     | 6.5   | -                           | -     | ●     |  |
| 1.50                              | 3.5                          | 3.5   | 6.5   | ●                           | ●     | ●     |  |
| 1.57                              | -                            | -     | 6.5   | -                           | -     | ●     |  |
| 1.70                              | -                            | -     | 6.5   | -                           | -     | ●     |  |
| 1.75                              | 3.5                          | 3.5   | -     | ●                           | ●     | -     |  |
| 1.78                              | -                            | -     | 6.5   | -                           | -     | ●     |  |
| 1.85                              | 3.5                          | 3.5   | -     | ●                           | ●     | -     |  |
| 1.96                              | -                            | -     | 6.5   | -                           | -     | ●     |  |
| 2.00                              | 3.5                          | 3.5   | 6.5   | ●                           | ●     | ●     |  |
| 2.15                              | 3.5                          | 3.5   | -     | ●                           | ●     | -     |  |
| 2.22                              | 6.5                          | -     | 6.5   | -                           | -     | ●     |  |
| 2.30                              | 3.5                          | 3.5   | 6.5   | ●                           | ●     | ●     |  |
| 2.39                              | -                            | -     | 6.5   | -                           | -     | ●     |  |
| 2.47                              | -                            | -     | 6.5   | -                           | -     | ●     |  |
| 2.50                              | 4.0                          | 4.0   | 6.5   | ●                           | ●     | ●     |  |
| 2.65                              | 4.0                          | 4.0   | 6.5   | ●                           | ●     | -     |  |
| 2.70                              | -                            | -     | 6.5   | -                           | -     | ●     |  |
| 2.80                              | 4.0                          | 4.0   | -     | ●                           | ●     | -     |  |
| 2.87                              | -                            | -     | 6.5   | -                           | -     | ●     |  |
| 3.00                              | 4.0                          | 4.0   | 6.5   | ●                           | ●     | ●     |  |
| 3.15                              | -                            | -     | 6.5   | -                           | -     | ●     |  |
| 3.18                              | -                            | -     | 6.5   | -                           | -     | ●     |  |
| 3.30                              | 4.0                          | -     | -     | ●                           | -     | -     |  |
| 3.50                              | 5.0                          | 5.0   | -     | ●                           | ●     | -     |  |
| 4.00                              | 5.0                          | 5.0   | -     | ●                           | ●     | -     |  |
| 4.30                              | 5.0                          | 5.0   | -     | ●                           | ●     | -     |  |
| 4.50                              | 5.0                          | 5.0   | -     | ●                           | ●     | -     |  |

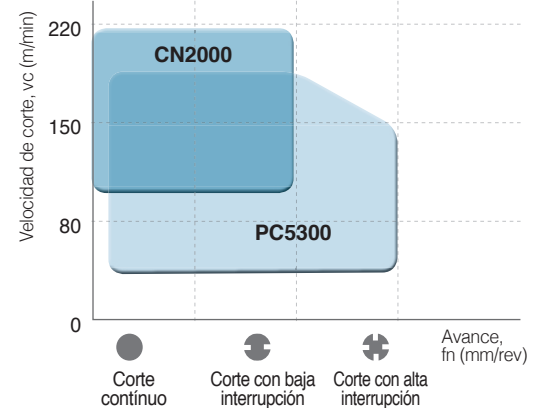
● : En Almacen

## Condiciones de corte recomendadas

| Material |              | CN2000 (Cermet) |             |      | PC5300 (Recubrimiento) |             |      |
|----------|--------------|-----------------|-------------|------|------------------------|-------------|------|
|          |              | Min.            | Recomendada | Max. | Min.                   | Recomendada | Max. |
| P        | SM□□C Tipo   | 100             | 160         | 220  | 80                     | 140         | 200  |
|          | SCM Tipo     | 100             | 150         | 200  | 80                     | 130         | 180  |
| M        | STS Tipo     | -               | -           | -    | 40                     | 80          | 150  |
| K        | GC, GCD Tipo | -               | -           | -    | 80                     | 130         | 180  |

Velocidad de corte recomendada, vc (m/min)

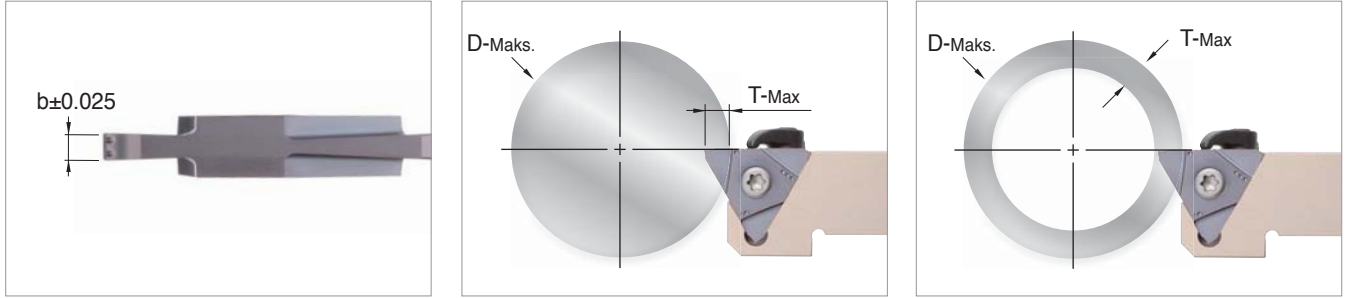
## Rango de aplicación



C

**TB5-M rango de maquinado (profundidad)**

- Hay un límite para los diámetros de corte de TB5-M cuando la profundidad de los cortes es superior a 5 mm  
(Por ejemplo, al cortar con un inserto TB5200N-020-M a una profundidad de 6,2 mm, Ø60 D-MAX está disponible)
- N.L = sin límite


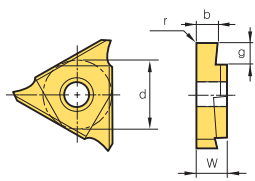

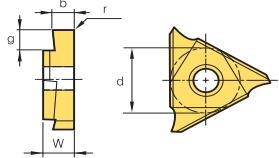


(mm)

| Designación            | b    | r    | g (T-Max) | ØD-Max |       |       |       |       |       |       |       |       |   |
|------------------------|------|------|-----------|--------|-------|-------|-------|-------|-------|-------|-------|-------|---|
|                        |      |      |           | T≤3.0  | T≤3.5 | T≤4.0 | T≤4.5 | T≤5.0 | T≤5.5 | T≤6.0 | T≤6.4 | T≤6.5 |   |
| <b>TB</b> 5050N- 000-M | 0.50 | 0.00 | 1.0       | -      | -     | -     | -     | -     | -     | -     | -     | -     | - |
| 004-M                  | 0.50 | 0.04 | 2.5       | -      | -     | -     | -     | -     | -     | -     | -     | -     | - |
| 5080N- 000-M           | 0.80 | 0.00 | 1.6       | -      | -     | -     | -     | -     | -     | -     | -     | -     | - |
| 5100N- 006-M           | 1.00 | 0.06 | 3.5       | -      | -     | -     | -     | -     | -     | -     | -     | -     | - |
| 5104N- 000-M           | 1.04 | 0.00 | 2.0       | -      | -     | -     | -     | -     | -     | -     | -     | -     | - |
| 5120N- 000-M           | 1.20 | 0.00 | 2.0       | -      | -     | -     | -     | -     | -     | -     | -     | -     | - |
| 5140N- 000-M           | 1.40 | 0.00 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5147N- 000-M           | 1.47 | 0.00 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5150N- 010-M           | 1.50 | 0.10 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 015-M                  | 1.50 | 0.15 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5157N- 015-M           | 1.57 | 0.15 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5170N- 010-M           | 1.70 | 0.10 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5178N- 018-M           | 1.78 | 0.18 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5196N- 015-M           | 1.96 | 0.15 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5200N- 020-M           | 2.00 | 0.20 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5222N- 015-M           | 2.22 | 0.15 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5230N- 020-M           | 2.30 | 0.20 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5239N- 015-M           | 2.39 | 0.15 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5247N- 020-M           | 2.47 | 0.20 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5250N- 020-M           | 2.50 | 0.20 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5270N- 010-M           | 2.70 | 0.10 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5287N- 020-M           | 2.87 | 0.20 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5300N- 000-M           | 3.00 | 0.00 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5300N- 020-M           | 3.00 | 0.20 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 040-M                  | 3.00 | 0.40 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5315N- 015-M           | 3.15 | 0.15 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |
| 5318N- 020-M           | 3.18 | 0.20 | 6.5       | N.L    | N.L   | N.L   | N.L   | N.L   | Ø300  | Ø170  | Ø60   | Ø40   |   |

# C Inserto disponible para TB/TB-M

## Inserto


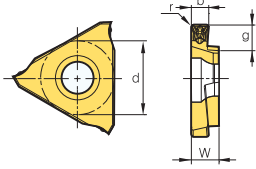

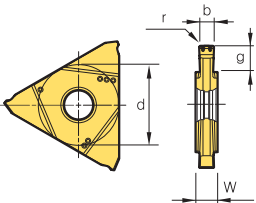
| Forma   | Designación       | Cermet        |        | Dimensiones (mm) |              |     |     |      | Configuración |   |
|---|-------------------|---------------|--------|------------------|--------------|-----|-----|------|---------------|---|
|   |                   | Recubrimiento | PC5300 | b                | g<br>(T-Max) | r   | w   | d    |               |   |
|    | TB<br>(derecha)   | 3125R         |        |                  | 1.25         | 1.5 | 0.2 | 4.76 | 9.525         |    |
|   |                   | 3145R         |        |                  | 1.45         | 1.5 | 0.2 | 4.76 | 9.525         |   |
|   |                   | 3175R         |        |                  | 1.75         | 2.5 | 0.2 | 4.76 | 9.525         |   |
|   |                   | 3185R         |        |                  | 1.85         | 2.5 | 0.2 | 4.76 | 9.525         |   |
|   |                   | 3200R         |        |                  | 2.00         | 2.5 | 0.2 | 4.76 | 9.525         |   |
|   |                   | 3230R         |        |                  | 2.30         | 3.5 | 0.3 | 4.76 | 9.525         |   |
|   |                   | 3280R         |        |                  | 2.80         | 3.5 | 0.3 | 4.76 | 9.525         |   |
|   |                   | 3330R         |        |                  | 3.30         | 3.5 | 0.3 | 4.76 | 9.525         |   |
|   |                   | 3430R         |        |                  | 4.30         | 3.5 | 0.4 | 4.76 | 9.525         |   |
|   |                   | 4125R         | ●      | ●                | 1.25         | 2.0 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4145R         | ●      | ●                | 1.45         | 2.0 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4150R         | ●      | ●                | 1.50         | 3.5 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4175R         | ●      | ●                | 1.75         | 3.5 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4185R         | ●      | ●                | 1.85         | 3.5 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4200R         | ●      | ●                | 2.00         | 3.5 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4215R         | ●      | ●                | 2.15         | 3.5 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4230R         | ●      | ●                | 2.30         | 3.5 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4250R         | ●      | ●                | 2.50         | 4.0 | 0.3 | 4.76 | 12.7          |   |
|   |                   | 4265R         | ●      | ●                | 2.65         | 4.0 | 0.3 | 4.76 | 12.7          |   |
|   |                   | 4280R         | ●      | ●                | 2.80         | 4.0 | 0.3 | 4.76 | 12.7          |   |
|   |                   | 4300R         | ●      | ●                | 3.00         | 4.0 | 0.3 | 4.76 | 12.7          |   |
|   |                   | 4330R         | ●      | ●                | 3.30         | 4.0 | 0.3 | 4.76 | 12.7          |   |
|   |                   | 4350R         | ●      | ●                | 3.50         | 5.0 | 0.3 | 4.76 | 12.7          |   |
|   |                   | 4400R         | ●      | ●                | 4.00         | 5.0 | 0.4 | 4.76 | 12.7          |   |
|   |                   | 4430R         | ●      | ●                | 4.30         | 5.0 | 0.4 | 4.76 | 12.7          |   |
|   |                   | 4450R         | ●      | ●                | 4.50         | 5.0 | 0.4 | 4.76 | 12.7          |   |
|  | TB<br>(izquierda) | 3125L         |        |                  | 1.25         | 1.5 | 0.2 | 4.76 | 9.525         |  |
|   |                   | 3145L         |        |                  | 1.45         | 1.5 | 0.2 | 4.76 | 9.525         |   |
|   |                   | 3175L         |        |                  | 1.75         | 2.5 | 0.2 | 4.76 | 9.525         |   |
|   |                   | 3185L         |        |                  | 1.85         | 2.5 | 0.2 | 4.76 | 9.525         |   |
|   |                   | 3200L         |        |                  | 2.00         | 2.5 | 0.2 | 4.76 | 9.525         |   |
|   |                   | 3230L         |        |                  | 2.30         | 3.5 | 0.3 | 4.76 | 9.525         |   |
|   |                   | 3280L         |        |                  | 2.80         | 3.5 | 0.3 | 4.76 | 9.525         |   |
|   |                   | 3330L         |        |                  | 3.30         | 3.5 | 0.3 | 4.76 | 9.525         |   |
|   |                   | 3430L         |        |                  | 4.30         | 3.5 | 0.4 | 4.76 | 9.525         |   |
|   |                   | 4125L         |        |                  | 1.25         | 2.0 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4145L         |        |                  | 1.45         | 2.0 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4150L         |        |                  | 1.50         | 3.5 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4175L         |        |                  | 1.75         | 3.5 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4185L         |        |                  | 1.85         | 3.5 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4200L         |        |                  | 2.00         | 3.5 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4215L         |        |                  | 2.15         | 3.5 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4230L         |        |                  | 2.30         | 3.5 | 0.2 | 4.76 | 12.7          |   |
|   |                   | 4250L         |        |                  | 2.50         | 4.0 | 0.3 | 4.76 | 12.7          |   |
|   |                   | 4265L         |        |                  | 2.65         | 4.0 | 0.3 | 4.76 | 12.7          |   |
|   |                   | 4280L         |        |                  | 2.80         | 4.0 | 0.3 | 4.76 | 12.7          |   |
|   |                   | 4300L         |        |                  | 3.00         | 4.0 | 0.3 | 4.76 | 12.7          |   |
|   |                   | 4330L         |        |                  | 3.30         | 4.0 | 0.3 | 4.76 | 12.7          |   |
|   |                   | 4350L         |        |                  | 3.50         | 5.0 | 0.3 | 4.76 | 12.7          |   |
|   |                   | 4400L         |        |                  | 4.00         | 5.0 | 0.4 | 4.76 | 12.7          |   |
|   |                   | 4430L         |        |                  | 4.30         | 5.0 | 0.4 | 4.76 | 12.7          |   |
|   |                   | 4450L         |        |                  | 4.50         | 5.0 | 0.4 | 4.76 | 12.7          |   |

● : En Almacen






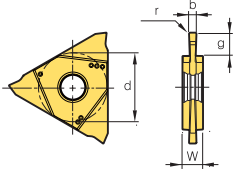

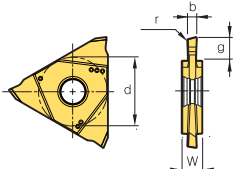

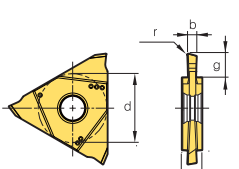

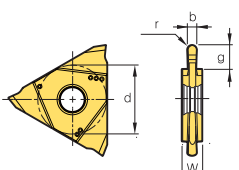
**Inserto**

| Forma   | Designación            | Cermet      |                         | Dimensiones (mm) |              |      |        |      | Configuración |   |
|---|------------------------|-------------|-------------------------|------------------|--------------|------|--------|------|---------------|---|
|   |                        | CN2000      | Recubrimiento<br>PC5300 | b                | g<br>(T-Max) | r    | w      | d    |               |   |
|    | <b>TB</b><br>(derecha) | 4150R-M     | ●                       | ●                | 1.50         | 3.5  | 0.20   | 4.76 | 12.7          |    |
|   |                        | 4175R-M     | ●                       | ●                | 1.75         | 3.5  | 0.20   | 4.76 | 12.7          |   |
|   |                        | 4185R-M     | ●                       | ●                | 1.85         | 3.5  | 0.20   | 4.76 | 12.7          |   |
|   |                        | 4200R-M     | ●                       | ●                | 2.00         | 3.5  | 0.20   | 4.76 | 12.7          |   |
|   |                        | 4215R-M     | ●                       | ●                | 2.15         | 3.5  | 0.20   | 4.76 | 12.7          |   |
|   |                        | 4230R-M     | ●                       | ●                | 2.30         | 3.5  | 0.20   | 4.76 | 12.7          |   |
|   |                        | 4250R-M     | ●                       | ●                | 2.50         | 4.0  | 0.30   | 4.76 | 12.7          |   |
|   |                        | 4265R-M     | ●                       | ●                | 2.65         | 4.0  | 0.30   | 4.76 | 12.7          |   |
|   |                        | 4280R-M     | ●                       | ●                | 2.80         | 4.0  | 0.30   | 4.76 | 12.7          |   |
|   |                        | 4300R-M     | ●                       | ●                | 3.00         | 4.0  | 0.30   | 4.76 | 12.7          |   |
|   |                        | 4330R-M     | ●                       | ●                | 3.30         | 4.0  | 0.30   | 4.76 | 12.7          |   |
|   |                        | 4350R-M     | ●                       | ●                | 3.50         | 5.0  | 0.30   | 4.76 | 12.7          |   |
|   |                        | 4400R-M     | ●                       | ●                | 4.00         | 5.0  | 0.40   | 4.76 | 12.7          |   |
|   |                        | 4430R-M     | ●                       | ●                | 4.30         | 5.0  | 0.40   | 4.76 | 12.7          |   |
|   |                        | 4450R-M     | ●                       | ●                | 4.50         | 5.0  | 0.40   | 4.76 | 12.7          |   |
|  | <b>TB</b><br>(neutral) | 5050N-000-M |                         | ●                | 0.50         | 1.0  | 0.00   | 4.50 | 15.875        |  |
|   |                        | 5050N-004-M |                         | ●                | 0.50         | 2.5  | 0.04   | 4.50 | 15.875        |   |
|   |                        | 5080N-000-M |                         | ●                | 0.80         | 1.6  | 0.00   | 4.50 | 15.875        |   |
|   |                        | 5100N-006-M |                         | ●                | 1.00         | 3.5  | 0.06   | 4.50 | 15.875        |   |
|   |                        | 5104N-000-M |                         | ●                | 1.04         | 2.0  | 0.00   | 4.50 | 15.875        |   |
|   |                        | 5120N-000-M |                         | ●                | 1.20         | 2.0  | 0.00   | 4.50 | 15.875        |   |
|   |                        | 5140N-000-M |                         | ●                | 1.40         | 6.5  | 0.00   | 4.50 | 15.875        |   |
|   |                        | 5147N-000-M |                         | ●                | 1.47         | 6.5  | 0.00   | 4.50 | 15.875        |   |
|   |                        | 5150N-010-M |                         | ●                | 1.50         | 6.5  | 0.10   | 4.50 | 15.875        |   |
|   |                        | 5150N-015-M |                         | ●                | 1.50         | 6.5  | 0.15   | 4.50 | 15.875        |   |
|   |                        | 5157N-015-M |                         | ●                | 1.57         | 6.5  | 0.15   | 4.50 | 15.875        |   |
|   |                        | 5170N-010-M |                         | ●                | 1.70         | 6.5  | 0.10   | 4.50 | 15.875        |   |
|   |                        | 5178N-018-M |                         | ●                | 1.78         | 6.5  | 0.18   | 4.50 | 15.875        |   |
|   |                        | 5196N-015-M |                         | ●                | 1.96         | 6.5  | 0.15   | 4.50 | 15.875        |   |
|   |                        | 5200N-020-M |                         | ●                | 2.00         | 6.5  | 0.20   | 4.50 | 15.875        |   |
|   |                        | 5222N-015-M |                         | ●                | 2.22         | 6.5  | 0.15   | 4.50 | 15.875        |   |
|   |                        | 5230N-020-M |                         | ●                | 2.30         | 6.5  | 0.20   | 4.50 | 15.875        |   |
|   |                        | 5239N-015-M |                         | ●                | 2.39         | 6.5  | 0.15   | 4.50 | 15.875        |   |
|   |                        | 5247N-020-M |                         | ●                | 2.47         | 6.5  | 0.20   | 4.50 | 15.875        |   |
|   |                        | 5250N-020-M |                         | ●                | 2.50         | 6.5  | 0.20   | 4.50 | 15.875        |   |
|   |                        | 5270N-010-M |                         | ●                | 2.70         | 6.5  | 0.10   | 4.50 | 15.875        |   |
|   |                        | 5287N-020-M |                         | ●                | 2.87         | 6.5  | 0.20   | 4.50 | 15.875        |   |
|   |                        | 5300N-000-M |                         | ●                | 3.00         | 6.5  | 0.00   | 4.50 | 15.875        |   |
|   |                        | 5300N-020-M |                         | ●                | 3.00         | 6.5  | 0.20   | 4.50 | 15.875        |   |
|   |                        | 5300N-040-M |                         | ●                | 3.00         | 6.5  | 0.40   | 4.50 | 15.875        |   |
| 5315N-015-M   |                        | ●           | 3.15                    | 6.5              | 0.15         | 4.50 | 15.875 |      |               |   |
| 5318N-020-M   |                        | ●           | 3.18                    | 6.5              | 0.20         | 4.50 | 15.875 |      |               |   |

●: En Almacen

# C Inserto disponible para TB/TB-M

## Inserto

| Forma   | Designación                           | Cermet | Recubrimiento | Dimensiones (mm) |              |      |      |        |        | Configuración   |
|---|---------------------------------------|--------|---------------|------------------|--------------|------|------|--------|--------|---|
|   |                                       | CN2000 | PC5300        | b                | g<br>(T-Max) | r    | a°   | w      | d      |   |
|    | <b>TB</b><br>(Neutral)                |        |               |                  |              |      |      |        |        |    |
|   | 5050N-004-P                           |        |               | 0.50             | 1.0          | 0.04 | -    | 4.50   | 15.875 |   |
|   | 5100N-010-P                           |        |               | 1.00             | 3.5          | 0.10 | -    | 4.50   | 15.875 |   |
|   | 5150N-010-P                           |        |               | 1.50             | 6.5          | 0.10 | -    | 4.50   | 15.875 |   |
|   | -020-P                                |        |               | 1.50             | 6.5          | 0.20 | -    | 4.50   | 15.875 |   |
|   | 5200N-010-P                           |        |               | 2.00             | 6.5          | 0.10 | -    | 4.50   | 15.875 |   |
|   | -020-P                                |        |               | 2.00             | 6.5          | 0.20 | -    | 4.50   | 15.875 |   |
|   | 5239N-015-P                           |        |               | 2.39             | 6.5          | 0.15 | -    | 4.50   | 15.875 |   |
|   | 5250N-020-P                           |        |               | 2.50             | 6.5          | 0.20 | -    | 4.50   | 15.875 |   |
| 5300N-020-P   |                                       |        | 3.00          | 6.5              | 0.20         | -    | 4.50 | 15.875 |        |   |
|    | <b>TB</b><br>(Neutral, a derecha)     |        |               |                  |              |      |      |        |        |    |
|   | 5100N-6DR-P                           |        |               | 1.00             | 3.5          | 0.05 | 6    | 4.50   | 15.875 |   |
|   | 15DR-P                                |        |               | 1.00             | 3.5          | 0.05 | 15   | 4.50   | 15.875 |   |
|   | 5150N-6DR-P                           |        |               | 1.50             | 6.5          | 0.05 | 6    | 4.50   | 15.875 |   |
|   | 15DR-P                                |        |               | 1.50             | 6.5          | 0.05 | 15   | 4.50   | 15.875 |   |
|   | 5200N-6DR-P                           |        |               | 2.00             | 6.5          | 0.10 | 6    | 4.50   | 15.875 |   |
| 15DR-P  |                                       |        | 2.00          | 6.5              | 0.10         | 15   | 4.50 | 15.875 |        |   |
|  | <b>TB</b><br>(Neutral, a izquierda)   |        |               |                  |              |      |      |        |        |  |
|   | 5100N-6DL-P                           |        |               | 1.00             | 3.5          | 0.05 | 6    | 4.50   | 15.875 |   |
|   | 15DL-P                                |        |               | 1.00             | 3.5          | 0.05 | 15   | 4.50   | 15.875 |   |
|   | 5150N-6DL-P                           |        |               | 1.50             | 6.5          | 0.05 | 6    | 4.50   | 15.875 |   |
|   | 15DL-P                                |        |               | 1.50             | 6.5          | 0.05 | 15   | 4.50   | 15.875 |   |
|   | 5200N-6DL-P                           |        |               | 2.00             | 6.5          | 0.10 | 6    | 4.50   | 15.875 |   |
| 15DL-P  |                                       |        | 2.00          | 6.5              | 0.10         | 15   | 4.50 | 15.875 |        |   |
|  | <b>TB</b><br>(Neutral, forma redonda) |        |               |                  |              |      |      |        |        |  |
|   | 5157N-079-P                           |        |               | 1.57             | 6.5          | 0.79 | -    | 4.50   | 15.875 |   |
|   | 5200N-100-P                           |        |               | 2.00             | 6.5          | 1.00 | -    | 4.50   | 15.875 |   |
|   | 5239N-120-P                           |        |               | 2.39             | 6.5          | 1.20 | -    | 4.50   | 15.875 |   |
| 5300N-150-P   |                                       |        | 3.00          | 6.5              | 1.50         | -    | 4.50 | 15.875 |        |   |



# TBH



TB3000R/L  
TB4000R-M

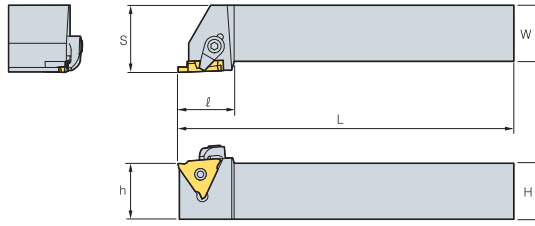
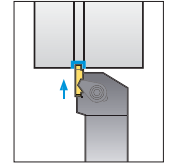


Fig. 1



• Inserto tipo R



TB5000N-□□□-M

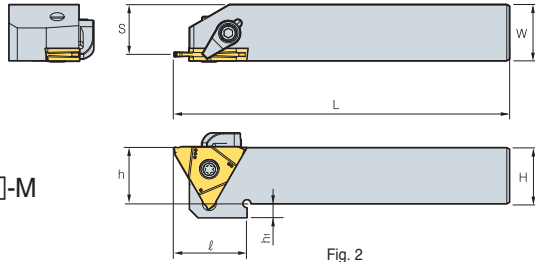


Fig. 2

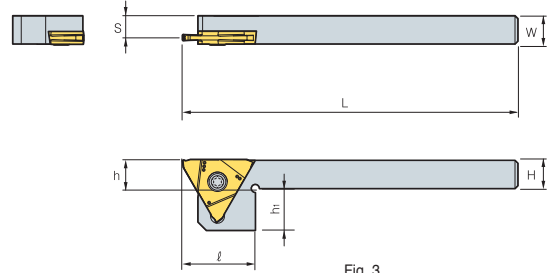






Fig. 3

(mm)

| Designación | Dimensiones |    |    |     |                |    | Insertos | Brida  | Tornillo Brida   | Tornillo   | Llave  | Fig.            |   |
|-------------|-------------|----|----|-----|----------------|----|----------|--|--|--|--|-----------------|---|
|             | H = (h)     | W  | L  | φ   | h <sub>1</sub> | S  |          |  |  |  |  |                 |   |
| TBH         | 320R/L-23   | 20 | 20 | 125 | 25.5           | -  | 25       | TB3125~3230R/L   | CS6R1  | DHA0617  | -  | HW30L           | 1 |
|             | 320R/L-33   | 20 | 20 | 125 | 25.5           | -  | 25       | TB3280~3330R/L   |  |  |  |                 |   |
|             | 320R/L-43   | 20 | 20 | 125 | 25.5           | -  | 25       | TB3430R/L  |  |  |  |                 |   |
|             | 325R/L-23   | 25 | 25 | 150 | 25.5           | -  | 30       | TB3125~3230R/L   |  |  |  |                 |   |
|             | 325R/L-33   | 25 | 25 | 150 | 25.5           | -  | 30       | TB3280~3330R/L   |  |  |  |                 |   |
|             | 325R/L-43   | 25 | 25 | 150 | 25.5           | -  | 30       | TB3430R/L  |  |  |  |                 |   |
|             | 420R/L-23   | 20 | 20 | 125 | 25.5           | -  | 25       | TB4125~4230R/L   |  |  |  |                 |   |
|             | 420R/L-33   | 20 | 20 | 125 | 25.5           | -  | 25       | TB4250~4330R/L   |  |  |  |                 |   |
|             | 420R/L-45   | 20 | 20 | 125 | 25.5           | -  | 25       | TB4350~4450R/L   |  |  |  |                 |   |
|             | 425R/L-23   | 25 | 25 | 150 | 25.5           | -  | 30       | TB4125~4230R/L   |  |  |  |                 |   |
|             | 425R/L-33   | 25 | 25 | 150 | 25.5           | -  | 30       | TB4250~4330R/L   |  |  |  |                 |   |
|             | 425R/L-45   | 25 | 25 | 150 | 25.5           | -  | 30       | TB4350~4450R/L   |  |  |  |                 |   |
| TBH         | 510R/L      | 10 | 10 | 125 | 25             | 15 | 7.8      | TB5050~5318N   | -  | -  | FTNA0512   | TW20L           | 3 |
|             | 512R/L      | 12 | 12 | 125 | 25             | 13 | 9.8      |  |  |  |  |                 |   |
|             | 516R/L      | 16 | 16 | 125 | 26             | 9  | 13.8     |  |  |  |  |                 |   |
|             | 520R/L      | 20 | 20 | 125 | 26             | 5  | 17.8     |  |  |  |  |                 |   |
|             | 525R/L      | 25 | 25 | 150 | -              | -  | 22.8     |  | CS6R1  | DHA0617  | FTNA0516   | HW30L,<br>TW20L | 2 |

# C Información técnica para K Notch

La solución para el ranurado de alta precisión

## K Notch

Herramienta de ranurado KORLOY

- El sistema de sujeción de KORLOY ofrece una alta rigidez para el mecanizado de alta precisión
- Filo de alta calidad que garantiza una larga vida útil de la herramienta y una excelente maquinabilidad
- Proporciona varios anchos de filo para una amplia gama de selección

### ➤ Sistema de codificación de inserto

|                |  |                                   |                           |                                    |  |                             |
|----------------|--|-----------------------------------|---------------------------|------------------------------------|--|-----------------------------|
| KN             | G  | P                                 | 3                         | M                                  | 200  | R                           |
| <b>K Notch</b> | <b>Tipo de inserto</b>                                 | <b>Información adicional</b>      | <b>Tamaño del inserto</b> | <b>Unidad</b>                      | <b>Ancho del filo de corte del inserto</b> | <b>Sentido de corte</b>     |
|                | B: proforma en bruto<br>G: Ranurado<br>R: Filo redondo | P: Positivo<br>Sin mención: Plano | 2, 3, 4                   | M: Métrico<br>Sin mención: Pulgada | 200 : 2.00 mm                              | R : Derecha<br>L: Izquierda |

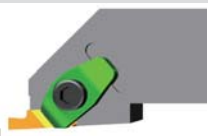
### ➤ Sistema de codificación del portaherramientas

|                |                            |                            |                           |   |                           |   |
|----------------|----------------------------|----------------------------|---------------------------|---|---------------------------|---|
| KN             | S                          | R                          | 25                        | 25  | M                         | 3 |
| <b>K Notch</b> | <b>Posición del amarre</b> | <b>Sentido de corte</b>    | <b>Tamaño del porta</b>   | <b>Longitud del porta</b>                                       | <b>Tamaño del inserto</b> |   |
|                | S: Lateral                 | R: derecha<br>L: izquierda | Alto: 25mm<br>Ancho: 25mm | E: 70 mm K: 125 mm<br>F: 80 mm M: 150 mm<br>H: 100 mm P: 170 mm | 8~36 mm                   |   |

### ➤ Características del portaherramientas

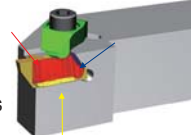
**Brida**

- Fuerza de combinación rígida relativa a la fuerza de fijación de fijación
- Disposición cómoda orientada al usuario

Vista superior de la brida 


**Fijación del inserto**

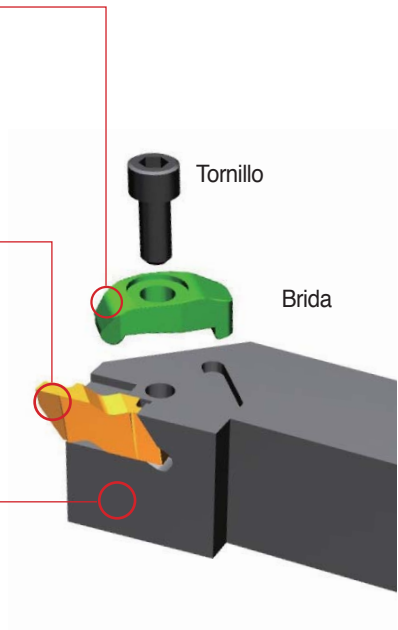
- Proporciona una fijación con una excelente estabilidad gracias a la combinación de la fuerza de agarre en 3 direcciones (parte inferior, lateral y posterior)

Fijación de 3 caras 

**Ángulo de incidencia**

- Ángulo de incidencia lateral de 3°

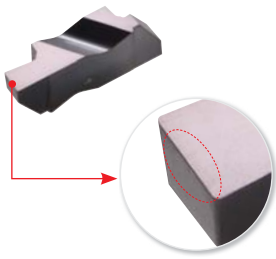




Tornillo

Brida

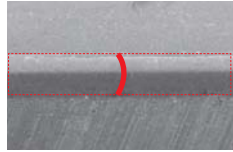
## Características de inserto



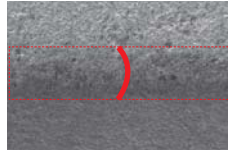
[ Preparación de filo de alta calidad ]

### Preparación de filo de alta calidad

- Filos de corte en calidad uniforme
- Vida prolongada de la herramienta



[ K Notch ]



[ Competidor ]

### Superficie de la cara de ataque con acabado a modo de espejo

- Resistencia mejorada a la soldadura y astillado
- Mejora el acabado superficial de las piezas de trabajo



[ K Notch ]

## Avance recomendado para cada inserto

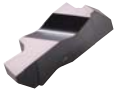
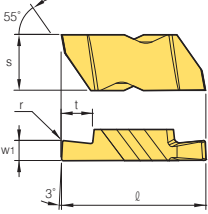

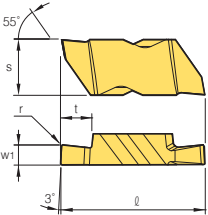
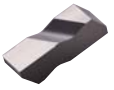
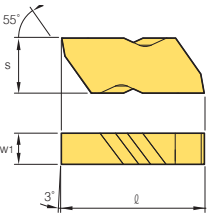
| Tipo                               |     | KNG              | KNGP             | KNR                  | KNRP                 | KNB               |
|------------------------------------|-----|------------------|------------------|----------------------|----------------------|-------------------|
| Forma del inserto                  |     |                  |                  |                      |                      |                   |
| Filo de corte                      |     |                  |                  |                      |                      |                   |
| Aplicación                         |     | Ranurado general | Ranurado general | Torneado (perfilado) | Torneado (perfilado) | Proforma en bruto |
| Pieza de trabajo recomendada       | 1er | P, K             | M, N, S          | P, K                 | M, N, S              | -                 |
|                                    | 2do | M, N, S          | P, K             | M, N, S              | P, K                 | -                 |
| Avance recomendado, $f_n$ (mm/rev) | P   | 0.10 - 0.28      | 0.08 - 0.25      | 0.10 - 0.28          | 0.08 - 0.25          | -                 |
|                                    | M   | 0.10 - 0.25      | 0.08 - 0.25      | 0.10 - 0.25          | 0.08 - 0.25          | -                 |
|                                    | K   | 0.10 - 0.28      | 0.08 - 0.25      | 0.10 - 0.28          | 0.08 - 0.25          | -                 |
|                                    | N   | 0.01 - 0.30      | 0.01 - 0.30      | 0.01 - 0.30          | 0.01 - 0.30          | -                 |
|                                    | S   | 0.05 - 0.15      | 0.05 - 0.15      | 0.05 - 0.15          | 0.05 - 0.15          | -                 |

## Velocidad de corte recomendada para cada grado

| Pieza de trabajo                  | Grado  | Velocidad de corte recomendada, $vc$ (m / min) |     |     |     |     |
|-----------------------------------|--------|--|-----|-----|-----|-----|
|                                   |        | 50   | 100 | 200 | 300 | 600 |
| P Acero                           | PC5300 |  | 80  | 200 |     |     |
|                                   | PC5300 | 60   | 160 |     |     |     |
| M Acero inoxidable                | PC5300 |  | 80  | 130 |     |     |
|                                   | PC8110 |  | 80  | 160 |     |     |
| K Fundición                       | PC5300 |  | 90  | 200 |     |     |
| N Metales no ferrosos             | PC5300 |  |     | 150 |     | 600 |
| S Aleaciones resistentes al calor | PC8110 | 35   | 65  |     |     |     |


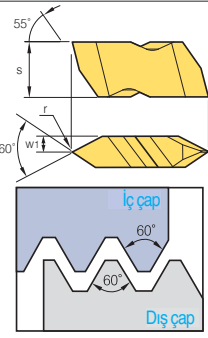
# C Inserto aplicable para K Notch

## Inserto (Métrico)

| Aplicación                                | Imagen  | Designación  | Recubierto |        |                   | Dimensiones |                |      |      |        |         |                |        |       |       | Configuración   |
|---|---|--------------|------------|--------|-------------------|-------------|----------------|------|------|--------|---------|----------------|--------|-------|-------|---|
|   |   |              | PC5300     | PC8110 | Sin recubrimiento | Métrico     |                |      |      |        | Pulgada |                |        |       |       |   |
|   |   |              |            |        |                   | s           | w <sub>1</sub> | r    | t    | ℓ      | s       | w <sub>1</sub> | r      | t     | ℓ     |   |
| Plano                                     |    | KNG 2M 150R  | PC5300     | PC8110 | H05               | 5.56        | 1.50           | 0.19 | 2.79 | 13.030 | 0.219   | 0.059          | 0.0075 | 0.11  | 0.513 |    |
|   |   |              |            |        |                   | 5.56        | 2.00           | 0.19 | 2.79 | 13.030 | 0.219   | 0.079          | 0.0075 | 0.11  | 0.513 |   |
|   |   | 250R         |            |        |                   | 5.56        | 2.50           | 0.19 | 2.79 | 13.030 | 0.219   | 0.098          | 0.0075 | 0.11  | 0.513 |   |
|   |   | 300R         |            |        |                   | 5.56        | 3.00           | 0.19 | 2.79 | 13.030 | 0.219   | 0.118          | 0.0075 | 0.11  | 0.513 |   |
|   |   | 3M 150R      | ●          | ●      |                   | 8.74        | 1.50           | 0.19 | 1.91 | 22.709 | 0.344   | 0.059          | 0.0075 | 0.075 | 0.894 |   |
|   |   | 200R         | ●          | ●      |                   | 8.74        | 2.00           | 0.19 | 2.79 | 22.709 | 0.344   | 0.079          | 0.0075 | 0.11  | 0.894 |   |
|   |   | 250R         | ●          | ●      |                   | 8.74        | 2.50           | 0.19 | 3.81 | 22.709 | 0.344   | 0.098          | 0.0075 | 0.15  | 0.894 |   |
|   |   | 300R         | ●          | ●      |                   | 8.74        | 3.00           | 0.19 | 3.81 | 22.709 | 0.344   | 0.118          | 0.0075 | 0.15  | 0.894 |   |
|   |   | 400R         | ●          | ●      |                   | 8.74        | 4.00           | 0.19 | 3.81 | 22.709 | 0.344   | 0.157          | 0.0075 | 0.15  | 0.894 |   |
|   |   | 4M 500R      |            |        |                   | 11.51       | 5.00           | 0.20 | 6.35 | 28.663 | 0.453   | 0.197          | 0.0079 | 0.25  | 1.128 |   |
| Rompeviruta con cara superior rectificada |    | KNGP 2M 150R | PC5300     | PC8110 | H05               | 5.56        | 1.50           | 0.19 | 2.79 | 13.030 | 0.219   | 0.059          | 0.0075 | 0.11  | 0.513 |    |
|   |   |              |            |        |                   | 5.56        | 2.00           | 0.19 | 2.79 | 13.030 | 0.219   | 0.079          | 0.0075 | 0.11  | 0.513 |   |
|   |   | 250R         |            |        |                   | 5.56        | 2.50           | 0.19 | 2.79 | 13.030 | 0.219   | 0.098          | 0.0075 | 0.11  | 0.513 |   |
|   |   | 300R         |            |        |                   | 5.56        | 3.00           | 0.19 | 2.79 | 13.030 | 0.219   | 0.118          | 0.0075 | 0.11  | 0.513 |   |
|   |   | 3M 150R      | ●          | ●      |                   | 8.74        | 1.50           | 0.19 | 1.91 | 22.709 | 0.344   | 0.059          | 0.0075 | 0.075 | 0.894 |   |
|   |   | 200R         | ●          | ●      |                   | 8.74        | 2.00           | 0.19 | 2.79 | 22.709 | 0.344   | 0.079          | 0.0075 | 0.11  | 0.894 |   |
|   |   | 250R         | ●          | ●      |                   | 8.74        | 2.50           | 0.19 | 3.81 | 22.709 | 0.344   | 0.098          | 0.0075 | 0.15  | 0.894 |   |
|   |   | 300R         | ●          | ●      |                   | 8.74        | 3.00           | 0.19 | 3.81 | 22.709 | 0.344   | 0.118          | 0.0075 | 0.15  | 0.894 |   |
|   |   | 400R         | ●          | ●      |                   | 8.74        | 4.00           | 0.19 | 3.81 | 22.709 | 0.344   | 0.157          | 0.0075 | 0.15  | 0.894 |   |
|   |   | 4M 500R      |            |        |                   | 11.51       | 5.00           | 0.20 | 6.35 | 28.663 | 0.453   | 0.197          | 0.0079 | 0.25  | 1.128 |   |
| Proforma                                  |  | KNB 2R       | PC5300     | PC8110 | H05               | 5.56        | 3.81           | -    | -    | 13.030 | 0.219   | 0.150          | -      | -     | 0.513 |  |
|   |   |              |            |        |                   | 8.74        | 4.95           | -    | -    | 22.709 | 0.344   | 0.195          | -      | -     | 0.894 |   |
|   |   | 3R           |            |        |                   | 8.74        | 4.95           | -    | -    | 22.709 | 0.344   | 0.195          | -      | -     | 0.894 |   |
|   |   | 4R           |            |        |                   | 11.51       | 6.48           | -    | -    | 28.663 | 0.453   | 0.255          | -      | -     | 1.128 |   |

● : En Almacen

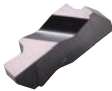
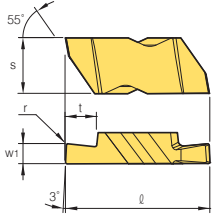
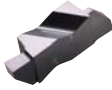
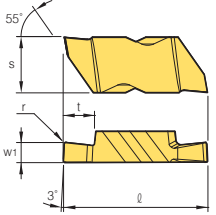

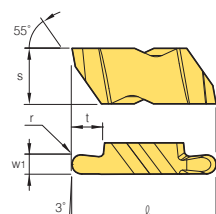

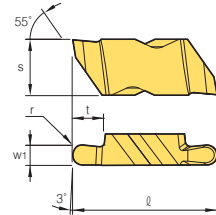
## Inserto (roscado)

| Aplicación              | Imagen  | Designación | Recubierto |        | Dimensiones |                |      |         |                |       |                 |           |   |      | Configuración |
|-------------------------|---|-------------|------------|--------|-------------|----------------|------|---------|----------------|-------|-----------------|-----------|---|------|---------------|
|                         |   |             | PC5300     | PC8110 | Métrico     |                |      | Pulgada |                |       | Paso (Exterior) |           |   |      |               |
|                         |   |             |            |        | s           | w <sub>1</sub> | r    | s       | w <sub>1</sub> | r     | mm              | tpi       |   |      |               |
| Perfilado parcial a 60° |  | KNT 2R      | PC5300     | PC8110 | 5.56        | 3.81           | 0.10 | 0.219   | 0.150          | 0.004 | 0.70-3.00       | 8-36      |  |      |               |
|                         |   |             |            |        | 8.74        | 4.95           | 0.17 | 0.344   | 0.195          | 0.007 | 1.25-4.00       | 6-20      |   |      |               |
|                         |   | 3R          |            |        |             | 8.74           | 4.95 | 0.17    | 0.344          | 0.195 | 0.007           | 1.25-6.25 |   | 4-20 |               |
|                         |   | 4R          |            |        |             | 11.51          | 6.48 | 0.17    | 0.453          | 0.255 | 0.007           | 1.25-6.25 |   | 4-20 |               |

● : En Almacen



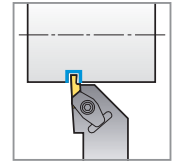
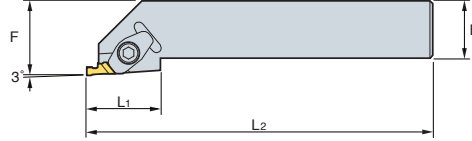
**Inserto (Pulgada)**

| Aplicación                                | Fóto  | Designación | Recubierta |        | Dimensiones |                |       |       |        |         |                |        |       |       | Configuración   |
|---|---|-------------|------------|--------|-------------|----------------|-------|-------|--------|---------|----------------|--------|-------|-------|---|
|   |   |             | PC5300     | PC8110 | Métrico     |                |       |       |        | Pulgada |                |        |       |       |   |
|   |   |             |            |        | s           | w <sub>1</sub> | r     | t     | ℓ      | s       | w <sub>1</sub> | r      | t     | ℓ     |   |
| Cara superior plana                       |    | KNG         | 2031R      |        | 5.56        | 0.79           | 0.09  | 1.27  | 13.030 | 0.219   | 0.031          | 0.0035 | 0.05  | 0.513 |    |
|   |   |             | 2041R      |        | 5.56        | 1.04           | 0.09  | 1.27  | 13.030 | 0.219   | 0.041          | 0.0035 | 0.05  | 0.513 |   |
|   |   |             | 2047R      |        | 5.56        | 1.19           | 0.09  | 1.27  | 13.030 | 0.219   | 0.047          | 0.0035 | 0.05  | 0.513 |   |
|   |   |             | 2058R      |        | 5.56        | 1.47           | 0.19  | 1.27  | 13.030 | 0.219   | 0.058          | 0.0075 | 0.05  | 0.513 |   |
|   |   |             | 2062R      |        | 5.56        | 1.57           | 0.19  | 2.79  | 13.030 | 0.219   | 0.062          | 0.0075 | 0.11  | 0.513 |   |
|   |   |             | 2094R      |        | 5.56        | 2.39           | 0.19  | 2.79  | 13.030 | 0.219   | 0.094          | 0.0075 | 0.11  | 0.513 |   |
|   |   |             | 2125R      |        | 5.56        | 3.18           | 0.19  | 2.79  | 13.030 | 0.219   | 0.125          | 0.0075 | 0.11  | 0.513 |   |
|   |   |             | 3047R      |        | 8.74        | 1.19           | 0.19  | 1.91  | 22.709 | 0.344   | 0.047          | 0.0075 | 0.075 | 0.894 |   |
|   |   |             | 3062R      | ●      | 8.74        | 1.57           | 0.19  | 2.39  | 22.709 | 0.344   | 0.062          | 0.0075 | 0.094 | 0.894 |   |
|   |   |             | 3072R      |        | 8.74        | 1.83           | 0.19  | 2.39  | 22.709 | 0.344   | 0.072          | 0.0075 | 0.094 | 0.894 |   |
|   |   |             | 3078R      | ●      | 8.74        | 1.98           | 0.19  | 2.39  | 22.709 | 0.344   | 0.078          | 0.0075 | 0.094 | 0.894 |   |
|   |   |             | 3088R      |        | 8.74        | 2.24           | 0.19  | 2.39  | 22.709 | 0.344   | 0.088          | 0.0075 | 0.094 | 0.894 |   |
|   |   |             | 3094R      |        | 8.74        | 2.39           | 0.19  | 3.81  | 22.709 | 0.344   | 0.094          | 0.0075 | 0.15  | 0.894 |   |
|   |   |             | 3097R      | ●      | 8.74        | 2.46           | 0.32  | 3.81  | 22.709 | 0.344   | 0.097          | 0.0125 | 0.15  | 0.894 |   |
|   |   |             | 3105R      |        | 8.74        | 2.67           | 0.19  | 3.81  | 22.709 | 0.344   | 0.105          | 0.0075 | 0.15  | 0.894 |   |
|   |   |             | 3110R      |        | 8.74        | 2.79           | 0.32  | 3.81  | 22.709 | 0.344   | 0.110          | 0.0125 | 0.15  | 0.894 |   |
|   |   |             | 3122R      |        | 8.74        | 3.10           | 0.19  | 3.81  | 22.709 | 0.344   | 0.122          | 0.0075 | 0.15  | 0.894 |   |
|   |   |             | 3125R      | ●      | 8.74        | 3.18           | 0.19  | 3.81  | 22.709 | 0.344   | 0.125          | 0.0075 | 0.15  | 0.894 |   |
|   |   |             | 3142R      |        | 8.74        | 3.61           | 0.32  | 3.81  | 22.709 | 0.344   | 0.142          | 0.0125 | 0.15  | 0.894 |   |
|   |   |             | 3156R      | ●      | 8.74        | 3.96           | 0.19  | 3.81  | 22.709 | 0.344   | 0.156          | 0.0075 | 0.15  | 0.894 |   |
|   |   |             | 3178R      |        | 8.74        | 4.52           | 0.19  | 3.81  | 22.709 | 0.344   | 0.178          | 0.0075 | 0.15  | 0.894 |   |
|   |   |             | 3185R      |        | 8.74        | 4.70           | 0.57  | 3.81  | 22.709 | 0.344   | 0.185          | 0.0225 | 0.15  | 0.894 |   |
|   |   |             | 3189R      | ●      | 8.74        | 4.80           | 0.57  | 3.81  | 22.709 | 0.344   | 0.189          | 0.0225 | 0.15  | 0.894 |   |
|   |   |             | 4125R      | ●      | 11.51       | 3.18           | 0.19  | 3.81  | 28.663 | 0.453   | 0.125          | 0.0075 | 0.15  | 1.128 |   |
| 4189R                                     |   | 11.51       | 4.80       | 0.57   | 6.35        | 28.663         | 0.453 | 0.189 | 0.0225 | 0.25    | 1.128          |        |       |       |   |
| 4213R                                     |   | 11.51       | 5.41       | 0.19   | 6.35        | 28.663         | 0.453 | 0.213 | 0.0075 | 0.25    | 1.128          |        |       |       |   |
| 4219R                                     |   | 11.51       | 5.56       | 0.57   | 6.35        | 28.663         | 0.453 | 0.219 | 0.0225 | 0.25    | 1.128          |        |       |       |   |
| 4250R                                     |   | 11.51       | 6.35       | 0.57   | 6.35        | 28.663         | 0.453 | 0.250 | 0.0225 | 0.25    | 1.128          |        |       |       |   |
| Cara superior rectificada                 |  | KNGP        | 2031R      |        | 5.56        | 0.79           | 0.09  | 1.27  | 13.030 | 0.219   | 0.031          | 0.0035 | 0.05  | 0.513 |  |
|   |   |             | 2062R      |        | 5.56        | 1.57           | 0.19  | 2.79  | 13.030 | 0.219   | 0.062          | 0.0075 | 0.11  | 0.513 |   |
|   |   |             | 2125R      |        | 5.56        | 3.18           | 0.19  | 2.79  | 13.030 | 0.219   | 0.125          | 0.0075 | 0.11  | 0.513 |   |
|   |   |             | 3088R      |        | 8.74        | 2.24           | 0.19  | 2.39  | 22.709 | 0.344   | 0.088          | 0.0075 | 0.094 | 0.894 |   |
|   |   |             | 3125R      | ●      | 8.74        | 3.18           | 0.19  | 3.81  | 22.709 | 0.344   | 0.125          | 0.0075 | 0.15  | 0.894 |   |
|   |   |             | 3156R      | ●      | 8.74        | 3.96           | 0.19  | 3.81  | 22.709 | 0.344   | 0.156          | 0.0075 | 0.15  | 0.894 |   |
|   |   |             | 3189R      |        | 8.74        | 4.80           | 0.57  | 3.81  | 22.709 | 0.344   | 0.189          | 0.0225 | 0.15  | 0.894 |   |
|   |   |             | 4189R      |        | 11.51       | 4.80           | 0.57  | 6.35  | 28.663 | 0.453   | 0.189          | 0.0225 | 0.25  | 1.128 |   |
| 4250R                                     |   | 11.51       | 6.35       | 0.57   | 6.35        | 28.663         | 0.453 | 0.250 | 0.0225 | 0.25    | 1.128          |        |       |       |   |
| Inserto redondo cara plana                |  | KNR         | 2031R      |        | 5.56        | 1.57           | 0.79  | 2.79  | 13.030 | 0.219   | 0.062          | 0.031  | 0.11  | 0.513 |  |
|   |   |             | 2047R      |        | 5.56        | 2.39           | 1.19  | 2.79  | 13.030 | 0.219   | 0.094          | 0.047  | 0.11  | 0.513 |   |
|   |   |             | 3031R      | ●      | 8.74        | 1.57           | 0.79  | 2.39  | 22.709 | 0.344   | 0.062          | 0.031  | 0.094 | 0.894 |   |
|   |   |             | 3047R      | ●      | 8.74        | 2.39           | 1.19  | 3.81  | 22.709 | 0.344   | 0.094          | 0.047  | 0.15  | 0.894 |   |
|   |   |             | 3062R      | ●      | 8.74        | 3.18           | 1.59  | 3.81  | 22.709 | 0.344   | 0.125          | 0.0625 | 0.15  | 0.894 |   |
|   |   |             | 3078R      | ●      | 8.74        | 3.96           | 1.98  | 3.81  | 22.709 | 0.344   | 0.156          | 0.078  | 0.15  | 0.894 |   |
|   |   |             | 3094R      | ●      | 8.74        | 4.78           | 2.39  | 3.81  | 22.709 | 0.344   | 0.188          | 0.094  | 0.15  | 0.894 |   |
|   |   |             | 4125R      |        | 11.51       | 6.35           | 3.18  | 6.35  | 28.663 | 0.453   | 0.250          | 0.125  | 0.25  | 1.128 |   |
| Inserto redondo cara superior rectificada |  | KNRP        | 2031R      |        | 5.56        | 1.57           | 0.79  | 2.79  | 13.030 | 0.219   | 0.062          | 0.031  | 0.11  | 0.513 |  |
|   |   |             | 2047R      |        | 5.56        | 2.39           | 1.19  | 2.79  | 13.030 | 0.219   | 0.094          | 0.047  | 0.11  | 0.513 |   |
|   |   |             | 3031R      | ●      | 8.74        | 1.57           | 0.79  | 2.39  | 22.709 | 0.344   | 0.062          | 0.031  | 0.094 | 0.894 |   |
|   |   |             | 3047R      | ●      | 8.74        | 2.39           | 1.19  | 3.81  | 22.709 | 0.344   | 0.094          | 0.047  | 0.15  | 0.894 |   |
|   |   |             | 3062R      | ●      | 8.74        | 3.18           | 1.59  | 3.81  | 22.709 | 0.344   | 0.125          | 0.0625 | 0.15  | 0.894 |   |
|   |   |             | 3078R      | ●      | 8.74        | 3.96           | 1.98  | 3.81  | 22.709 | 0.344   | 0.156          | 0.078  | 0.15  | 0.894 |   |
|   |   |             | 3094R      | ●      | 8.74        | 4.78           | 2.39  | 3.81  | 22.709 | 0.344   | 0.188          | 0.094  | 0.15  | 0.894 |   |
| 4125R                                     |   | 11.51       | 6.35       | 3.18   | 6.35        | 28.663         | 0.453 | 0.250 | 0.125  | 0.25    | 1.128          |        |       |       |   |

● : En Almacen

## KNSR

Para ranurado, perfilado



Inserto tipo R

KNG KNGP KNT  
KNR KNRP KNB

| Designación | Métrico |    |    |    |     | Pulgada |       |       |       |       | Insertos | Brida  | Tornillo | Llave   |       |
|-------------|---------|----|----|----|-----|---------|-------|-------|-------|-------|----------|--|----------|---------|-------|
|             | H       | B  | F  | L1 | L2  | H       | B     | F     | L1    | L2    |          |  |          |         |       |
| KNSR        | 1010E2  | 10 | 10 | 14 | 19  | 70      | 0.394 | 0.394 | 0.551 | 0.748 | 2.756    | KNG2□<br>KNGP2□<br>KNR2□<br>KNB2R<br>KNT2R           | CM74     | MHB3010 | HW25L |
|             | 1212F2  | 12 | 12 | 16 | 19  | 80      | 0.472 | 0.472 | 0.630 | 0.748 | 3.150    |  |          |         |       |
|             | 1616H2  | 16 | 16 | 20 | 19  | 100     | 0.630 | 0.630 | 0.787 | 0.748 | 3.937    |  |          |         |       |
|             | 2020K2  | 20 | 20 | 25 | 19  | 125     | 0.787 | 0.787 | 0.984 | 0.748 | 4.921    |  |          |         |       |
|             | 2525M2  | 25 | 25 | 32 | 19  | 150     | 0.984 | 0.984 | 1.260 | 0.748 | 5.906    |  |          |         |       |
|             | 2020K3  | 20 | 20 | 25 | 32  | 125     | 0.787 | 0.787 | 0.984 | 1.260 | 4.921    | KNG3□<br>KNGP3□<br>KNR3□<br>KNRP3□<br>KNB3R<br>KNT3R | CM72LP   | MHA0512 | HW40L |
|             | 2525M3  | 25 | 25 | 32 | 32  | 150     | 0.984 | 0.984 | 1.260 | 1.260 | 5.906    |  |          |         |       |
|             | 3225P3  | 32 | 32 | 32 | 32  | 170     | 1.260 | 1.260 | 1.260 | 1.260 | 6.693    |  |          |         |       |
|             | 3232P3  | 32 | 32 | 40 | 32  | 170     | 1.260 | 1.260 | 1.575 | 1.260 | 6.693    | KNG4□<br>KNGP4□<br>KNR4□<br>KNB4R<br>KNT4R           | CM72LP   | MHA0512 | HW40L |
|             | 2525M4  | 25 | 25 | 32 | 35  | 150     | 0.984 | 0.984 | 1.260 | 1.378 | 5.906    |  |          |         |       |
| 3225P4      | 32      | 32 | 32 | 35 | 170 | 1.260   | 1.260 | 1.260 | 1.378 | 6.693 |          |  |          |         |       |
| 3232P4      | 32      | 32 | 40 | 35 | 170 | 1.260   | 1.260 | 1.575 | 1.378 | 6.693 |          |  |          |         |       |



Para ranurado profundo y tronzado

# Saw-man

## Características del inserto saw-man para tronzado

- Posibilidad de mecanizar una amplia gama de piezas, como acero, fundición, acero inoxidable, etc.
- Mayor vida útil de la herramienta debido al bajo ángulo de ataque del inserto
- Rebabas minimizadas debido a la ángulo mínimo en punta
- Varios ángulos de avance disponibles
- Control de viruta gracias al diseño de aristas en la superficie del inserto

| Pza.Trabajo                           | Velocidad de Corte (vc = m/min) |        |        |        |        |        |        |        |          | Avance (fn = mm/rev) |           |           |           |           |           |
|---------------------------------------|---------------------------------|--------|--------|--------|--------|--------|--------|--------|----------|----------------------|-----------|-----------|-----------|-----------|-----------|
|                                       | CVD                             |        |        |        | PVD    |        |        |        | Sin Rec. | Ancho del corte (mm) |           |           |           |           |           |
|                                       | NC3120                          | NC3030 | NCM325 | NC5330 | PC230  | PC8110 | PC5300 | PC6510 | ST30A    | 2                    | 3         | 4         | 5         | 6         |           |
| SM□□C                                 | 80~180                          |        |        | 80~180 | 80~180 |        |        |        |          |                      | 0.02~0.15 | 0.03~0.20 | 0.08~0.30 | 0.10~0.4  | 0.12~0.50 |
| SCM                                   | 70~150                          | 70~150 | 70~150 | 70~150 | 70~150 |        |        |        |          |                      | 0.02~0.15 | 0.03~0.20 | 0.08~0.30 | 0.10~0.4  | 0.12~0.50 |
| GC/GCD                                |                                 |        |        | 50~100 |        |        |        | 50~100 | 50~100   |                      | 0.05~0.12 | 0.10~0.25 | 0.10~0.30 | 0.10~0.35 | 0.10~0.40 |
| STS                                   |                                 |        | 50~120 | 50~120 |        | 50~120 | 60~140 |        |          |                      | 0.02~0.10 | 0.03~0.15 | 0.08~0.25 | 0.10~0.35 | 0.12~0.40 |
| Metales No-Ferrosos (Aluminio, Cobre) |                                 |        |        |        |        |        |        |        | 200~450  |                      | 0.05~0.10 | 0.05~0.20 | 0.05~0.25 | 0.05~0.30 | 0.05~0.35 |

## Insertos

| Aplicación | Imagen | Designación | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. | Dimensiones (mm) |      |       | Configuración |  |
|------------|--------|-------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------------------|------|-------|---------------|--|
|            |        |             | NC3120     | NC3225 | NC3030 | NCM325 | NC5330 | PC3035 | PC8105 | PC8110 | PC5300 | PC9030 | ST30A    | W                | l    | r     |               |  |
|            |        |             |            |        |        |        |        |        |        |        |        |        |          |                  |      |       |               | W  |
| Tronzado   |        | SP 160      |            |        |        |        |        |        |        |        |        |        |          |                  | 1.6  | 7.8   | 0.16          | <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>R tipo</p> </div> <div style="text-align: center;"> <p>Estándar</p> </div> </div> <div style="margin-top: 10px;"> <p>L tipo</p> </div> <div style="margin-top: 10px;"> <p>W = ±0.1</p> </div> |
|            |        | 180         |            |        |        |        |        |        |        |        |        |        |          |                  | 1.8  | 9.3   | 0.16          |  |
|            |        | 200         |            | ●      | ●      | ●      | ●      |        |        | ●      | ●      | ●      |          |                  | 2.2  | 9.3   | 0.2           |  |
|            |        | 200R        |            |        | ●      |        |        |        |        |        |        | ●      |          |                  | 2.2  | 9.3   | 0.2           |  |
|            |        | 200L        |            |        |        |        |        |        |        |        |        | ●      |          |                  | 2.2  | 9.3   | 0.2           |  |
|            |        | 300         |            | ●      | ●      | ●      | ●      | ●      |        | ●      | ●      | ●      | ●        |                  | 3.1  | 11.3  | 0.2           |  |
|            |        | 300R        |            |        | ●      | ●      | ●      |        |        | ●      |        |        |          |                  | 3.1  | 11.3  | 0.2           |  |
|            |        | 300L        |            |        |        | ●      |        |        |        |        |        |        |          |                  | 3.1  | 11.3  | 0.2           |  |
|            |        | 400         |            | ●      | ●      | ●      | ●      | ●      |        | ●      | ●      | ●      |          |                  | 4.1  | 11.3  | 0.25          |  |
|            |        | 400R        |            |        |        | ●      |        |        |        | ●      |        |        |          |                  | 4.1  | 11.3  | 0.25          |  |
|            |        | 400L        |            |        |        | ●      |        |        |        |        |        |        |          |                  | 4.1  | 11.3  | 0.25          |  |
|            |        | 500         |            |        |        | ●      | ●      | ●      |        | ●      | ●      |        |          |                  | 5.1  | 11.4  | 0.3           |  |
|            |        | 500R        |            |        |        |        |        |        |        |        |        |        |          |                  | 5.1  | 11.4  | 0.3           |  |
|            |        | 500L        |            |        |        |        |        |        |        |        |        |        |          |                  | 5.1  | 11.4  | 0.3           |  |
|            |        | 600         |            |        |        | ●      |        | ●      |        |        |        | ●      |          |                  | 6.4  | 11.4  | 0.35          |  |
|            |        | 600R        |            |        |        |        |        |        |        |        |        |        |          |                  | 6.4  | 11.4  | 0.35          |  |
|            |        | 600L        |            |        |        |        |        |        |        |        |        |        |          |                  | 6.4  | 11.4  | 0.35          |  |
|            |        | 800         |            |        |        |        |        |        |        |        |        |        |          |                  | 8.0  | 14.06 | 0.4           |  |
| 900        |        |             |            |        |        |        |        |        |        |        |        |        | 9.6      | 14.06            | 0.45 |       |               |  |

● : En Almacen

# SPB/SPB-S (Lama ó Cuchilla)



SP

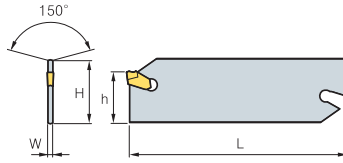


Fig. 1

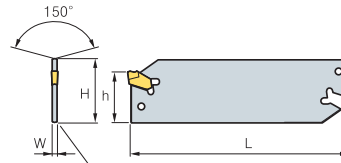
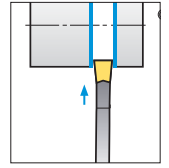




Fig. 2



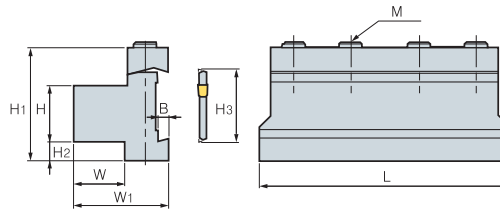
| Designación   | H             | W    | L   | h   | Insertos      | Llave   |   | Fig.                               |   |
|---------------|---------------|------|-----|-----|---------------|---|---|------------------------------------|---|
|               |               |      |     |     |               |  |  |                                    |   |
| <b>SPB</b>    | <b>226</b>    | 26   | 1.6 | 110 | 21            | SP200, 200R/L   | SW50L   | -                                  | 1 |
|               | <b>232</b>    | 32   | 1.6 | 150 | 25            | SP200, 200R/L   |   |                                    |   |
|               | <b>326</b>    | 26   | 2.4 | 110 | 21            | SP300, 300R/L   |   |                                    |   |
|               | <b>332</b>    | 32   | 2.4 | 150 | 25            | SP300, 300R/L   |   |                                    |   |
|               | <b>426</b>    | 26   | 3.2 | 110 | 21            | SP400, 400R/L   |   |                                    |   |
|               | <b>432</b>    | 32   | 3.2 | 150 | 25            | SP400, 400R/L   |   |                                    |   |
|               | <b>526</b>    | 26   | 4.0 | 110 | 21            | SP500, 500R/L   |   |                                    |   |
|               | <b>532</b>    | 32   | 4.0 | 150 | 25            | SP500, 500R/L   |   |                                    |   |
|               | <b>626</b>    | 26   | 5.2 | 110 | 21            | SP600, 600R/L   |   |                                    |   |
| <b>632</b>    | 32            | 5.2  | 150 | 25  | SP600, 600R/L |   |   |                                    |   |
| <b>SPB-S</b>  | <b>226-S</b>  | 26   | 1.6 | 110 | 21            | SP200, 200R/L   | -   | SW15S<br>(A encargar por separado) | 2 |
|               | <b>232-S</b>  | 32   | 1.6 | 150 | 25            | SP200, 200R/L   |   |                                    |   |
|               | <b>326-S</b>  | 26   | 2.4 | 110 | 21            | SP300, 300R/L   |   |                                    |   |
|               | <b>332-S</b>  | 32   | 2.4 | 150 | 25            | SP300, 300R/L   |   |                                    |   |
|               | <b>426-S</b>  | 26   | 3.2 | 110 | 21            | SP400, 400R/L   |   |                                    |   |
|               | <b>432-S</b>  | 32   | 3.2 | 150 | 25            | SP400, 400R/L   |   |                                    |   |
|               | <b>526-S</b>  | 26   | 4.0 | 110 | 21            | SP500, 500R/L   |   |                                    |   |
|               | <b>532-S</b>  | 32   | 4.0 | 150 | 25            | SP500, 500R/L   |   |                                    |   |
|               | <b>626-S</b>  | 26   | 5.2 | 110 | 21            | SP600, 600R/L   |   |                                    |   |
|               | <b>632-S</b>  | 32   | 5.2 | 150 | 25            | SP600, 600R/L   |   |                                    |   |
|               | <b>832-S</b>  | 32   | 6.8 | 150 | 25            | SP800   |   |                                    |   |
|               | <b>932-S</b>  | 32   | 8   | 150 | 25            | SP900   |   |                                    |   |
|               | <b>8526-S</b> | 52.6 | 6.8 | 150 | 45            | SP800   |   |                                    |   |
| <b>9526-S</b> | 52.6          | 8    | 150 | 45  | SP900         |   |   |                                    |   |


 Insertos Aplicable C59

# SMBB (Bloque)



SPB□□□(-S)  
KGTB□□□32



| Designación | H            | W  | H3 | L    | H1  | H2    | W1 | B  | M   | Lamas | Llave   |
|-------------|--------------|----|----|------|-----|-------|----|----|-----|-------|---|
|             |              |    |    |      |     |       |    |    |     |       |  |
| <b>SMBB</b> | <b>1626</b>  | 16 | 12 | 26   | 86  | 43    | 13 | 30 | 5.3 | 3-M6  | HW50L   |
|             | <b>2026</b>  | 20 | 19 | 26   | 86  | 43    | 9  | 38 | 5.3 | 3-M6  |   |
|             | <b>2032</b>  | 20 | 19 | 32   | 100 | 50    | 13 | 38 | 5.3 | 4-M6  |   |
|             | <b>2526</b>  | 25 | 23 | 26   | 86  | 43    | 4  | 42 | 5.3 | 4-M6  |   |
|             | <b>2532</b>  | 25 | 23 | 32   | 110 | 50    | 8  | 42 | 5.3 | 4-M6  |   |
|             | <b>3232</b>  | 32 | 30 | 32   | 110 | 54    | 5  | 48 | 5.3 | 4-M6  |   |
|             | <b>40526</b> | 40 | 41 | 52.6 | 130 | 81.73 | 22 | 66 | 8   | 4-M8  |   |

 Insertos Aplicable C59



# SPH/SPH-S (Portainserito)



SP

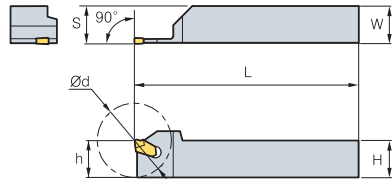


Fig. 1

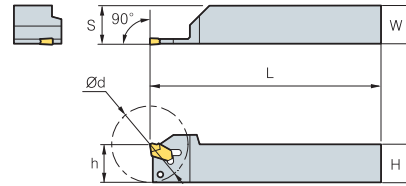
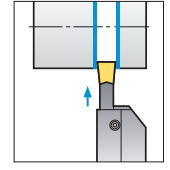




Fig. 2



• Inserto tipo R  
(mm)

| Designación | H = (h)  | W  | L  | Ød  | S  | Insertos | Llave   |   | Fig.                               |   |
|-------------|----------|----|----|-----|----|----------|---|---|------------------------------------|---|
|             |          |    |    |     |    |          |  |  |                                    |   |
| SPH         | 316R/L   | 16 | 16 | 100 | 32 | 16.3     | SP300, 300R/L   | SW50L   | -                                  | 1 |
|             | 320R/L   | 20 | 20 | 120 | 40 | 20.3     | SP300, 300R/L   |   |                                    |   |
|             | 325R/L   | 25 | 25 | 150 | 50 | 25.3     |   |   |                                    |   |
|             | 420R/L   | 20 | 20 | 120 | 50 | 20.4     | SP400, 400R/L   |   |                                    |   |
|             | 425R/L   | 25 | 25 | 150 | 60 | 25.4     | SP500, 500R/L   |   |                                    |   |
|             | 520R/L   | 20 | 20 | 120 | 60 | 20.5     | SP300, 300R/L   |   |                                    |   |
|             | 525R/L   | 25 | 25 | 150 | 70 | 25.5     | SP500, 500R/L   |   |                                    |   |
| SPH         | 316R/L-S | 16 | 16 | 100 | 32 | 16.3     | SP300, 300R/L   | -   | SW15S<br>(A encargar por separado) | 2 |
|             | 320R/L-S | 20 | 20 | 120 | 40 | 20.3     | SP300, 300R/L   |   |                                    |   |
|             | 325R/L-S | 25 | 25 | 150 | 50 | 25.3     | SP300, 300R/L   |   |                                    |   |
|             | 420R/L-S | 20 | 20 | 120 | 50 | 20.4     | SP400, 400R/L   |   |                                    |   |
|             | 425R/L-S | 25 | 25 | 150 | 60 | 25.4     | SP400, 400R/L   |   |                                    |   |
|             | 520R/L-S | 20 | 20 | 120 | 60 | 20.5     | SP500, 500R/L   |   |                                    |   |
|             | 525R/L-S | 25 | 25 | 150 | 70 | 25.5     | SP500, 500R/L   |   |                                    |   |

 Insertos Aplicable C59

La solución para tronzado y ranurado profundo

## Saw Man-X

- Mecanizado estable en ranurado profundo aplicando la sistema de sujeción V-Rail con tres cara de sujeción
- Precisión de la sujeción mejorada y reemplazo conveniente de insertos con el uso de la llave exclusiva

### ☞ Sistema de codificación de lama



### ☞ Sistema de codificación de inserto

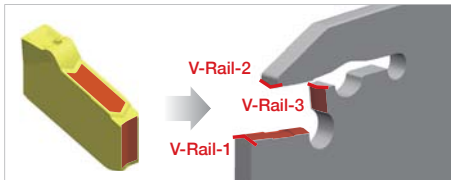


### ☞ Características

- Sistema de sujeción V-Rail con 3 caras de apoyo - sistema de sujeción más estable
- Nuevo tratamiento del filo de corte - mecanizado de mejor calidad y una larga vida de herramienta
- Rompeviruta superior - Mejor control de viruta
- Llave exclusiva - sistema de sujeción más conveniente

#### V-Rail triple para amarre en tres planos

- Inserto firmemente sujeto en el asiento de la punta
- La vibración minimizada durante el mecanizado aumenta la estabilidad
- Preparado para un mecanizado de alta velocidad, alto avance y alta profundidad de corte

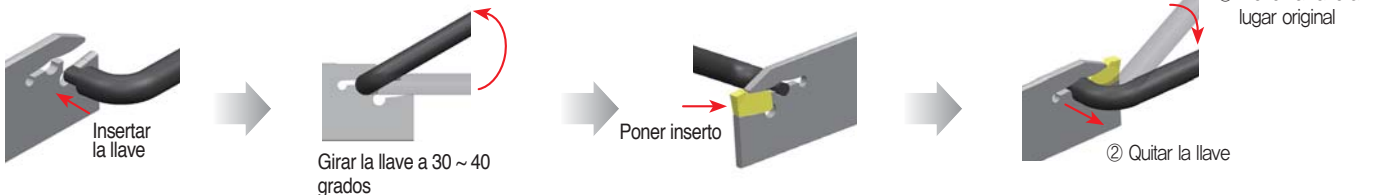


#### Borde de corte especial

- Borde de corte totalmente paralelo mejorando la maquinabilidad
- Mecanizado de alta calidad y alta resistencia al desgaste

#### La llave exclusiva

- La llave exclusiva para Saw Man-X
- Sistema de sujeción más estable y conveniente



### Características del rompevirutas

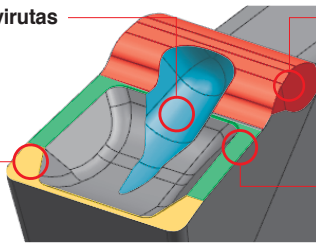
- El diseño del rompevirutas y su saliente en el área posterior permiten una mejor evacuación de la viruta.
- Rompevirutas con el filo de corte negativo para mecanizado universal

#### Canal refrigerante y canal guía para evacuación de virutas

- Portaherramientas con refrigeración interna disponible
- Canal guía para la evacuación de virutas

#### Filo negativo

- Rendimiento estable en varios material.
- Garantizar la estabilidad del mecanizado a alta profundidad de corte.



#### Rompevirutas secundario en la zona posterior

- Mejor control de viruta de componentes de gran diámetro
- Evita que la viruta golpee y dañe el porta

#### Aumento de la altura del filo de corte lateral

- Mejor control de viruta en diámetros pequeños
- Aumenta la rigidez

### Condiciones de corte recomendadas


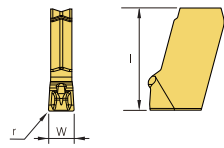
| Pieza de trabajo |                              |             |          |                              | Grado  | Condiciones de corte |             |
|------------------|------------------------------|-------------|----------|------------------------------|--------|----------------------|-------------|
| ISO              | Pieza de trabajo             | KS          | AISI     | ISO (DIN)*                   |        | vc (m/dak)           | fn (mm/dev) |
| P                | Acero al carbono             | SM45C       | 1045     | C45ww                        | PC5300 | 80-200               | 0.08-0.28   |
|                  |                              |             |          |                              | PC3035 | 80-220               | 0.08-0.28   |
|                  | Acero aleado                 | SCM440      | 4140     | 42CrMo4<br>(42CrMo4)*        | PC5300 | 80-160               | 0.08-0.25   |
|                  |                              |             |          |                              | PC3035 | 80-180               | 0.08-0.25   |
| M                | Acero inoxidable             | STS304      | 304      | X5CrNi18-9<br>(X2CrNi19-11)* | PC5300 | 80-190               | 0.06-0.20   |
|                  |                              | STS316      | 316      | X5CrNiMo17-12-2              | PC5300 | 80-190               | 0.06-0.20   |
| K                | Fundición gris               | GC250       | No35B    | 250<br>(GG25)*               | PC8110 | 100-220              | 0.10-0.28   |
|                  |                              |             |          |                              | PC5300 | 100-200              | 0.10-0.28   |
|                  | Fundición de grafito nodular | GCD500      | 80-55-06 | 450-10                       | PC8110 | 80-200               | 0.10-0.25   |
| S                | Materiales termoresistentes  | Inconel 718 | 7718     | 15156-3                      | PC8110 | 35-65                | 0.05-0.15   |
|                  |                              |             |          |                              | PC5300 | 25-55                | 0.05-0.15   |

### Comparación de distiancho de filo y profundidades por cada item

| Forma                | Ancho de corte (mm) |     |     |   |     |                   | Nº de filos | Mecanizado        |                     |          |  | Características |
|----------------------|---------------------|-----|-----|---|-----|-------------------|-------------|-------------------|---------------------|----------|--|-----------------|
|                      | 2                   | 4   | 6   | 8 | 130 | Diámetro exterior |             | Diámetro interior | sección transversal | Tronzado |  |                 |
| <b>Saw Man-X new</b> | 2                   |     | 6.0 |   |     | 125               | ○           |                   |                     | ◎        | • Auto sujeción<br>• Ranurado profundo   |                 |
| <b>MGT, KGT</b>      | 1.5                 |     | 8.0 |   | 28  |                   | ◎           | ○                 | ○                   | ○        | • Varios mecanizados<br>• Amplia gama de mecanizado                              |                 |
| <b>TB</b>            | 1.25                |     | 6.0 |   |     |                   | ◎           |                   |                     | ○        | • Alta precisión (rectificado)<br>• Mecanizado automático óptimo                 |                 |
| <b>Auto tools</b>    | Lama                | 0.7 | 2.0 |   | 8.3 |                   | ◎           |                   |                     | ○        | • Para torno automático (Lama)<br>• Mecanizado de componentes pequeños           |                 |
|                      | Multifuncional      | 1.0 | 4.0 |   | 8.5 |                   | ◎           |                   |                     | ○        | • Para torno automático (multifuncional)<br>• Mecanizado de componentes pequeños |                 |
| <b>K Notch</b>       | 0.75                |     | 6.3 |   | 6.5 |                   | ◎           |                   |                     |          | • Un fuerte sistema de sujeción<br>• Un filo de corte de gran calidad            |                 |

◎: Primera recomendación ○: Segunda recomendación

### Inserto

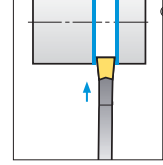
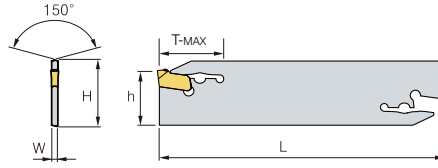
| Aplicación | Imagen  | Designación   | Recubrimiento |        |        | W   | r    | L    | Configuración   |
|------------|---|---------------|---------------|--------|--------|-----|------|------|---|
|            |   |               | PC3035        | PC5300 | PC8110 |     |      |      |   |
| Tronzado   |  | KSP 200-020-N | ●             | ●      | ●      | 2.0 | 0.20 | 11.0 |  |
|            |   | 300-020-N     | ●             | ●      | ●      | 3.0 | 0.20 | 12.0 |   |
|            |   | 400-025-N     | ●             | ●      | ●      | 4.0 | 0.25 | 12.5 |   |
|            |   | 500-025-N     |               |        |        | 5.0 | 0.25 | 13.5 |   |
|            |   | 600-035-N     |               |        |        | 6.0 | 0.35 | 14.5 |   |

●: En Almacen


# KSPB (Lama)



KSP



(mm)

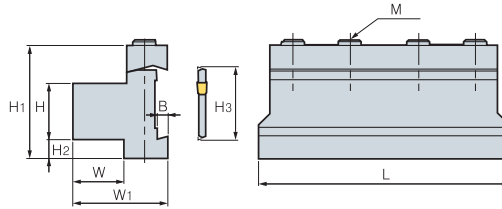
| Designación | Ancho del filo de corte | H  | W   | L   | h  | T-MAX | Llave   |
|-------------|-------------------------|----|-----|-----|----|-------|---|
| KSPB        | 2026                    | 26 | 1.6 | 110 | 21 | 25    | <br>CW08 |
|             | 2032                    | 32 | 1.6 | 150 | 25 | 26    |   |
|             | 3026                    | 26 | 2.4 | 110 | 21 | 36    |   |
|             | 3032                    | 32 | 2.4 | 150 | 25 | 60    |   |
|             | 4026                    | 26 | 3.2 | 110 | 21 | 36    |   |
|             | 4032                    | 32 | 3.2 | 150 | 25 | 60    |   |
|             | 5026                    | 26 | 4.0 | 110 | 21 | 40    |   |
|             | 5032                    | 32 | 4.0 | 150 | 25 | 60    |   |
|             | 6026                    | 26 | 5.2 | 110 | 21 | 60    |   |
|             | 6032                    | 32 | 5.2 | 150 | 25 | 60    |   |

 Insertos Aplicable C63


# SMBB (Bloque)



KSPB□□□□  
SPB□□□(-S)  
KGTB□□□□



(mm)

| Designación | H    | W  | H3 | L  | H1  | H2 | W  | B  | M   | Llave |  |
|-------------|------|----|----|----|-----|----|----|----|-----|-------|--|
| SMBB        | 1626 | 16 | 12 | 26 | 86  | 43 | 13 | 30 | 5.3 | 3-M6  | <br>HW50L |
|             | 2026 | 20 | 19 | 26 | 86  | 43 | 9  | 38 | 5.3 | 3-M6  |  |
|             | 2032 | 20 | 19 | 32 | 100 | 50 | 13 | 38 | 5.3 | 4-M6  |  |
|             | 2526 | 25 | 23 | 26 | 86  | 43 | 4  | 42 | 5.3 | 4-M6  |  |
|             | 2532 | 25 | 23 | 32 | 110 | 50 | 8  | 42 | 5.3 | 4-M6  |  |
|             | 3232 | 32 | 30 | 32 | 110 | 54 | 5  | 48 | 5.3 | 4-M6  |  |

 Insertos Aplicable C63

Seis clases insertos pueden utilizarse en un solo portaherramienta para diversas operaciones

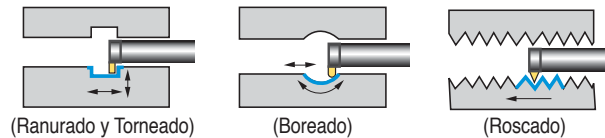
# Fine Tools

- Sistema de anclaje fuerte e inserto especialmente diseñado, adecuados para el mecanizado de diámetro pequeño
- Seis tipos de insertos disponibles para cada soporte para varias operaciones
- Larga vida de la herramienta garantizada debido al buen sustrato de tenacidad con el nuevo recubrimiento TiAlN
- Inserto corregido garantiza un mecanizado de alta precisión



➤ **Rango de Aplicaciones** • Ranurado interno, Roscado y boreado de Ø8 mm~Ø16 mm

➤ **Características**



➤ **Sistema de códigos**

NFTIH 08 3 12 - S

Diametro Minimo
Longitud (ℓ/ØD)
Diametro del Zanco
Tipo de Zanco

S: Acero, C: Carburo

➤ **Condiciones de Corte Recomendadas**

| Pza.Trabajo                  | Grado | Condición de Corte |                                       |           |           |           |
|------------------------------|-------|--------------------|---------------------------------------|-----------|-----------|-----------|
|                              |       |                    | Diametro Minimo Para Maquinar (ØDmin) |           |           |           |
|                              |       |                    | Ø8                                    | Ø11       | Ø14       | Ø16       |
| Acero al Carbon              | ◎     | vc (m/dak)         | 30~80                                 | 30~100    | 30~100    | 30~100    |
|                              |       | fn (m/dev)         | 0.01~0.04                             | 0.01~0.05 | 0.02~0.05 | 0.02~0.06 |
| Aleación de Acero            | ◎     | vc (m/dak)         | 30~80                                 | 30~100    | 30~100    | 30~100    |
|                              |       | fn (m/dev)         | 0.01~0.02                             | 0.01~0.04 | 0.02~0.04 | 0.02~0.05 |
| Fundición                    | ○     | vc (m/dak)         | 30~80                                 | 30~100    | 30~100    | 30~100    |
|                              |       | fn (m/dev)         | 0.01~0.05                             | 0.01~0.05 | 0.02~0.05 | 0.02~0.05 |
| Aleación Metales No-Ferrosos | ○     | vc (m/dak)         | 70~150                                | 100~150   | 100~150   | 100~150   |
|                              |       | fn (m/dev)         | 0.02~0.06                             | 0.02~0.06 | 0.02~0.06 | 0.02~0.06 |

- Nota**
- En caso de vibraciones reduzca la velocidad de avance
  - Para encontrar las condiciones de corte optimas, incremente las condiciones recomendadas gradualmente
  - En caso de tronzado desigual mayor de 0.04 pulgadas, trabaje con las condiciones de avance recomendadas

➤ **Sistema de Sujeción**



| Tornillo | Insertos             | Portainsero  |
|----------|----------------------|--|
|          | Tipo R    Tipo L<br> | Zanco (Acero ó Carburo cementado)<br><br>Longitud (3D, 4D, 5D) |

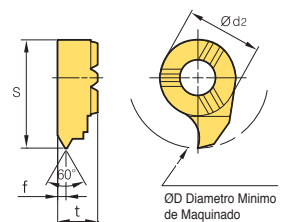
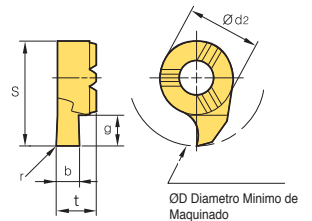
• El inserto disponible de tipo R/L con un portainsero

Sistema de sujeción estable de 3 puntos de anclaje

No existe riesgo de giro, debido al sistema de centrado

## Insertos

| Aplicación | Imagen  | Designación   | Recubierta |      | Dimensiones (mm) |      |     |      |     |                 |      |       |     | Configuración |
|------------|---|---------------|------------|------|------------------|------|-----|------|-----|-----------------|------|-------|-----|---------------|
|            |   |               | PC5300     |      | ØD               | b    | r   | S    | g   | Ød <sub>2</sub> | t    | Hatve | f   |               |
|            |   |               | R          | L    |                  |      |     |      |     |                 |      |       |     |               |
| Ranurado   |    | NFTG 08075R/L | ●          |      | 8                | 0.75 | -   | 7.75 | 1.3 | 5.9             | 3.85 | -     | -   |               |
|            |   | 08085R/L      | ●          |      | 8                | 0.85 | -   | 7.75 | 1.3 | 5.9             | 3.85 | -     | -   |               |
|            |   | 08095R/L      | ●          |      | 8                | 0.95 | -   | 7.75 | 1.3 | 5.9             | 3.85 | -     | -   |               |
|            |   | 08121R/L      | ●          |      | 8                | 1.21 | -   | 7.75 | 1.3 | 5.9             | 3.85 | -     | -   |               |
|            |   | 08141R/L      | ●          |      | 8                | 1.41 | -   | 7.75 | 1.3 | 5.9             | 3.85 | -     | -   |               |
|            |   | 08152R/L      | ●          |      | 8                | 1.52 | -   | 7.75 | 1.3 | 5.9             | 3.85 | -     | -   |               |
|            |   | 08171R/L      | ●          |      | 8                | 1.71 | -   | 7.75 | 1.3 | 5.9             | 3.85 | -     | -   |               |
|            |   | 08202R/L      | ●          |      | 8                | 2.02 | -   | 7.75 | 1.3 | 5.9             | 3.85 | -     | -   |               |
|            |   | 11075R/L      | ●          |      | 11               | 0.75 | -   | 10.7 | 1.8 | 8.0             | 4.9  | -     | -   |               |
|            |   | 11085R/L      | ●          |      | 11               | 0.85 | -   | 10.7 | 1.8 | 8.0             | 4.9  | -     | -   |               |
|            |   | 11095R/L      | ●          |      | 11               | 0.95 | -   | 10.7 | 1.8 | 8.0             | 4.9  | -     | -   |               |
|            |   | 11121R/L      | ●          |      | 11               | 1.21 | -   | 10.7 | 2.6 | 8.0             | 4.9  | -     | -   |               |
|            |   | 11141R/L      | ●          |      | 11               | 1.41 | -   | 10.7 | 2.6 | 8.0             | 4.9  | -     | -   |               |
|            |   | 11152 R/L     | ●          |      | 11               | 1.52 | -   | 10.7 | 2.6 | 8.0             | 4.9  | -     | -   |               |
|            |   | 11171R/L      | ●          |      | 11               | 1.71 | -   | 10.7 | 2.6 | 8.0             | 4.9  | -     | -   |               |
|            |   | 11202R/L      | ●          |      | 11               | 2.02 | -   | 10.7 | 2.6 | 8.0             | 4.9  | -     | -   |               |
|            |   | 11202R/L-02   | ●          |      | 11               | 2.02 | 0.2 | 10.7 | 2.6 | 8.0             | 4.9  | -     | -   |               |
|            |   | 11252R/L      | ●          |      | 11               | 2.52 | -   | 10.7 | 2.6 | 8.0             | 4.9  | -     | -   |               |
|            |   | 11302R/L      | ●          |      | 11               | 3.02 | -   | 10.7 | 2.6 | 8.0             | 4.9  | -     | -   |               |
|            |   | 14075R/L      | ●          |      | 14               | 0.75 | -   | 13.5 | 1.8 | 9.0             | 5.85 | -     | -   |               |
|            |   | 14085R/L      | ●          |      | 14               | 0.85 | -   | 13.5 | 1.8 | 9.0             | 5.85 | -     | -   |               |
|            |   | 14095R/L      | ●          |      | 14               | 0.95 | -   | 13.5 | 1.8 | 9.0             | 5.85 | -     | -   |               |
|            |   | 14121R/L      | ●          |      | 14               | 1.21 | -   | 13.5 | 4.3 | 9.0             | 5.85 | -     | -   |               |
|            |   | 14141R/L      | ●          |      | 14               | 1.41 | -   | 13.5 | 4.3 | 9.0             | 5.85 | -     | -   |               |
|            |   | 14152R/L      | ●          |      | 14               | 1.52 | -   | 13.5 | 4.3 | 9.0             | 5.85 | -     | -   |               |
|            |   | 14171R/L      | ●          |      | 14               | 1.71 | -   | 13.5 | 4.3 | 9.0             | 5.85 | -     | -   |               |
|            |   | 14202R/L      | ●          |      | 14               | 2.02 | -   | 13.5 | 4.3 | 9.0             | 5.85 | -     | -   |               |
|            |   | 14252R/L      | ●          |      | 14               | 2.52 | -   | 13.5 | 4.3 | 9.0             | 5.85 | -     | -   |               |
|            |   | 14302R/L      | ●          |      | 14               | 3.02 | -   | 13.5 | 4.3 | 9.0             | 5.85 | -     | -   |               |
|            |   | 16075R/L      | ●          |      | 16               | 0.75 | -   | 15.7 | 1.8 | 11              | 5.8  | -     | -   |               |
|            |   | 16085R/L      | ●          |      | 16               | 0.85 | -   | 15.7 | 1.8 | 11              | 5.8  | -     | -   |               |
|            |   | 16095R/L      | ●          |      | 16               | 0.95 | -   | 15.7 | 1.8 | 11              | 5.8  | -     | -   |               |
|            |   | 16121R/L      | ●          |      | 16               | 1.21 | -   | 15.7 | 4.6 | 11              | 5.8  | -     | -   |               |
|            |   | 16141R/L      | ●          |      | 16               | 1.41 | -   | 15.7 | 4.6 | 11              | 5.8  | -     | -   |               |
|            |   | 16171R/L      | ●          |      | 16               | 1.71 | -   | 15.7 | 4.6 | 11              | 5.8  | -     | -   |               |
|            |   | 16202R/L      | ●          |      | 16               | 2.02 | -   | 15.7 | 4.6 | 11              | 5.8  | -     | -   |               |
| 16252R/L   | ●   |               | 16         | 2.52 | -                | 15.7 | 4.6 | 11   | 5.8 | -               | -    |       |     |               |
| 16302R/L   | ●   |               | 16         | 3.02 | -                | 15.7 | 4.6 | 11   | 5.8 | -               | -    |       |     |               |
| 16352R/L   | ●   |               | 16         | 3.52 | -                | 15.7 | 4.6 | 11   | 5.8 | -               | -    |       |     |               |
| 16402R/L   | ●   |               | 16         | 4.02 | -                | 15.7 | 4.6 | 11   | 5.8 | -               | -    |       |     |               |
| Roscado    |  | NFTT 0805MR/L | ●          |      | 8                | -    | -   | 7.75 | -   | 6               | 3.85 | 0.5   | 1.0 |               |
|            |   | 0810MR/L      | ●          |      | 8                | -    | -   | 7.75 | -   | 6               | 3.85 | 1.0   | 1.0 |               |
|            |   | 0815MR/L      | ●          |      | 8                | -    | -   | 7.75 | -   | 6               | 3.85 | 1.5   | 1.2 |               |
|            |   | 1110MR/L      | ●          |      | 11               | -    | -   | 10.7 | -   | 8               | 4.9  | 1.0   | 1.2 |               |
|            |   | 1115MR/L      | ●          |      | 11               | -    | -   | 10.7 | -   | 8               | 4.9  | 1.5   | 1.2 |               |
|            |   | 1120MR/L      | ●          |      | 11               | -    | -   | 10.7 | -   | 8               | 4.9  | 2.0   | 1.2 |               |
|            |   | 1125MR/L      | ●          |      | 11               | -    | -   | 10.7 | -   | 8               | 4.9  | 2.5   | 1.2 |               |
|            |   | 1410MR/L      | ●          |      | 14               | -    | -   | 13.5 | -   | 9               | 5.85 | 1.0   | 1.2 |               |
|            |   | 1415MR/L      | ●          |      | 14               | -    | -   | 13.5 | -   | 9               | 5.85 | 1.5   | 1.2 |               |
|            |   | 1420MR/L      | ●          |      | 14               | -    | -   | 13.5 | -   | 9               | 5.85 | 2.0   | 1.2 |               |
|            |   | 1425MR/L      | ●          |      | 14               | -    | -   | 13.5 | -   | 9               | 5.85 | 2.5   | 1.2 |               |
|            |   | 1610MR/L      | ●          |      | 16               | -    | -   | 15.7 | -   | 11              | 5.8  | 1.0   | 1.2 |               |
|            |   | 1615MR/L      | ●          |      | 16               | -    | -   | 15.7 | -   | 11              | 5.8  | 1.5   | 1.2 |               |
|            |   | 1620MR/L      | ●          |      | 16               | -    | -   | 15.7 | -   | 11              | 5.8  | 2.0   | 1.2 |               |
|            |   | 1625MR/L      | ●          |      | 16               | -    | -   | 15.7 | -   | 11              | 5.8  | 2.5   | 1.2 |               |
|            |   | 1630MR/L      | ●          |      | 16               | -    | -   | 15.7 | -   | 11              | 5.8  | 3.0   | 1.5 |               |
| 1635MR/L   | ●   |               | 16         | -    | -                | 15.7 | -   | 11   | 5.8 | 3.5             | 1.6  |       |     |               |
| 1640MR/L   | ●   |               | 16         | -    | -                | 15.7 | -   | 11   | 5.8 | 4.0             | 1.8  |       |     |               |



● : En Almacen



**Insertos**

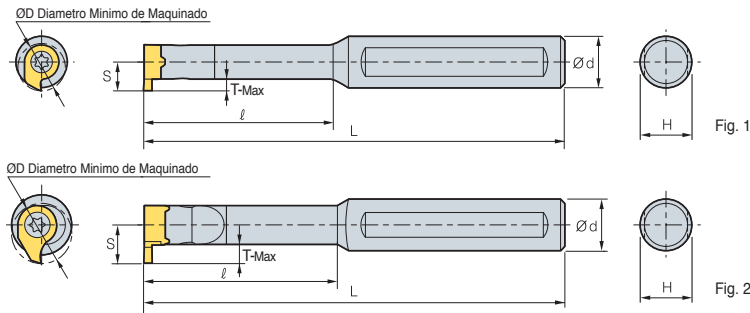
| Aplicación | Imagen | Designación   | Recubierto |   | Dimensiones (mm) |      |      |      |     |                 |      | Configuración |
|------------|--------|---------------|------------|---|------------------|------|------|------|-----|-----------------|------|---------------|
|            |        |               | PC5300     |   | D                | b    | r    | S    | g   | Ød <sub>2</sub> | t    |               |
|            |        |               | R          | L |                  |      |      |      |     |                 |      |               |
| Perfilado  |        | NFTF 08082R/L | ●          |   | 8                | 0.82 | 0.41 | 7.75 | 1.3 | 5.9             | 3.85 |               |
|            |        | 08122R/L      | ●          |   | 8                | 1.22 | 0.61 | 7.75 | 1.3 | 5.9             | 3.85 |               |
|            |        | 08182R/L      | ●          |   | 8                | 1.82 | 0.91 | 7.75 | 1.3 | 5.9             | 3.85 |               |
|            |        | 11082R/L      | ●          |   | 11               | 0.82 | 0.41 | 10.7 | 2.6 | 8               | 4.9  |               |
|            |        | 11122R/L      | ●          |   | 11               | 1.22 | 0.61 | 10.7 | 2.6 | 8               | 4.9  |               |
|            |        | 11182R/L      | ●          |   | 11               | 1.82 | 0.91 | 10.7 | 2.6 | 8               | 4.9  |               |
|            |        | 11202R/L      | ●          |   | 11               | 2.02 | 1.01 | 10.7 | 2.6 | 8               | 4.9  |               |
|            |        | 11302R/L      | ●          |   | 11               | 3.02 | 1.51 | 10.7 | 2.6 | 8               | 4.9  |               |
|            |        | 14122R/L      | ●          |   | 14               | 1.22 | 0.61 | 13.5 | 4.3 | 9               | 5.85 |               |
|            |        | 14182R/L      | ●          |   | 14               | 1.82 | 0.91 | 13.5 | 4.3 | 9               | 5.85 |               |
|            |        | 14202R/L      | ●          |   | 14               | 2.02 | 1.01 | 13.5 | 4.3 | 9               | 5.85 |               |
|            |        | 14222R/L      | ●          |   | 14               | 2.22 | 1.11 | 13.5 | 4.3 | 9               | 5.85 |               |
|            |        | 14302R/L      | ●          |   | 14               | 3.02 | 1.51 | 13.5 | 4.3 | 9               | 5.85 |               |
|            |        | 16182R/L      | ●          |   | 16               | 1.82 | 0.91 | 15.7 | 4.6 | 11              | 5.8  |               |
|            |        | 16222R/L      | ●          |   | 16               | 2.22 | 1.11 | 15.7 | 4.6 | 11              | 5.8  |               |
|            |        | 16302R/L      | ●          |   | 16               | 3.02 | 1.51 | 15.7 | 4.6 | 11              | 5.8  |               |
|            |        | 16402R/L      | ●          |   | 16               | 4.02 | 2.01 | 15.7 | 4.6 | 11              | 5.8  |               |

● : En Almacén

**NFTIH**



NFTF  
NFTT  
NFTG



• for NFTIH14~  
• Inserto tipo R

| Designación  | ØD | Ød | L   | ℓ  | T-Max | H  | S    | Insertos       |               | Tornillo  | Llave | Fig. |
|--------------|----|----|-----|----|-------|----|------|----------------|---------------|-----------|-------|------|
|              |    |    |     |    |       |    |      | NFTG: Ranurado | NFTT: Roscado |           |       |      |
| NFTIH 08206C | 8  | 6  | 65  | -  | 1.0   | 4  | 4.8  |                |               | PTKA02508 | TW08P | 1    |
| 08212C       | 8  | 12 | 70  | 16 | 1.0   | 10 | 4.8  | NFTG08□□□R/L   |               |           |       |      |
| 08312C       | 8  | 12 | 80  | 24 | 1.0   | 10 | 4.8  | NFTT08□□□R/L   |               |           |       |      |
| 08312S       | 8  | 12 | 80  | 24 | 1.0   | 10 | 4.8  | NFTF08□□□R/L   |               |           |       |      |
| 08412C       | 8  | 12 | 90  | 32 | 1.0   | 10 | 4.8  |                |               |           |       |      |
| 08512C       | 8  | 12 | 100 | 40 | 1.0   | 10 | 4.8  |                |               |           |       |      |
| NFTIH 11208C | 11 | 8  | 80  | -  | 2.3   | 7  | 6.7  |                |               | PTKA03510 | TW15P | 2    |
| 11212C       | 11 | 12 | 75  | 22 | 2.3   | 11 | 6.7  | NFTG11□□□R/L   |               |           |       |      |
| 11312C       | 11 | 12 | 95  | 33 | 2.3   | 11 | 6.7  | NFTT11□□□R/L   |               |           |       |      |
| 11312S       | 11 | 12 | 95  | 33 | 2.3   | 11 | 6.7  | NFTF11□□□R/L   |               |           |       |      |
| 11412C       | 11 | 12 | 110 | 44 | 2.3   | 11 | 6.7  |                |               |           |       |      |
| 11512C       | 11 | 12 | 120 | 55 | 2.3   | 11 | 6.7  |                |               |           |       |      |
| NFTIH 14012C | 14 | 12 | 75  | 20 | 4.0   | 11 | 9.0  |                |               | PTKA0412  | TW15P | 2    |
| 14016C       | 14 | 16 | 75  | 20 | 4.0   | 15 | 9.0  | NFTG14□□□R/L   |               |           |       |      |
| 14112C       | 14 | 12 | 100 | 34 | 4.0   | 11 | 9.0  | NFTT14□□□R/L   |               |           |       |      |
| 14116C       | 14 | 16 | 100 | 34 | 4.0   | 15 | 9.0  | NFTF14□□□R/L   |               |           |       |      |
| 14212C       | 14 | 12 | 110 | 45 | 4.0   | 11 | 9.0  |                |               |           |       |      |
| 14216C       | 14 | 16 | 110 | 45 | 4.0   | 15 | 9.0  |                |               |           |       |      |
| NFTIH 16312C | 16 | 12 | 130 | 64 | 4.0   | 11 | 9.0  |                |               | PTKA0512  | TW20P | 2    |
| 16312S       | 16 | 12 | 130 | 48 | 4.3   | 11 | 10.2 | NFTG16□□□R/L   |               |           |       |      |
| 16412C       | 16 | 12 | 130 | 64 | 4.3   | 11 | 10.2 | NFTT16□□□R/L   |               |           |       |      |
| 16512C       | 16 | 12 | 150 | 80 | 4.3   | 11 | 10.2 | NFTF16□□□R/L   |               |           |       |      |
| 16316C       | 16 | 16 | 130 | 48 | 4.3   | 15 | 10.2 |                |               |           |       |      |
| 16416C       | 16 | 16 | 130 | 64 | 4.3   | 15 | 10.2 |                |               |           |       |      |
| 16516C       | 16 | 16 | 150 | 80 | 4.3   | 15 | 10.2 |                |               |           |       |      |

Insertos Applicable C66 ~ C67



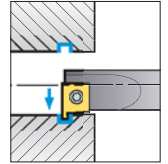
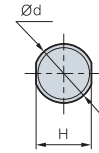
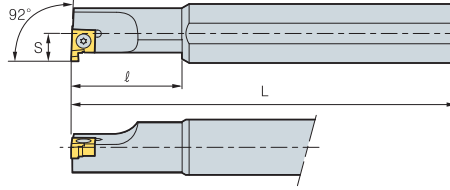
# C Herramientas para Ranurado

## IGH Para Ranurado Interno



IG

ØD Diámetro Mínimo de Maquinado



• Inserto tipo R  
(mm)

| Designación | ØD     | Ød | H  | L  | l   | S  | Insertos  | Tornillo  | Llave |
|-------------|--------|----|----|----|-----|----|-----------|-----------|-------|
|             |        |    |    |    |     |    |           |           |       |
| IGH         | 214R/L | 14 | 16 | 15 | 150 | 25 | IG125~280 | FTKA02565 | TW07P |
|             | 216R/L | 16 | 16 | 15 | 150 | 30 |           |           |       |
|             | 220R/L | 20 | 20 | 18 | 200 | 40 |           |           |       |

Insertos Aplicable C68

### Insertos

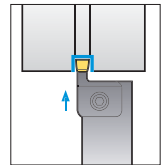
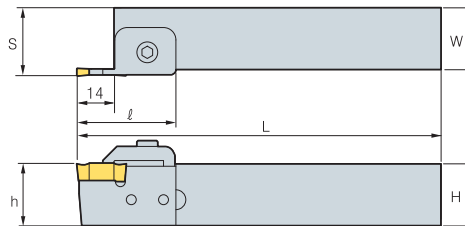
| Aplicación       | Imagen | Designación | Recubierto |        |        | Sin Recubrimiento |     |       | Dimensiones (mm) |      |      |      |                | Configuración |     |
|------------------|--------|-------------|------------|--------|--------|-------------------|-----|-------|------------------|------|------|------|----------------|---------------|-----|
|                  |        |             | NC3215     | NC3120 | NC3225 | H01               | G10 | ST30A | b                | g    | t    | d    | d <sub>1</sub> |               |     |
| Ranurado Interno |        | IG          | 125        |        |        |                   |     | ●     | 1.25             | 1.5  | 3.18 | 6.35 | 2.8            |               |     |
|                  |        |             | 145        |        |        |                   |     | ●     | 1.45             | 1.5  | 3.18 | 6.35 | 2.8            |               |     |
|                  |        |             | 175        |        |        |                   |     |       | ●                | 1.75 | 1.5  | 3.18 | 6.35           |               | 2.8 |
|                  |        |             | 200        |        |        |                   |     |       | ●                | 2.0  | 2.3  | 3.18 | 6.35           |               | 2.8 |
|                  |        |             | 230        |        |        |                   |     |       | ●                | 2.3  | 2.3  | 3.18 | 6.35           |               | 2.8 |
|                  |        |             | 280        |        |        |                   |     |       | ●                | 2.8  | 2.3  | 3.18 | 6.35           |               | 2.8 |

● : En Almacen

## DBH Para Ranurado Amplio y profundo



DB DC



• Inserto tipo R  
(mm)

| Designación | H = (h) | W  | L  | l   | S  |      | Insertos |       | Brida | Tornillo Brida | Torn. Cartucho | Cartucho | Llave |             |
|-------------|---------|----|----|-----|----|------|----------|-------|-------|----------------|----------------|----------|-------|-------------|
|             |         |    |    |     | *  | **   | *        | **    |       |                |                |          |       |             |
| DBH         | 320R/L  | 20 | 20 | 150 | 40 | 22.3 | 22.8     | DB300 | DB400 | CGH5R1         | MHA0512        | MHB0410  | LD34  | HW30L HW40L |
|             | 325R/L  | 25 | 25 | 150 | 40 | 27.3 | 27.8     | DC300 | DC400 |                |                |          |       |             |
|             | 520R/L  | 20 | 20 | 150 | 40 | 23.8 | 24.3     | DB500 | DB600 |                |                |          |       |             |
|             | 525R/L  | 25 | 25 | 150 | 40 | 28.8 | 29.3     | DC500 |       |                |                |          |       |             |
|             | 720R/L  | 20 | 20 | 150 | 40 | 25.8 | 26.3     |       |       |                |                |          |       |             |
|             | 725R/L  | 25 | 25 | 150 | 40 | 30.8 | 31.3     | DB700 | DB800 |                |                |          |       |             |

Insertos Aplicable C68

### Insertos

| Aplicación | Imagen | Designación | Cermet | Recubierto |        |        | Sin Recubrimiento |     | Dimensiones (mm) |     |     |      | Configuración |  |
|------------|--------|-------------|--------|------------|--------|--------|-------------------|-----|------------------|-----|-----|------|---------------|--|
|            |        |             | CN2000 | NC3215     | NC3120 | NC3225 | H01               | G10 | b                | l   | t   | r    |               |  |
| Ranurado   |        | DB          | 300    |            |        |        |                   |     | 3.0              | 20  | 7.5 | 0.2  |               |  |
|            |        |             | 400    |            |        |        |                   |     | 4.0              | 20  | 7.5 | 0.2  |               |  |
|            |        |             | 500    |            |        |        |                   |     | 5.0              | 20  | 7.5 | 0.2  |               |  |
|            |        |             | 600    |            |        |        |                   |     | 6.0              | 20  | 7.5 | 0.2  |               |  |
|            |        |             | 700    |            |        |        |                   |     | 7.0              | 20  | 7.5 | 0.2  |               |  |
|            |        | DC          | 300    |            |        |        |                   |     |                  | 3.0 | 20  | 7.5  | 0.2           |  |
|            |        |             | 400    |            |        |        |                   |     | 4.0              | 20  | 7.5 | 0.25 |               |  |
|            |        |             | 500    |            |        |        |                   |     | 5.0              | 20  | 7.5 | 0.3  |               |  |

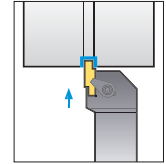
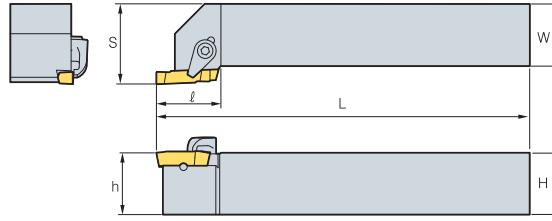
● : En Almacen



## GFT Ranurado Externo



GW BF



• Inserto tipo R

(mm)

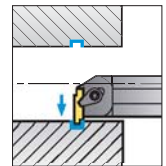
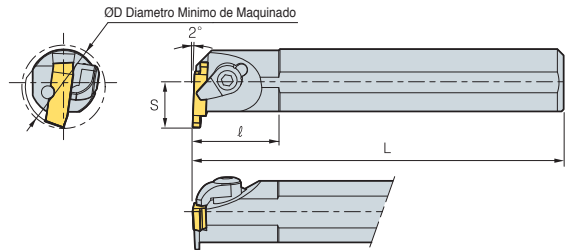
| Designación | H = (h) | W  | L  | l   | S    | Insertos | Brida            | Tornillo | Perno   | Llave  |       |
|-------------|---------|----|----|-----|------|----------|------------------|----------|---------|--------|-------|
| GFT         | 320R/L  | 20 | 20 | 125 | 23.5 | 25       | GW110~300R/L,BF3 | CS5R1    | DHA0514 | PN0310 | HW25L |
|             | 325R/L  | 25 | 25 | 150 | 23.5 | 32       |                  |          |         |        |       |
|             | 525R/L  | 25 | 25 | 150 | 25.5 | 32       | GW315~500R/L,BF5 | CS6R1    | DHA0617 | PN0310 | HW30L |
|             | 825R/L  | 25 | 25 | 150 | 28.5 | 32       | GW600~800R/L,BF8 | CS8R1    | DHA0820 | PN0314 | HW40L |

➔ Insertos Aplicable C69 • Use inserto de mano derecha para porta izquierdo

## GFIP Ranurado Interno



BF GW



• Inserto tipo R

(mm)

| Designación | ØD     | Ød | H  | L   | l   | S  | Insertos         | Brida            | Candado C | Tornillo | Perno   | Llave  |       |
|-------------|--------|----|----|-----|-----|----|------------------|------------------|-----------|----------|---------|--------|-------|
| GFIP        | 316R/L | 20 | 16 | 15  | 150 | 17 | GW110~300R/L,BF3 | CH5R2            | CR04      | CHX0513  | PN0310  | HW25L  |       |
|             | 320R/L | 26 | 20 | 18  | 150 | 22 |                  |                  |           |          |         |        |       |
|             | 325R/L | 32 | 25 | 23  | 200 | 22 |                  |                  |           |          |         |        |       |
|             | 340R/L | 50 | 40 | 37  | 300 | 32 | 27               | GW315~500R/L,BF5 | CH6R2     | CR05     | CHX0616 | PN0310 | HW30L |
|             | 525R/L | 32 | 25 | 23  | 200 | 22 | 17               |                  |           |          |         |        |       |
|             | 540R/L | 50 | 40 | 37  | 300 | 32 | 27               |                  |           |          |         |        |       |
| 840R/L      | 50     | 40 | 37 | 300 | 32  | 27 | GW600~800R/L,BF8 | CS8R1            | -         | DHA0820  | PN0314  | HW40L  |       |

➔ Insertos Aplicable C69 • Use inserto de mano derecha para porta izquierdo

## ➔ Insertos

| Aplicación       | Imagen | Designación | Sin Recubrimiento |   | Dimensiones (mm) |      |     |     |      |      | Configuración |  |    |  |  |  |     |      |      |   |
|------------------|--------|-------------|-------------------|---|------------------|------|-----|-----|------|------|---------------|--|----|--|--|--|-----|------|------|---|
|                  |        |             | ST30A             |   | b                | g    | W   | l   | t    | r    |               |  |    |  |  |  |     |      |      |   |
| Ranurado Interno |        | BF          | -3                | ● |                  |      |     | 3.1 | 16.4 | 5.26 | -             |  |    |  |  |  |     |      |      |   |
|                  |        |             |                   |   |                  |      |     |     |      |      |               |  | -5 |  |  |  | 5.1 | 22.4 | 6.26 | - |
|                  |        |             |                   |   |                  |      |     |     |      |      |               |  | -8 |  |  |  | 8.1 | 27.4 | 7.26 | - |
| Ranurado         |        | GW          | 110R/L            | ● | ●                | 1.1  | 2.1 | 3.1 | 16   | 5.0  | 0.2           |  |    |  |  |  |     |      |      |   |
|                  |        |             | 130R/L            | ● | ●                | 1.3  | 2.3 | 3.1 | 16   | 5.0  | 0.2           |  |    |  |  |  |     |      |      |   |
|                  |        |             | 160R/L            | ● | ●                | 1.6  | 2.6 | 3.1 | 16   | 5.0  | 0.2           |  |    |  |  |  |     |      |      |   |
|                  |        |             | 185R/L            | ● | ●                | 1.85 | 2.9 | 3.1 | 16   | 5.0  | 0.2           |  |    |  |  |  |     |      |      |   |
|                  |        |             | 215R/L            | ● | ●                | 2.15 | 3.2 | 3.1 | 16   | 5.0  | 0.2           |  |    |  |  |  |     |      |      |   |
|                  |        |             | 265R/L            | ● | ●                | 2.65 | 3.7 | 3.1 | 16   | 5.0  | 0.2           |  |    |  |  |  |     |      |      |   |
|                  |        |             | 300R/L            | ● | ●                | 3.0  | 4.0 | 3.1 | 16   | 5.0  | 0.2           |  |    |  |  |  |     |      |      |   |
|                  |        |             | 315R/L            | ● | ●                | 3.15 | 4.2 | 5.1 | 22   | 6.0  | 0.3           |  |    |  |  |  |     |      |      |   |
|                  |        |             | 415R/L            |   | ●                | 4.15 | 5.2 | 5.1 | 22   | 6.0  | 0.3           |  |    |  |  |  |     |      |      |   |
|                  |        |             | 500R/L            |   |                  | 5.0  | 6.0 | 5.1 | 22   | 6.0  | 0.3           |  |    |  |  |  |     |      |      |   |
|                  |        |             | 600R/L            |   |                  | 6.0  | 7.0 | 8.1 | 27   | 7.0  | 0.3           |  |    |  |  |  |     |      |      |   |
|                  |        |             | 800R/L            |   |                  | 8.0  | 9.0 | 8.1 | 27   | 7.0  | 0.3           |  |    |  |  |  |     |      |      |   |

●: En Almacen

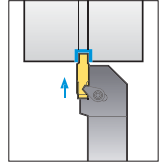
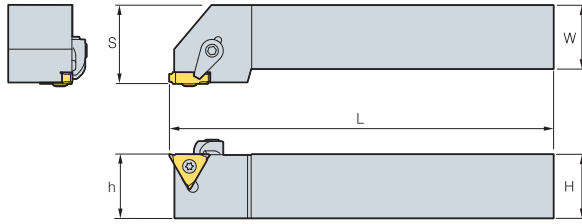


# C Herramientas para Ranurado

**GH** Para ranurado de ranuras de sellado



GO GS



• Inserto tipo R

(mm)

| Designación | H = (h)   | W  | L  | S   | Insertos | Brida       | Tornillo Brida | Tornillo | Llave     |             |
|-------------|-----------|----|----|-----|----------|-------------|----------------|----------|-----------|-------------|
| GH          | 2020R/L-3 | 20 | 20 | 125 | 22       | GS125~280   | CS6R1          | DHA0617  | PTMA03508 | TW09P-HW30L |
|             | 2525R/L-3 | 25 | 25 | 150 | 27       | GO250       |                |          |           |             |
|             | 2020R/L-4 | 20 | 20 | 125 | 21       | GS330 / 430 |                |          |           |             |
|             | 2525R/L-4 | 25 | 25 | 150 | 26       | GO320 / 410 |                |          |           |             |

## Insertos

Insertos Aplicable C70

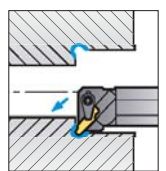
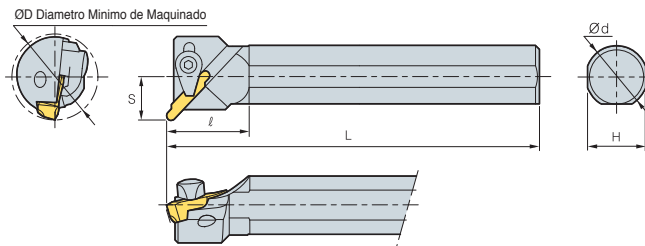
| Aplicación                             | Imagen | Designación | Recubierto |        |  | Sin Recubrimiento |      |       | Dimensiones (mm) |     |      |       |   | Configuración |
|--|--------|-------------|------------|--------|--|-------------------|------|-------|------------------|-----|------|-------|---|---------------|
|  |        |             | NC3120     | NC3225 |  | H01               | ST20 | ST30A | b                | g   | W    | r     | d |               |
| Ranurado (Estrecho O-ring - Snap-ring) |        | GO 250      |            |        |  |                   |      | 2.5   | 1.5              | 3.3 | 0.35 | 9.525 |   |               |
|  |        | GO 320      |            |        |  |                   |      | 3.2   | 2.0              | 3.8 | 0.35 | 9.525 |   |               |
|  |        | GO 410      |            |        |  |                   |      | 4.1   | 2.5              | 4.5 | 0.65 | 9.525 |   |               |
|  |        | GS 125      |            |        |  |                   |      | 1.23  | 1.5              | 2.5 | 0.2  | 9.525 |   |               |
|  |        | GS 145      |            |        |  |                   | ●    | 1.43  | 1.5              | 2.5 | 0.2  | 9.525 |   |               |
|  |        | GS 175      |            |        |  |                   | ●    | 1.73  | 2.0              | 2.5 | 0.2  | 9.525 |   |               |
|  |        | GS 185      |            |        |  |                   | ●    | 1.83  | 2.0              | 2.5 | 0.2  | 9.525 |   |               |
|  |        | GS 200      |            |        |  |                   | ●    | 2.03  | 2.5              | 2.5 | 0.2  | 9.525 |   |               |
|  |        | GS 230      |            |        |  |                   | ●    | 2.28  | 3.5              | 2.8 | 0.2  | 9.525 |   |               |
|  |        | GS 280      |            |        |  |                   | ●    | 2.78  | 3.5              | 3.3 | 0.3  | 9.525 |   |               |
|  |        | GS 330      |            |        |  |                   | ●    | 3.28  | 4.0              | 3.8 | 0.3  | 9.525 |   |               |
|  |        | GS 430      |            |        |  |                   | ●    | 4.28  | 4.0              | 4.5 | 0.4  | 9.525 |   |               |

● : En Almacen

**GFIK** Para Relevado



GR



• Inserto tipo R

(mm)

| Designación | ØD     | Ød | H  | L  | l   | S    | Insertos | Brida | Candado C | Tornillo | Perno   | Llave   |        |       |
|-------------|--------|----|----|----|-----|------|----------|-------|-----------|----------|---------|---------|--------|-------|
| GFIK        | 316R/L | 22 | 16 | 15 | 150 | 21.5 | 11       | GR3□□ | CH5R2     | CR04     | CHX0513 | PN0310  | HW25L  |       |
|             | 325R/L | 32 | 25 | 23 | 200 | 21.5 | 17       |       | CS5R1     | -        | DHA0514 | PN0310  | HW25L  |       |
|             | 340R/L | 50 | 40 | 37 | 300 | 35.4 | 27       | GR5□□ | CS6R1     | -        | DHA0617 | PN0314  | HW30L  |       |
|             | 525R/L | 32 | 25 | 23 | 200 | 27.5 | 17       |       | CS6R1     | -        | DHA0617 | PN0314  | HW30L  |       |
|             | 540R/L | 50 | 40 | 37 | 300 | 39.5 | 27       |       | GR8□□     | CS8R1    | -       | DHA0820 | PN0314 | HW40L |
|             | 840R/L | 50 | 40 | 37 | 300 | 41.8 | 27       |       |           | CS8R1    | -       | DHA0820 | PN0314 | HW40L |

## Insertos

Insertos Aplicable C70

| Aplicación | Imagen | Designación | Recubierto |        |  | Sin Recubrimiento |      |       | Dimensiones (mm) |     |      |     |     |   | Configuración |
|------------|--------|-------------|------------|--------|--|-------------------|------|-------|------------------|-----|------|-----|-----|---|---------------|
|            |        |             | NC3120     | NC3225 |  | H01               | ST20 | ST30A | b                | g   | W    | l   | t   | r |               |
| Relieve    |        | GR 310R     |            |        |  |                   |      | 2.0   | 2.0              | 3.1 | 15.9 | 5.0 | 1.0 |   |               |
|            |        | GR 315R     |            |        |  |                   |      | 3.0   | 2.9              | 3.1 | 15.9 | 5.0 | 1.5 |   |               |
|            |        | GR 520R     |            |        |  |                   |      | 4.0   | 4.0              | 5.1 | 21.9 | 6.0 | 2.0 |   |               |
|            |        | GR 525R     |            |        |  |                   |      | 5.0   | 5.0              | 5.1 | 21.8 | 6.0 | 2.5 |   |               |
|            |        | GR 830R     |            |        |  |                   |      | 6.0   | 6.0              | 8.1 | 26.8 | 7.0 | 3.0 |   |               |
|            |        | GR 840R     |            |        |  |                   |      | 8.0   | 8.0              | 8.1 | 26.7 | 7.0 | 4.0 |   |               |

● : En Almacen



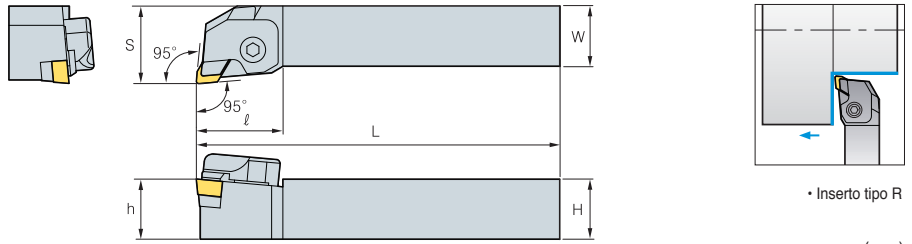
C

Çok Amaçlı Takımlar

## EH Inserto Reafiliable



ESB



• Inserto tipo R

(mm)

| Designación | H = (h) | W  | L   | l  | S  | Insertos | Brida  | Tornillo Brida | Rompeviruta | Placa  | Tornillo Placa | Llave          |
|-------------|---------|----|-----|----|----|----------|--------|----------------|-------------|--------|----------------|----------------|
| EH 620R     | 20      | 20 | 125 | 36 | 27 | ESB34    | CTH6R2 | BHA0616        | CB20        | SES33C | SHX0310        | HW50L<br>HW20L |
| EH 625R     | 25      | 25 | 150 | 36 | 32 |          |        |                |             |        |                |                |

➔ Insertos Aplicable C71

## Insertos

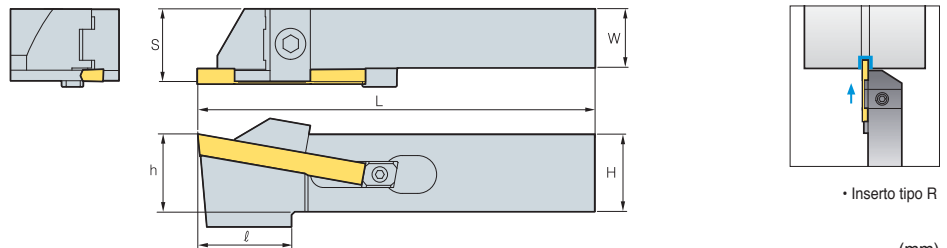
| Aplicación        | Imagen | Designación | Sin Recubrimiento |      | Dimensiones (mm) |      |      | Configuración |
|-------------------|--------|-------------|-------------------|------|------------------|------|------|---------------|
|                   |        |             | ST10              | ST20 | W                | l    | t    |               |
| Maquinado general |        | ESB 34      |                   |      | 9.525            | 30.0 | 6.35 |               |

● : En Almacen

## PH Para Tronzado Profundo



POB



• Inserto tipo R

(mm)

| Designación | H  | W  | L   | l  | S     | h  | Max. (Ø) | Insertos | Brida   | Tornillo Brida | Cartucho | Tornillo Stoppe | Llave       |
|-------------|----|----|-----|----|-------|----|----------|----------|---------|----------------|----------|-----------------|-------------|
| PH 320R/L   | 19 | 19 | 150 | 34 | 22.25 | 19 | 30       | POB300   | CGH6R1  | BHA0616        | STP5     | KHD0510         | HW25L-HW50L |
| PH 325R/L   | 25 | 19 | 150 | 34 | 22.25 | 25 | 40       |          |         |                |          |                 |             |
| PH 420R/L   | 19 | 19 | 150 | 34 | 23.5  | 19 | 30       | POB400   | CGH6R2  | BHA0616        | STP5     | KHD0510         | HW25L-HW50L |
| PH 425R/L   | 25 | 19 | 150 | 34 | 23.5  | 25 | 40       |          |         |                |          |                 |             |
| PH 520R/L   | 19 | 19 | 150 | 34 | 24.4  | 19 | 50       | POB500   | CTH 6R3 | BHA0616        | STP5     | KHD0510         | HW25L-HW50L |
| PH 525R/L   | 25 | 19 | 150 | 34 | 24.4  | 25 | 50       |          |         |                |          |                 |             |

➔ Insertos Aplicable C71

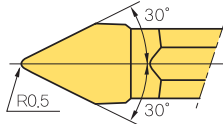
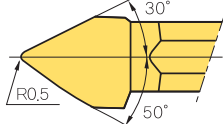
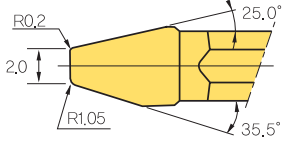
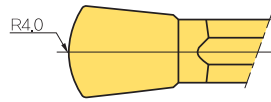
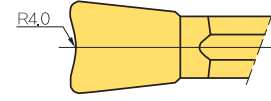
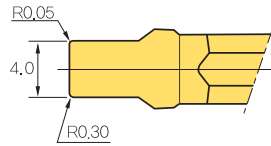
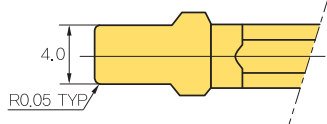
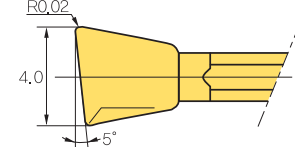
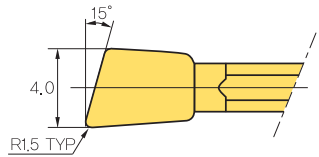
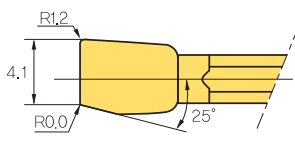
## Insertos

| Aplicación         | Imagen | Designación           | Sin Recubrimiento |             | Dimensiones (mm)  |                |                   | Configuración |
|--------------------|--------|-----------------------|-------------------|-------------|-------------------|----------------|-------------------|---------------|
|                    |        |                       | ST10              | ST20        | W                 | l              | t                 |               |
| Ranurado, Tronzado |        | POB 300<br>400<br>500 |                   | ●<br>●<br>● | 3.0<br>4.0<br>5.0 | 55<br>55<br>55 | 6.0<br>7.0<br>8.0 |               |

● : En Almacen



# C Formulario de pedido especial para MGT

| Designación  | Configuración  |
|--|--|
| <p><b>M F G N 4 - 0.5R - 30D</b></p> <p>① ② ③ ④ ⑤ ⑥ ⑦</p> <p>① Multi                      ② Formado                      ③ Esmerilado<br/>           ④ Dirección de Ataque      ⑤ Agarre: 4 mm              ⑥ Radio de Punta: 0.5<br/>           ⑦ Ángulo: 30°</p>   |  <p>Ex) MFGN4-0.5R-30D</p>              |
| <p><b>MFGN4 - 0.5R - L 50 D - R 30D</b></p> <p>① ② ③ ④ ⑤ ⑥</p> <p>① Referencia No. 1              ② Radio Punta: 0.5              ③ Izquierdo<br/>           ④ Ángulo: 50°                  ⑤ Derecho                      ⑥ Grado &gt; 30°</p>  |  <p>Ex) MFGN4-0.5R-L50D-R30D</p>        |
| <p><b>MFGN4 - 2.0 - R 020 250 - L 105 335</b></p> <p>① ② ③ ④ ⑤ ⑥ ⑦ ⑧</p> <p>① Referencia No. 1              ② Grosor del Filo: 2.0 mm              ③ Derecho<br/>           ④ Radio Punta: 0.20              ⑤ Grado: 25.0°                  ⑥ Izquierdo<br/>           ⑦ Radio Punta: 1.05              ⑧ Ángulo: 35.5°</p>   |  <p>Ex) MFGN4-2.0-R020250-L105335</p>   |
| <p><b>MFGN5 - 4.0R F</b></p> <p>① ② ③</p> <p>① Referencia to No. 1              ② Radio Punta: 4.0              ③ Frente (concavo)</p>   |  <p>Ex) MFGN5-4.0RF</p>                 |
| <p><b>MFGN5 - 4.0R B</b></p> <p>① ② ③</p> <p>① Referencia No. 1              ② Radio Punta: 4.0              ③ Espalda</p>   |  <p>Ex) MFGN5-4.0RB</p>               |
| <p><b>MFGN5 - 4.0 - R 005 - L 030</b></p> <p>① ② ③ ④ ⑤ ⑥</p> <p>① Referencia No. 1              ② Grosor del Filo: 4.0 mm              ③ Derecho<br/>           ④ Radio Punta: 0.05              ⑤ Izquierdo                      ⑥ Radio Punta: 0.30</p>  |  <p>Ex) MFGN5-4.0-R005-L030</p>       |
| <p><b>MFGN5 - 4.0 - 0.05 R</b></p> <p>① ② ③</p> <p>① Referencia No. 1<br/>           ② Grosor del Filo: 4.0 mm<br/>           ③ Radio Punta: 0.05</p>  |  <p>Ex) MFGN5-4.0-0.05R</p>           |
| <p><b>MFG R 5 - 4.0 - 5D - R 002 - L 115</b></p> <p>① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨</p> <p>① Referencia No. 1              ② Derecho                      ③ Brida: 5 mm<br/>           ④ Grosor del Filo: 4.0 mm              ⑤ Ang. de Ataque: 5°              ⑥ Derecho<br/>           ⑦ Radio Punta: 0.02              ⑧ Izquierdo                      ⑨ Radio Punta: 1.15</p> |  <p>Ex) MFGR5-4.0-5D-R002-L115</p>    |
| <p><b>MFG L 5 - 4.0 - 15D - 1.5R</b></p> <p>① ② ③ ④ ⑤ ⑥</p> <p>① Referencia No. 1              ② Izquierdo                      ③ Brida: 5 mm<br/>           ④ Grosor del Filo: 4.0 mm              ⑤ Ang. Ataque: 15°              ⑥ Radio Punta Izq: 1.5</p>   |  <p>Ex) MFG L5-4.0-15D-1.5R</p>       |
| <p><b>MFG R 5 - 4.10 - 25D - R012 - L000</b></p> <p>① ② ③ ④ ⑤ ⑥ ⑦</p> <p>① Referencia No. 1              ② Derecho                      ③ Brida: 5 mm<br/>           ④ Grosor del Filo: 4.1 mm              ⑤ Grado: 25°                      ⑥ Radio Punta Izq: 1.2<br/>           ⑦ Radio Punta Izq: 0.0</p>   |  <p>Ex) MFG R5-4.10-25D-R012-L000</p> |



## Sistema de códigos

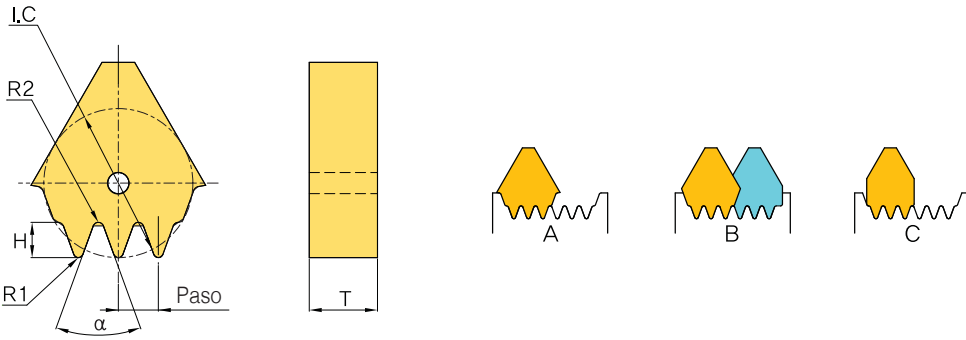
KP
27
064
-
R0.425
N3

**KORLOY PULLEY**
**ØD**
**W**
**R1**
**N.º de labios**

I.C
T
R
Z
▶ Tipos especiales disponibles bajo pedido

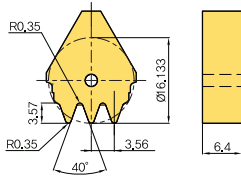
Ø 15.875
6.4
0.425
3

### Placa para mecanizado de poleas



#### Especificaciones

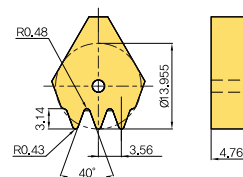
#### Denominación estándar



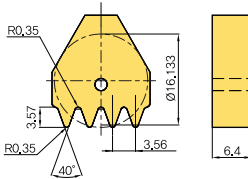
**KP27064-R0.35-N3**  
(Antigua designación:  
**DF356-3B**)

#### Especificaciones

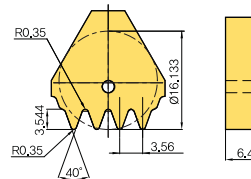
#### Denominación estándar



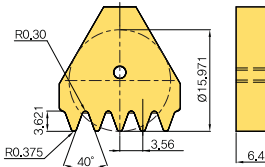
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(Antigua designación:  
**DF356-3SR**)



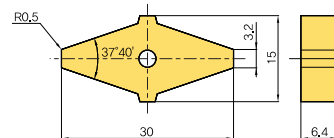
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(Antigua designación:  
**DF356-4B**)



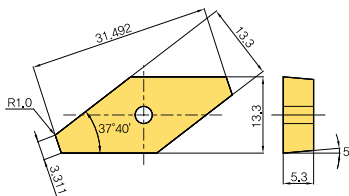
**KP27064-R0.35-N4-A**  
(Antigua designación:  
**DF356-4X**)



**KP27064-R0.375-N5**  
(Antigua designación:  
**DF356-5B**)



**UF320**



**VF13M522**

# D

## Roscado

Las herramientas Korloy de roscado están disponibles para el maquinado de diferentes tipos de roscas en varios pasos de alta calidad





## Sistema de Codificación Roscado

- D02 Sistema de Codificación de Insertos de Roscado
- D02 Sistema de Codificación Externo/Interno

## Información Técnica para Roscado

- D03 Información Técnica para Roscado
- D09 Insertos de Roscado con Rompeviruta

## Inserto para Roscado

- D10 Perfil parcial de 60°
- D11 Perfil parcial de 55°
- D12 ISO Métrico
- D16 American UN
- D18 With Worth
- D22 Rosca BSPT
- D22 Rosca NPT
- D23 Rosca NPT - Dry seal
- D23 DIN405 Redondo
- D24 DIN103 Trapezoidal
- D24 American ACME
- D25 Stub ACME
- D26 UNJ (Constante Unificación Roscado)
- D28 American Buttress (ABUT)
- D28 British Buttress (BBUT)
- D29 Métrico Buttress (SAGE)/API
- D30 API Buttress Casing (BUT)
- D30 API Round Casing & Tubing (APIRD)
- D30 Extreme Line Casing (EL)

## PortaInsertos para Roscado

- D31 Porta Externo
- D32 Porta Interno
- D33 Porta Verticales

## Insertos de Roscado por Fresado

- D34 Información Técnica de Roscado por Fresado
- D44 Insertos de Roscado por Fresado
- D49 Porta Herramientas de Roscado por Fresado

## Fresas Integrales de Roscado por Fresado

- D50 Información Técnica de Fresas Integrales de Roscado por Fresado
- D51 Fresas Integrales de Roscado por Fresado

## MACHOS

- D61 Información Técnica Sobre Machos
- D65 Macho Metal Duro
- D69 Macho HSS



## Sistema Codificación Portainserto Roscado

**E R H 10 (N) - 11 (C)**

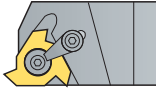
1      2      3      4      5      6      7

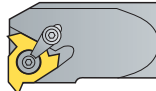
Tipo      Mano del Inserto      Nombre      Altura del Zanco      Placa      Tamaño Inserto (mm)      Sistema Sujecion

**1 Tipo**  
E R H 10 (N) - 11 (C)

E: Para externo I: Para Interno

**4 Altura del Zanco**  
E R H 10 (N) - 11 (C)

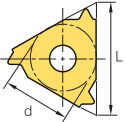
 - Externo  
8, 10, 12, 16, 20, 25, 32, 40, 50

 - Interno  
10, 12, 13, 16, 20, 25, 32, 49, 50, 60

\* Vease especificacin en informacion de diametro de zanco

**6 Tamaño Inserto (mm)**  
E R H 10 (N) - 11 (C)

11: d = 6.35  
16: d = 9.525  
22: d = 12.7  
27: d = 15.875



**2 Mano del Inserto**  
E R H 10 (N) - 11 (C)

R: Mano Derecha L: Mano Izquierda

**5 Placa**  
E R H 10 (N) - 11 (C)

sin código: Requiere Placa  
N: Requiere Placa

**7 Sistema Sujecion**  
E R H 10 (N) - 11 (C)

sin código: Sistema con Tornillo  
C: Sistema de Brida

**3 Nombre**  
E R H 10 (N) - 11 (C)

H: Portainserto (Porta)

## Sistema Codificación Insertos Roscado

**E R M 16 - 1.5 ISO**

1      2      3      4      5      6

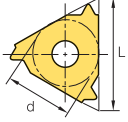
Tipo del Inserto      Mano del Inserto      Rompevirutas      Tamaño del Inserto (mm)      Paso      Tipo Roscado

**1 Tipo del Inserto**  
E R M 16 - 1.5 ISO

E: Externo I: Interno

**4 Tamaño del Inserto (mm)**  
E R M 16 - 1.5 ISO

11: d = 6.35  
16: d = 9.525  
22: d = 12.7  
27: d = 15.875



**6 Estándar**  
E R M 16 - 1.5 ISO

Perfil parcial 60°  
Perfil parcial 55°  
Métrica ISO (Perfil completo)  
American UN (Perfil completo) UN, UNC, UNF, UNEF  
Whitworth (Perfil completo) BSW, BSF, BSP  
Rosca de tubo de British Standards (Perfil completo) BSPT  
Rosca para tubos cónicos (Perfil completo) NPT  
Rosca para tubos cónicos de sellado en seco (Perfil completo) NPTF  
Redondo DIN 405  
Trapezoidal DIN 103  
American ACME  
Stub ACME  
UNJ  
American Buttress  
British Buttress  
Métrica Buttress-Sagengewinde  
API  
API Buttress Casing  
• API Round Casing & Tubing  
• EL-Extreme Line

**2 Mano del Inserto**  
E R M 16 - 1.5 ISO

R: Derecho L: Izquierdo



**5 Paso**  
E R M 16 - 1.5 ISO

| Perfil Completo |      | Perfil Parcila |       |
|-----------------|------|----------------|-------|
| mm              | tpi  | mm             | tpi   |
| 0.35-6.0        | 72-3 | A 0.5-1.5      | 48-16 |
|                 |      | AG 0.5-3.0     | 48-8  |
|                 |      | G 1.75-3.0     | 14-8  |
|                 |      | N 3.5-5.0      | 7-5   |
|                 |      | Q 5.5-6.0      | 4.5-4 |

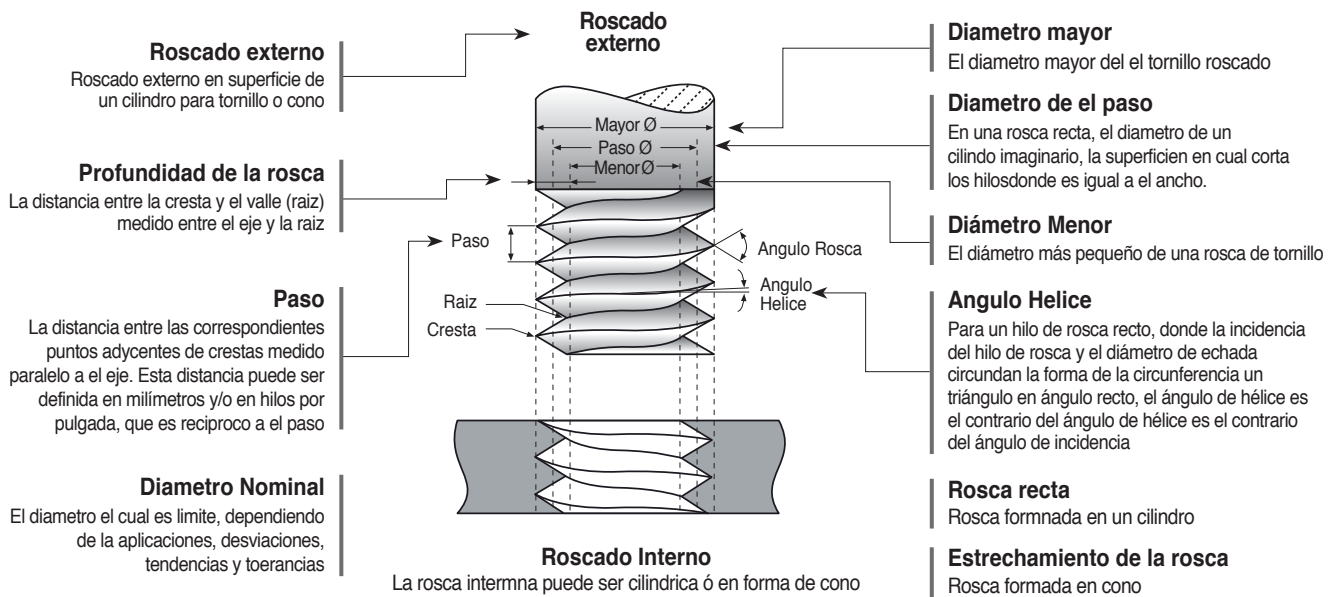
**3 Rompevirutas**  
E R M 16 - 1.5 ISO

M: Con Rompeviruta

**Forma del Inserto**

 < ER/IR >  
 < ERM/IRM >

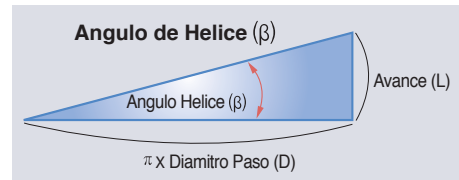
**Características**



Un hilo de rosca que cuando está visto axialmente, vientos en una dirección a la izquierda y del retroceso. Todos los hilos de rosca izquierdos se señalan LH



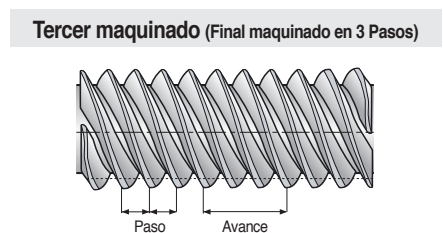
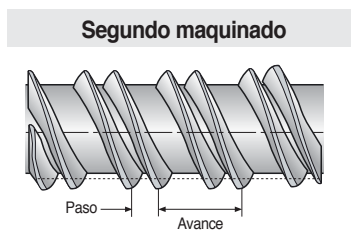
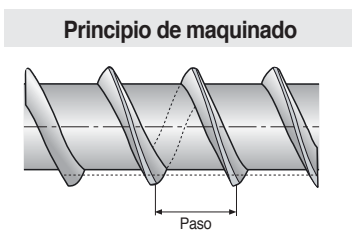
Un hilo de rosca que cuando está visto axialmente, vientos en una dirección a la derecha y del retroceso. Los hilos de rosca son siempre derechos a menos que se especifiquen



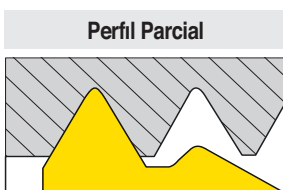
Para un hilo de rosca recto, donde la incidencia del hilo de rosca y el diámetro de echada circundan la forma de la circunferencia un triángulo en ángulo recto, el ángulo de hélice es el contrario del ángulo de incidencia

**Maquindo Multiple de Roscado**

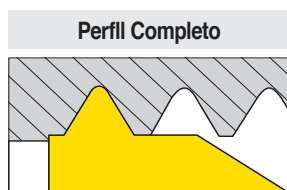
- Un hilo de rosca en el cual la incidencia es un múltiplo integral, mas grande que el extremo. Multi-empiece los permisos del hilo de rosca un avance más rápido sin una forma (más grande) más gruesa del hilo de rosca



**Estilo del Inserto**



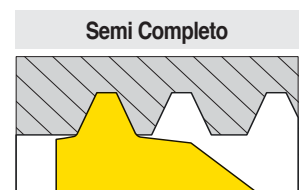
El inserto corta en forma V sin rematar el diámetro externo del hilo de rosca. El mismo inserto se puede utilizar para una gama de diversos rangos del hilo de rosca que tengan un ángulo común del hilo de rosca.



El inserto de perfil completo formará un perfil completo del hilo de rosca incluyendo la cresta. Para cada rango del hilo en rosca estándar se requiere un inserto separado



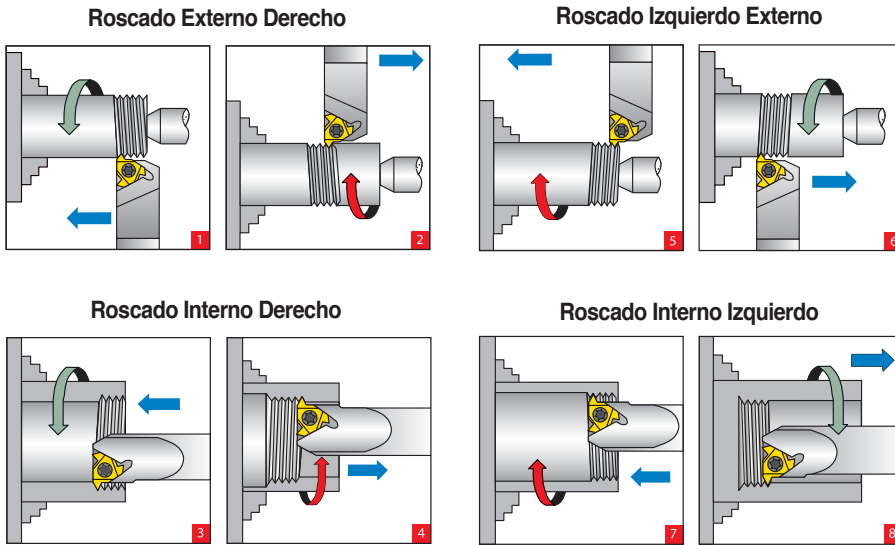
El perfil completo para las roscas finas formará un hilo de rosca completo. El desmoche del diámetro externo es generado por el segundo diente



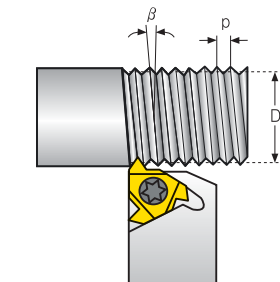
El inserto de semi perfil formará un hilo de rosca completo incluyendo radio de la cresta pero sin rematar el diámetro externo. Utilizado principalmente para los perfiles trapezoidales

## ➤ Método de Roscado en Torneado

| Roscado           | Insertos & Portainsero | Rotación                    | Dirección de corte | Método helice | Dibujo |
|-------------------|------------------------|-----------------------------|--------------------|---------------|--------|
| Derecho Externo   | EX RH                  | En sentido Manedillas Reloj | Hacia el Mandril   | Regular       | 1      |
|                   | EX LH                  | En sentido contrario        | Desde el Mandril   | Inverso       | 2      |
| Derecho Interno   | IN RH                  | En sentido Manedillas Reloj | Hacia el Mandril   | Regular       | 3      |
|                   | IN LH                  | En sentido contrario        | Desde el Mandril   | Inverso       | 4      |
| Izquierdo Externo | EX LH                  | En sentido contrario        | Hacia el Mandril   | Regular       | 5      |
|                   | EX RH                  | En sentido Manedillas Reloj | Desde el Mandril   | Inverso       | 6      |
| Izquierdo Interno | IN LH                  | En sentido contrario        | Hacia el Mandril   | Regular       | 7      |
|                   | IN RH                  | En sentido Manedillas Reloj | Desde el Mandril   | Inverso       | 8      |



## ➤ Calculo del angulo helice (β)

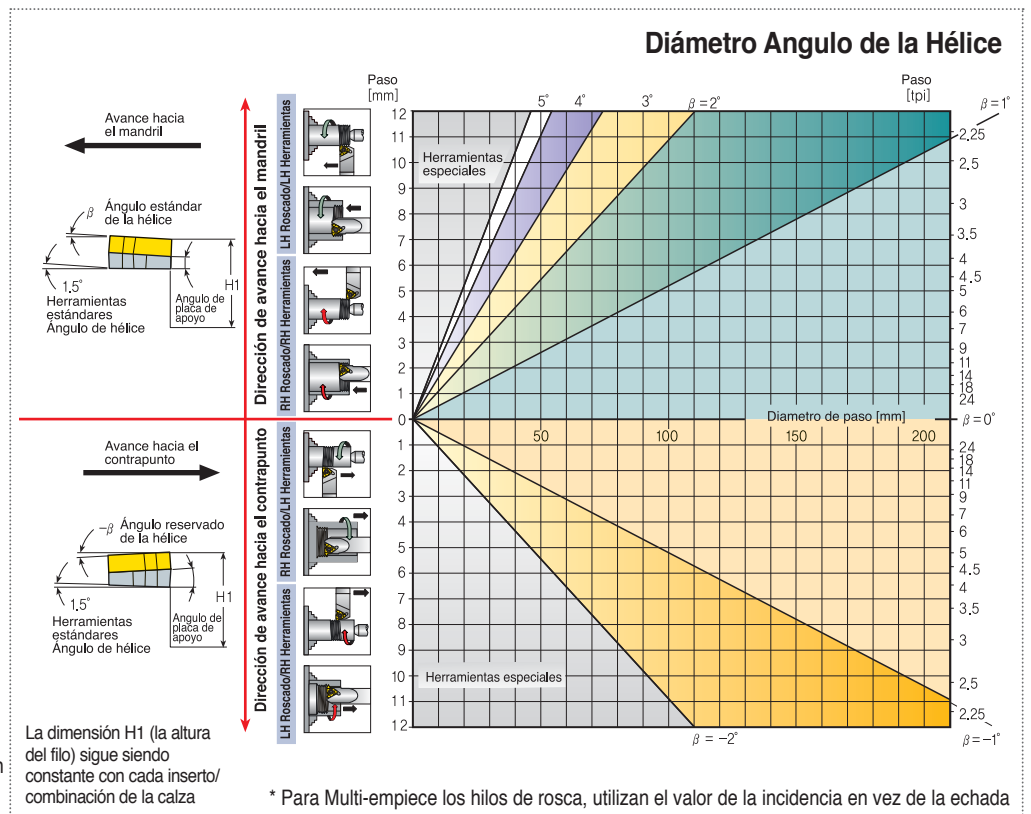


• El angulo de la helice es calculado por la sig. formula:

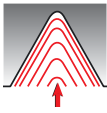
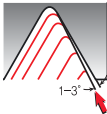

$$\beta = \tan^{-1} \frac{P \times N}{\pi \times D}$$

β: angulo de la helice (°)  
 P: Paso (mm)  
 N: No. De comienzos  
 D: diametro del paso (mm)  
 Avance = P x N

• El angulo de la helice se puede tambien obtener del siguiente diagrama



**Método de Entrada del hilo en la rosca**

| Tipo de entrada   | Aplicación   |
|---|--|
|  <p><b>Entrada Radial</b></p>                  | <ul style="list-style-type: none"> <li>• Cuando la echada es más pequeña de 16TPI</li> <li>• Para el material con rebabas cortas</li> <li>• Para el trabajo con material endurecido</li> </ul> <p>La entrada radial es el método más simple y más rápido. La alimentación es perpendicular al eje de torneado y ambos flancos del parte móvil realizan la operación del corte. La entrada radial se recomienda en 3 casos</p>  |
|  <p><b>Entrada del Flanco (modificada)</b></p> | <ul style="list-style-type: none"> <li>• Cuando la echada del hilo de rosca es mayor de 16 TPI. Usando el método radial, la longitud de filo eficaz es demasiado grande, dando por resultado vibraciones para TRAPEZ y ACME. El resultado radial en tres filos, flujo del método de la viruta y maquinado muy difícil.</li> </ul> <p>La entrada del flanco se recomienda en los casos siguientes</p>                           |
|  <p><b>Entrada Alternativa del Flanco</b></p>  | <ul style="list-style-type: none"> <li>• Este método divide la carga igualmente en ambos flancos, dando por resultado desgaste igual a lo largo de los filos. La entrada alterna del flanco requiere una programación más complicada y no esta disponible en todos los tornos</li> </ul> <p>El uso del método alterno del flanco se recomienda especialmente en echadas grandes y para los materiales con los chils largos</p> |




**Placa Apoyo**

| Alternativa Placa                                     | ATE (Externo)    ATI (Interna) |  | Angulo Helice 1.5° | Tam. inserto | d      | 9.525  |        | 12.7   |        | 15.875 |  |  |
|---|--------------------------------|--|--------------------|--------------|--------|--------|--------|--------|--------|--------|--|--|
|   |                                |  |                    | L            | 16     | 22     |        | 27     |        |        |  |  |
|   |                                |  |                    | Portainsero  | ER(L)H | IR(L)H | ER(L)H | IR(L)H | ER(L)H | IR(L)H |  |  |
|   |                                |  |                    | Codigo Orden | ATE16  | ATI16  | ATE22  | ATI22  | ATE27  | ATI27  |  |  |
| * placas estandar tienen angulo de incidencia de 1.5° |                                |  |                    |              |        |        |        |        |        |        |  |  |

**Grados de Aplicación**

| Grados         | Características   | Tipo de Inserto Disponible        |
|----------------|---|-----------------------------------|
| <b>PC5300</b>  | Grado universal <ul style="list-style-type: none"> <li>• Solo para insertos con rompevirutas</li> <li>• Mecanizado estable en diversas aplicaciones, debido al sustrato de grano fino. Sustrato equilibrado con resistencia al calor y tenacidad.</li> <li>• Excelente resistencia al desgaste y resistencia a la oxidación debido a la película de recubrimiento AlTiN Excelente rendimiento en mecanizado de alta velocidad.</li> </ul> | ERM/IRM (Inserto con Rompeviruta) |
| <b>PC3030T</b> | Grado específico para roscado <ul style="list-style-type: none"> <li>• Un sustrato resistente de grano fino con recubrimiento de TiAlN proporciona una buena tenacidad a la fractura y una excelente resistencia al desgaste</li> <li>• Excelente rendimiento en STS y materiales difíciles de cortar</li> </ul>  | ER/IR (Inserto sin rompeviruta)   |
| <b>PC9070</b>  | Grado específico para roscado <ul style="list-style-type: none"> <li>• Fuerte resistencia al desgaste en el mecanizado de acero inoxidable gracias a los recubrimientos de PVD multicapa.</li> </ul>  | E/IR (Inserto sin rompeviruta)    |

**Rango de Aplicaciones**

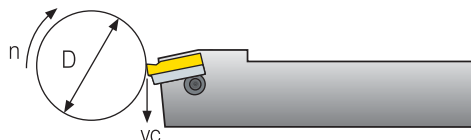
| Pieza de Trabajo |  | ● ← ..... → ●  |
|------------------|--|--|
| <b>P</b>         | Acero al Carbon, Aleaciones de Acero<br>Acero Forjado              |  |
| <b>M</b>         | Acero Inoxidable, Acero Resistente al Calor<br>Aleaciones de Acero |  |
| <b>K</b>         | Hierro al Carbon, Aluminio<br>Acero Forjado, Cobre                 |  |

## Condiciones de corte recomendadas (vc)

| Pieza de Trabajo        |  |   | Dureza Brinell (HB) | vc (m/min) |        |         |
|-------------------------|--|---|---------------------|------------|--------|---------|
|                         |  |   |                     | PC3030T    | PC9070 | PC5300  |
| P                       | AceroalCarbon  | TBajo carbón (C=0.1~0.25%)                | 125                 | 115~190    |        | 110~190 |
|                         |  | Medio carbón (C=0.25~0.55 %)              | 150                 | 100~175    |        | 100~165 |
|                         |  | Alto carbón (C=0.55~0.85 %)               | 170                 | 90~155     |        | 90~155  |
|                         | Aleaciones bajas de Acero (aleacion de elementos ≤ 5%) | No endurecido                             | 180                 | 100~180    |        | 100~180 |
|                         |  | Endurecido                                | 275                 | 75~140     |        | 75~140  |
|                         |  | Endurecido                                | 350                 | 70~135     |        | 70~135  |
|                         | Aleaciones altas de Acero (aleacion de elementos > 5%) | Templado                                  | 200                 | 80~120     |        | 80~120  |
|                         |  | Endurecido                                | 325                 | 50~100     |        | 50~100  |
|                         | Acero Forjado  | Baja aleación (elementos de aleación <5%) | 200                 | 70~130     |        | 70~130  |
|                         |  | Alta aleación (elementos de aleación <5%) | 225                 | 60~120     |        | 60~120  |
| M                       | Acero Inoxidable ferroso                               | No Endurecido                             | 200                 | 70~130     | 70~150 | 70~130  |
|                         |  | Endurecido                                | 330                 | 50~95      | 60~125 | 50~95   |
|                         | Acero Inoxidable Austenitico                           | Austenitico                               | 180                 | 80~120     | 90~160 | 80~120  |
|                         |  | Super austenitico                         | 200                 | 30~100     | 40~120 | 30~100  |
|                         | Acero Inoxidable Forja ferrosa                         | No Endurecido                             | 200                 | 90~120     | 90~150 | 90~120  |
|                         |  | Endurecido                                | 330                 | 65~110     | 65~120 | 65~110  |
|                         | Acero inoxidable austenitico                           | Austenitico                               | 200                 | 85~110     | 85~120 | 85~110  |
|                         |  | Endurecido                                | 330                 | 60~100     | 60~110 | 60~100  |
|                         | Aleación alta temperatura                              | Recosido (Base hierro)                    | 200                 | 45~60      |        | 45~60   |
|                         |  | Envejecido (Bare hierro)                  | 280                 | 30~50      |        | 30~50   |
|                         |  | Recosido (Base de Niquel o Cobalto)       | 250                 | 20~30      |        | 20~30   |
|                         |  | Templado (Base Cobvalto ó Niquel)         | 350                 | 15~25      |        | 15~25   |
|                         | Aleación deTitaio                                      | Titanio 99.5 puro                         | 400Rm               | 140~170    |        | 140~170 |
|                         |  | a+b Aleaciones                            | 1050Rm              | 50~70      |        | 50~70   |
| K                       | Acero extra endurecido                                 | Endurecido & templado                     | 55HRC               | 45~60      |        | 45~60   |
|                         | Acero forjado maleable                                 | Ferritico (Virutas Cortas)                | 130                 | 70~120     |        | 70~120  |
|                         |  | Pearlitico (IVirutas largas)              | 230                 | 70~120     |        | 70~120  |
|                         | Acero forjado gris                                     | Baja fuerza de tensión                    | 180                 | 70~130     |        | 70~130  |
|                         |  | Alta fierza de Tension                    | 260                 | 60~100     |        | 60~100  |
|                         | Acero Nodular SG                                       | Ferritico                                 | 160                 | 125~160    |        | 125~160 |
|                         |  | Pearlitico                                | 260                 | 90~120     |        | 90~120  |
|                         | Aleacion de Aluminio Forjado                           | No envejecido                             | 60                  | 100~250    |        | 100~250 |
|                         |  | Envejecido                                | 100                 | 80~180     |        | 80~180  |
|                         | AleaciónAluminio                                       | Forjado                                   | 75                  | 200~400    |        | 200~400 |
|                         |  | Forjado & envejecido                      | 90                  | 200~280    |        | 200~280 |
|                         |  | Forjado Si 13~22%                         | 130                 | 60~150     |        | 60~180  |
|                         | Cobre y alaeaciones de cobre                           | Latón                                     | 90                  | 80~120     |        | 80~210  |
| Bronce y no cobre-plomo |  | 100                                       | 80~120              |            | 80~210 |         |

## Cálculo de N [RPM]

$$n = \frac{vc \times 1000}{\pi \times D} \quad vc = \frac{\pi \times D \times n}{1000}$$



n: RPM (min<sup>-1</sup>)  
vc: Velocidad de Corte (m/min)  
D: Diametro Pza.Trabajo (mm)

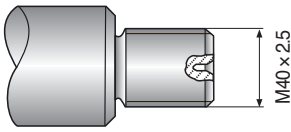
## Número de Maquinado

| Paso         | mm  | 0.50 | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 2.00 | 2.50 | 3.00 | 3.50  | 4.00  | 4.50  | 5.00  | 5.50  | 6.00  | 8.00  |
|--------------|-----|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
|              | tpi | 48   | 32   | 24   | 20   | 16   | 14   | 12   | 10   | 8    | 7     | 6     | 5.5   | 5     | 4.5   | 4     | 3     |
| No. De pases |     | 4~6  | 4~7  | 4~8  | 5~9  | 6~10 | 7~12 | 7~12 | 8~14 | 9~16 | 10~18 | 11~18 | 11~19 | 12~20 | 12~20 | 12~20 | 15~24 |

※ Una profundidad de corte en calculado por la profundidad de corte total dividido en tiempos de mecanizado  
ex) ER16 - 1.5ISO, hmin 0,92: si el mecanizado de 10 veces, una profundidad de corte es 0.092(0.92/10)



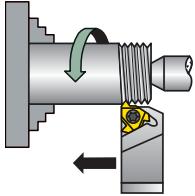
## 🔗 Pasos para Roscado en Torneado



### Aplicación

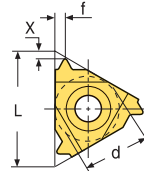
- Rosca: Externa Derecha ISO Métrico M40x2.5
- Material: 4140 (25 HRC)

### 1 Seleccione el método de roscado



La dirección de avance hacia el plato fue elegido. Por lo tanto un inserto externo de mano derecha y un holder exterior derecho sera utilizado

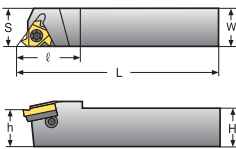
### 2 Selección del Inserto



Inserto Elegido: ER16-2.5 ISO

| Tam. Inserto | Paso | Codigo      | Placa base | Porta herramientas |
|--------------|------|-------------|------------|--------------------|
| d            | mm   | RH          | RH         | ERH□□-16           |
| 9.525        | 2.5  | ER16-2.5ISO | ATE16      | ERH□□-16           |

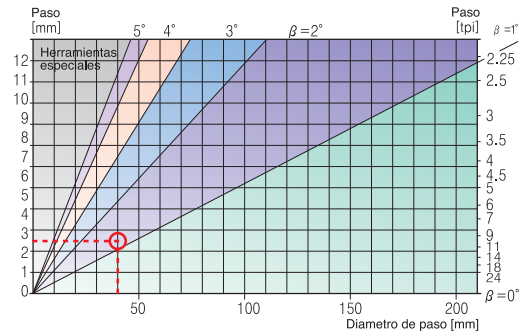
### 3 Seleccione el porta herramientas



Porta herramientas seleccionado: ERH 25-16

| Tam. Inserto | Codigo   | Dimensiones (mm) |    |    |       |    |
|--------------|----------|------------------|----|----|-------|----|
| d            | RH       | H=h              | W  | S  | L     | ℓ  |
| 9.525        | ERH25-16 | 25               | 25 | 25 | 153.6 | 30 |

### 4 Determine el ángulo helicoidal de la rosca



Para la tabla, usando un Paso de 2.5 mm (10 tpi) y el diametro de la pieza de trabajo es de 40mm (1.57") nos encontramos con el ángulo de hélice de 1.5°

### 5 Seleccione la placa adecuada

| Angulo de Helice Resultante |   | 1.5°  |
|-----------------------------|---|-------|
| Tam. Inserto                | d | 9.525 |
|                             | L | 16    |
| Codigo                      |   | ATE16 |

### 6 Seleccione el grado de carburo y las condiciones de corte

| Pieza de Trabajo |   | HB            | vc (m/min) |
|------------------|---|---------------|------------|
|                  |   |               | PC3030T    |
| <b>P</b>         | <b>Aleacion Baja en Acero</b><br>(aleacion de Elementos ≤ 5%) | No endurecido | 180 85~145 |
|                  |   | Endurecido    | 275 75~140 |
|                  |   | Endurecido    | 350 70~135 |

- Grado de carburo elegido: PC3030T
- Velocidad Corte: 140m/min

### 7 Determine el No. de pasadas

| Paso          | mm  | 1.50 | 1.75 | 2.00 | 2.50 | 3.00 | 3.50  | 4.00  |
|---------------|-----|------|------|------|------|------|-------|-------|
|               | tpi | 16   | 14   | 12   | 10   | 8    | 7     | 6     |
| No de Pasadas |     | 6~10 | 7~12 | 7~12 | 8~14 | 9~16 | 10~18 | 11~18 |

- Grado de carburo elegido: PC3030T
- Velocidad Corte: 140 m/min

### 8 El resumen

| Tipo de Roscado               | ISO M40 x 2.5 Externo de mano derecha |
|-------------------------------|---------------------------------------|
| 1. Dirección de Avance        | Hacia el husillo                      |
| 2. Inserto y grado            | ER16-2.5ISO, PC3030T                  |
| 3. Soportes para herramientas | ERH25-16                              |
| 4. Angulo de Helice           | 1.5°                                  |
| 5. Placa de apoyo             | ATE16                                 |
| 6. Velocidad de Corte         | 140 m/min                             |
| 7. Numero de pasadas          | 10                                    |

# D Información Técnica de Roscado

## Las condiciones de corte dependen de

|                             |                            |  |                        |  |  |  |
|-----------------------------|----------------------------|--|------------------------|--|--|--|
| <b>Pieza de Trabajo</b>     | Tipo Material              |  | <b>Refrigerante</b>    | Tipo de Refrigerante                         |  |  |
|                             | Dimensiones del Material   |  |                        | <b>Soportes</b>                              | Area de la sección representativa del Soportes |  |
|                             | Diametro y flujo la viruta |  |                        |  | Soportes Proyección                            |  |
|                             | Dureza del Material        |  |                        |  | Opción de refrigeración                        |  |
| <b>Aplicaciones Roscado</b> | Externo Interno            |  | <b>Insertos</b>        | Tipo de Zanco: Aleación, implante de carburo |  |  |
|                             | Forma del perfil           |  |                        | Grado del inserto                            |  |  |
|                             | Superficie de Acabado      |  |                        | Perfil de la rosca y profundidad             |  |  |
| <b>Maquina</b>              | Estabilidad de la Maquina  |  | Radio                  |  |  |  |
|                             | RPM Max.                   |  | Tipo de la Rompeviruta |  |  |  |
|                             | Sujeción del sistema       |  |                        |  |  |  |

## Problemas, Posible Causa y solución

| Problema                             | Possible Cause  | Solución  |
|--------------------------------------|---|---|
| <b>Desgaste excesivo</b>             | Velocidad de corte Alta .....<br>Profundidad de corte baja (muchas pasadas) .....<br>Selección de grado inadecuado .....<br>Refrigerante insuficiente .....                 | ➔ Reducir Velocidad/usar inserto recubierto<br>➔ Incrementar profundidad de corte<br>➔ Usar inserto Recubierto<br>➔ Incrementar Refrigerante  |
| <b>Desgaste Irregular en el filo</b> | Selección de Angulo Incorrecto .....<br>Metodo de Roscado erroneo .....   | ➔ Seleccionar placa correcta<br>➔ Seleccionar metodo alterno  |
| <b>Deformación Plástica Excesiva</b> | Profundidad de corte excesiva .....<br>Refrigerante insuficiente .....<br>Velocidad de corte Alta .....<br>Selección de grado inadecuado .....<br>Radio Pequeno .....       | ➔ Reducir prof. de corte/incrementar No.de pasadas<br>➔ Incrementar Refrigerante<br>➔ Incrementar Refrigerante<br>➔ Usar Grado mas duro<br>➔ Usar inserto con radio mas grande                            |
| <b>Fractura en el filo de corte</b>  | Profundidad de corte excesiva .....<br>Deformación plastica excesiva .....<br>Refrigerante insuficiente .....<br>Selección de grado inadecuado .....<br>Inestabilidad ..... | ➔ Reducir Velocidad/incrementar No.de pasadas<br>➔ Usar inserto con mayor dureza<br>➔ Incrementar Refrigerante/Corregir flujo de Refrig<br>➔ Hacer seleccion adecuada<br>➔ Revisar estabilidad del sistem |
| <b>Adhesión de material al filo</b>  | Velocidad de corte Incorrecta .....<br>Selección de grado inadecuado .....  | ➔ Cambie la velocidad de corte<br>➔ Use Insertos recubiertos  |
| <b>Bajo perfil de la cuerda</b>      | La herramienta no está a la altura del eje en la pieza de trabajo .....<br>El inserto no alcanza la cresta de la cuerda .....<br>Inserto mal seleccionado .....             | ➔ Cambie la altura de la herramienta<br>➔ Dimensione el diámetro de la pieza<br>➔ Cambie el filo de corte   |
| <b>Mal Acabado</b>                   | Velocidad de corte baja .....<br>Placa equivocada .....<br>Método del flanco de entrada no es apropiado .....   | ➔ Incremente la velocidad de corte<br>➔ Seleccione la placa correcta<br>➔ Utilice un método alternativo de alimentación flanco o radial   |



## Insertos de Roscado con Rompeviruta

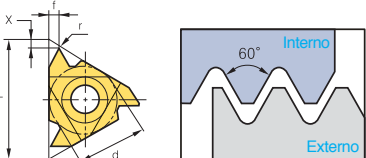
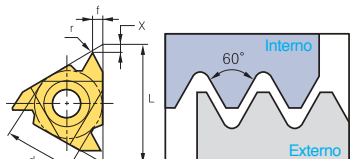
- Características**
- Inseto Económico
  - Buena tenacidad y alta precisión en este tipo de insertos
  - Diseño Exclusivo del inserto que mejora el control de la viruta
  - Nuevo grado para aplicación general de diversas piezas de trabajo

| Tipo               | Inseto básico   |         | Inseto con las clases de Rompevirutas   |         |  |         |
|--------------------|---|---------|---|---------|--|---------|
| Código C/B         | Ninguno   |         | Ninguno   |         | U  |         |
| Descripción        | ER16-1.5ISO   |         | ERM16-1.5ISO  |         | ERM16-1.5ISO-U   |         |
| Maquinado          | Externo   | Interno | Externo   | Interno | Externo  | Interno |
| Forma del inserto  |   |         |   |         |  |         |
| Forma de la Viruta |   |         |   |         |  |         |
| Clase              | P, M, K, N, S   |         | P, M, K   |         | P, M, K  |         |
| Aplicación         | Clase G   |         | Clase M   |         | Clase M  |         |
| Características    | <ul style="list-style-type: none"> <li>• Rompeviruta en forma de ranura con evacuación superior de la viruta, reduciendo la carga de corte</li> <li>• Permite el maquinado de alta precisión</li> <li>• Aplicable para el maquinado de varias formas de roscas</li> <li>• Aplicable para el maquinado de diferentes piezas</li> </ul> |         | <ul style="list-style-type: none"> <li>• Exclusivo rompeviruta 3 dimensional que mejora el maquinado con un mejor control de viruta</li> <li>• Excelente tratamiento tecnológico que garantiza alta precisión el borde del filo de corte</li> </ul> |         | <ul style="list-style-type: none"> <li>• Rompeviruta en forma de ranura con evacuación superior de la viruta, reduce la carga de corte</li> <li>• Reduce las pasadas del maquinado en un 10 ~ 30%</li> <li>• Excelente tratamiento tecnológico que alcanza alta precisión en el filo de corte</li> </ul> |         |

### Ejemplo de Maquinado

| KORLOY                |                       | ERM16-1.5ISO [PC3030T]                      | IRM16-2.0ISO [PC3030T]  |
|-----------------------|-----------------------|---|---|
| Hettas del Competidor |                       | ER16-1.5ISO [A-Fabricante]                  | IR16-2.0ISO [B-Fabricante]  |
| Pieza de Trabajo      | Material              | SCM440                                      | STS304  |
|                       | Figura                |   |   |
| Condición de Corte    | Vel. de Corte (m/min) | 63  | 120   |
|                       | Pasadas               | 8   | 9   |
|                       | Maquinado             | Penetración Radial                          | Penetración Radial  |
|                       | Paso                  | 1.5   | 2.0   |
| Refrigerante          |                       | Con refrigerante                            | Con refrigerante  |
| Resultado             |                       | <p>Incrementa la vida de la herramienta</p> | <p>Previene la fractura del inserto debido al buen control de la viruta</p> |

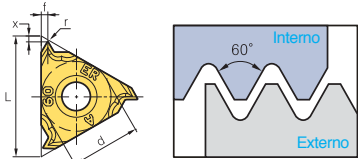
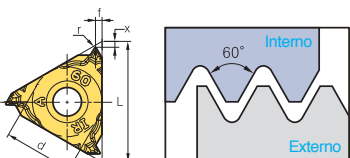
## Perfil Parcial 60°

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso     |       | Dimensiones (mm) |    |      |     |     | Imagen  |
|---------|------------------|---------|---------|--------------------|---------|---------|----------|-------|------------------|----|------|-----|-----|---|
|         |                  |         |         |                    |         |         | (mm)     | (tpi) | d                | L  | r    | x   | f   |   |
| Externo | ER 11-A60        | ●       | ●       | EL 11-A60          | ●       |         | 0.5~1.5  | 48~16 | 6.35             | 11 | 0.05 | 0.8 | 0.9 |  |
|         | 16-A60           | ●       | ●       | 16-A60             | ●       |         | 0.5~1.5  | 48~16 | 9.525            | 16 | 0.05 | 0.8 | 0.9 |   |
|         | 16-G60           | ●       |         | 16-G60             | ●       |         | 1.75~3.0 | 14~8  | 9.525            | 16 | 0.27 | 1.2 | 1.7 |   |
|         | 16-AG60          | ●       | ●       | 16-AG60            | ●       |         | 0.5~3.0  | 48~8  | 9.525            | 16 | 0.08 | 1.2 | 1.7 |   |
|         | 22-N60           | ●       | ●       | 22-N60             | ●       |         | 3.5~5.0  | 7~5   | 12.7             | 22 | 0.53 | 1.7 | 2.5 |   |
|         | 27-Q60           | ●       | ●       | 27-Q60             | ●       |         | 5.5~6.0  | 4.5~4 | 15.875           | 27 | 0.64 | 2.1 | 3.1 |   |
| Interno | IR 11-A60        | ●       | ●       | IL 11-A60          | ●       | ●       | 0.5~1.5  | 48~16 | 6.35             | 11 | 0.05 | 0.8 | 0.9 |  |
|         | 16-A60           | ●       |         | 16-A60             | ●       |         | 0.5~1.5  | 48~16 | 9.525            | 16 | 0.05 | 0.8 | 0.9 |   |
|         | 16-G60           | ●       |         | 16-G60             | ●       |         | 1.75~3.0 | 14~8  | 9.525            | 16 | 0.16 | 1.2 | 1.7 |   |
|         | 16-AG60          | ●       | ●       | 16-AG60            | ●       |         | 0.5~3.0  | 48~8  | 9.525            | 16 | 0.05 | 1.2 | 1.7 |   |
|         | 22-N60           | ●       | ●       | 22-N60             | ●       |         | 3.5~5.0  | 7~5   | 12.7             | 22 | 0.30 | 1.7 | 2.5 |   |
|         | 27-Q60           | ●       | ●       | 27-Q60             |         |         | 5.5~6.0  | 4.5~4 | 15.875           | 27 | 0.30 | 1.8 | 2.7 |   |

Porta herramientas disponibles D31, D32

●: En Almacen

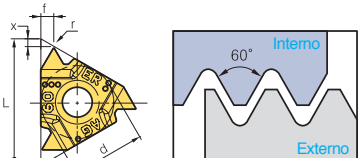
## Perfil Parcial 60° (Rompeviruta Clase M)

| Tipo    | Codigo (Derecho) | PC3030T | PC5300 | Codigo (Izquierdo) | PC3030T | Paso     |       | Dimensiones (mm) |    |      |     |     | Imagen  |
|---------|------------------|---------|--------|--------------------|---------|----------|-------|------------------|----|------|-----|-----|---|
|         |                  |         |        |                    |         | (mm)     | (tpi) | d                | L  | r    | x   | f   |   |
| Externo | ERM 16-A60       | ●       |        |                    |         | 0.5~1.5  | 48~16 | 9.525            | 16 | 0.05 | 0.8 | 0.9 |  |
|         | 16-G60           | ●       |        |                    |         | 1.75~3.0 | 14~8  | 9.525            | 16 | 0.27 | 1.2 | 1.7 |   |
|         | 16-AG60          | ●       |        |                    |         | 0.5~3.0  | 48~8  | 9.525            | 16 | 0.08 | 1.2 | 1.7 |   |
|         | 22-N60           | ●       |        |                    |         | 3.5~5.0  | 7~5   | 12.7             | 22 | 0.53 | 1.7 | 2.5 |   |
| Interno | IRM 11-A60       | ●       |        |                    |         | 0.5~1.5  | 48~16 | 6.35             | 11 | 0.08 | 0.8 | 0.9 |  |
|         | 16-A60           | ●       |        |                    |         | 0.5~1.5  | 48~16 | 9.525            | 16 | 0.08 | 0.8 | 0.9 |   |
|         | 16-G60           | ●       |        |                    |         | 1.75~3.0 | 14~8  | 9.525            | 16 | 0.12 | 1.2 | 1.7 |   |
|         | 16-AG60          | ●       |        |                    |         | 0.5~3.0  | 48~8  | 9.525            | 16 | 0.08 | 1.2 | 1.7 |   |
|         | 22-N60           | ●       |        |                    |         | 3.5~5.0  | 7~5   | 12.7             | 22 | 0.30 | 1.7 | 2.5 |   |

Porta herramientas disponibles D31, D32

●: En Almacen

## Perfil Parcial 60° (Rompeviruta Clase U) new

| Tipo    | Codigo (Derecho) | PC3030T | PC5300 | Codigo (Izquierdo) | PC3030T | Paso    |       | Dimensiones (mm) |    |      |     |     | Imagen  |
|---------|------------------|---------|--------|--------------------|---------|---------|-------|------------------|----|------|-----|-----|---|
|         |                  |         |        |                    |         | (mm)    | (tpi) | d                | L  | r    | x   | f   |   |
| Externo | ERM 16-AG60-U    |         |        |                    |         | 0.5~3.0 | 48~8  | 9.525            | 16 | 0.08 | 1.2 | 1.7 |  |
| Interno | IRM 16-AG60-U    |         |        |                    |         | 0.5~3.0 | 48~8  | 9.525            | 16 | 0.08 | 1.2 | 1.7 |   |

Porta herramientas disponibles D31, D32

●: En Almacen

## Perfil Parcial 55°

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso     |       | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|----------|-------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         | (mm)     | (tpi) | d                | L  | r    | x   | f   |        |
| Externo | ER 11-A55        | ●       |         | EL 11-A55          |         |         | 0.5~1.5  | 48~16 | 6.35             | 11 | 0.05 | 0.8 | 0.9 |        |
|         | 16-A55           | ●       |         | 16-A55             | ●       |         | 0.5~1.5  | 48~16 | 9.525            | 16 | 0.05 | 0.8 | 0.9 |        |
|         | 16-G55           | ●       |         | 16-G55             |         |         | 1.75~3.0 | 14~8  | 9.525            | 16 | 0.21 | 1.2 | 1.7 |        |
|         | 16-AG55          | ●       |         | 16-AG55            | ●       |         | 0.5~3.0  | 48~8  | 9.525            | 16 | 0.07 | 1.2 | 1.7 |        |
|         | 22-N55           | ●       |         | 22-N55             |         |         | 3.5~5.0  | 7~5   | 12.7             | 22 | 0.43 | 1.7 | 2.5 |        |
|         | 27-Q55           | ●       |         | 27-Q55             |         |         | 5.5~6.0  | 4.5~4 | 15.875           | 27 | 0.60 | 2.0 | 2.9 |        |
| Interno | IR 11-A55        | ●       |         | IL 11-A55          | ●       |         | 0.5~1.5  | 48~16 | 6.35             | 11 | 0.05 | 0.8 | 0.9 |        |
|         | 16-A55           | ●       |         | 16-A55             |         |         | 0.5~1.5  | 48~16 | 9.525            | 16 | 0.05 | 0.8 | 0.9 |        |
|         | 16-G55           | ●       |         | 16-G55             |         |         | 1.75~3.0 | 14~8  | 9.525            | 16 | 0.21 | 1.2 | 1.7 |        |
|         | 16-AG55          | ●       |         | 16-AG55            | ●       |         | 0.5~3.0  | 48~8  | 9.525            | 16 | 0.07 | 1.2 | 1.7 |        |
|         | 22-N55           | ●       |         | 22-N55             |         |         | 3.5~5.0  | 7~5   | 12.7             | 22 | 0.43 | 1.7 | 2.5 |        |
|         | 27-Q55           | ●       |         | 27-Q55             |         |         | 5.5~6.0  | 4.5~4 | 15.875           | 27 | 0.60 | 2.0 | 2.9 |        |

Porta herramientas disponibles D31, D32

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## Perfil Parcial 55° (Rompeviruta Clase M)

| Tipo    | Codigo (Derecho) | PC3030T | PC5300 | Codigo (Izquierdo) | PC3030T | Paso     |       | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|--------|--------------------|---------|----------|-------|------------------|----|------|-----|-----|--------|
|         |                  |         |        |                    |         | (mm)     | (tpi) | d                | L  | r    | x   | f   |        |
| Externo | ERM 16-A55       | ●       |        |                    |         | 0.5~1.5  | 48~16 | 9.525            | 16 | 0.08 | 0.8 | 0.9 |        |
|         | 16-G55           | ●       |        |                    |         | 1.75~3.0 | 14~8  | 9.525            | 16 | 0.21 | 1.2 | 1.7 |        |
|         | 16-AG55          | ●       |        |                    |         | 0.5~3.0  | 48~8  | 9.525            | 16 | 0.07 | 1.2 | 1.7 |        |
|         | 22-N55           | ●       |        |                    |         | 3.5~5.0  | 7~5   | 12.7             | 22 | 0.43 | 1.7 | 2.5 |        |
| Interno | IRM 11-A55       | ●       |        |                    |         | 0.5~1.5  | 48~16 | 6.35             | 11 | 0.08 | 0.8 | 0.9 |        |
|         | 16-A55           | ●       |        |                    |         | 0.5~1.5  | 48~16 | 9.525            | 16 | 0.05 | 0.8 | 0.9 |        |
|         | 16-G55           | ●       |        |                    |         | 1.75~3.0 | 14~8  | 9.525            | 16 | 0.08 | 1.2 | 1.7 |        |
|         | 16-AG55          | ●       |        |                    |         | 0.5~3.0  | 48~8  | 9.525            | 16 | 0.08 | 1.2 | 1.7 |        |
|         | 22-N55           | ●       |        |                    |         | 3.5~5.0  | 7~5   | 12.7             | 22 | 0.43 | 1.7 | 2.5 |        |

Porta herramientas disponibles D31, D32

● En Almacen

## Perfil Parcial 55° (Rompeviruta Clase U) new

| Tipo    | Codigo (Derecho) | PC3030T | PC5300 | Codigo (Izquierdo) | PC3030T | Paso    |       | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|--------|--------------------|---------|---------|-------|------------------|----|------|-----|-----|--------|
|         |                  |         |        |                    |         | (mm)    | (tpi) | d                | L  | r    | x   | f   |        |
| Externo | ERM 16-AG55-U    |         |        |                    |         | 0.5~3.0 | 48~8  | 9.525            | 16 | 0.07 | 1.2 | 1.7 |        |
| Interno | IRM 16-AG55-U    |         |        |                    |         | 0.5~3.0 | 48~8  | 9.525            | 16 | 0.08 | 1.2 | 1.7 |        |

Porta herramientas disponibles D31, D32

● En Almacen

# D Insertos para Roscado

## ISO Métrico

| Tipo      | Codigo (Derecho) | PC3030T | PC9070T   | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (mm) | Dimensiones (mm) |      |      |     |     | Imagen |
|-----------|------------------|---------|-----------|--------------------|---------|---------|-----------|------------------|------|------|-----|-----|--------|
|           |                  |         |           |                    |         |         |           | d                | L    | hmin | X   | f   |        |
| Externo   | ER 11-0.35ISO    | ●       |           | EL 11-0.35ISO      |         |         | 0.35      | 6.35             | 11   | 0.21 | 0.8 | 0.4 |        |
|           | 11-0.4ISO        | ●       |           | 11-0.4ISO          |         |         | 0.4       | 6.35             | 11   | 0.25 | 0.7 | 0.4 |        |
|           | 11-0.45ISO       | ●       |           | 11-0.45ISO         |         |         | 0.45      | 6.35             | 11   | 0.28 | 0.7 | 0.4 |        |
|           | 11-0.5ISO        |         |           | 11-0.5ISO          |         |         | 0.5       | 6.35             | 11   | 0.31 | 0.6 | 0.4 |        |
|           | 11-0.6ISO        |         |           | 11-0.6ISO          |         |         | 0.6       | 6.35             | 11   | 0.37 | 0.6 | 0.6 |        |
|           | 11-0.7ISO        | ●       |           | 11-0.7ISO          |         |         | 0.7       | 6.35             | 11   | 0.43 | 0.6 | 0.6 |        |
|           | 11-0.75ISO       |         |           | 11-0.75ISO         |         |         | 0.75      | 6.35             | 11   | 0.46 | 0.6 | 0.6 |        |
|           | 11-0.8ISO        | ●       |           | 11-0.8ISO          |         |         | 0.8       | 6.35             | 11   | 0.49 | 0.6 | 0.6 |        |
|           | 11-1.0ISO        | ●       |           | 11-1.0ISO          |         |         | 1.0       | 6.35             | 11   | 0.61 | 0.7 | 0.7 |        |
|           | 11-1.25ISO       | ●       | ●         | 11-1.25ISO         |         |         | 1.25      | 6.35             | 11   | 0.77 | 0.8 | 0.9 |        |
|           | 11-1.5ISO        | ●       |           | 11-1.5ISO          | ●       |         | 1.5       | 6.35             | 11   | 0.92 | 0.8 | 1.0 |        |
|           | 11-1.75ISO       | ●       |           | 11-1.75ISO         |         |         | 1.75      | 6.35             | 11   | 1.07 | 0.8 | 1.1 |        |
|           | 16-0.35ISO       |         |           | 16-0.35ISO         |         |         | 0.35      | 9.525            | 16   | 0.21 | 0.8 | 0.4 |        |
|           | 16-0.4ISO        |         |           | 16-0.4ISO          |         |         | 0.4       | 9.525            | 16   | 0.25 | 0.7 | 0.4 |        |
|           | 16-0.45ISO       | ●       |           | 16-0.45ISO         |         |         | 0.45      | 9.525            | 16   | 0.28 | 0.7 | 0.4 |        |
|           | 16-0.5ISO        | ●       |           | 16-0.5ISO          | ●       |         | 0.5       | 9.525            | 16   | 0.31 | 0.6 | 0.4 |        |
|           | 16-0.6ISO        | ●       |           | 16-0.6ISO          |         |         | 0.6       | 9.525            | 16   | 0.37 | 0.6 | 0.6 |        |
|           | 16-0.7ISO        | ●       |           | 16-0.7ISO          |         |         | 0.7       | 9.525            | 16   | 0.43 | 0.6 | 0.6 |        |
|           | 16-0.75ISO       | ●       |           | 16-0.75ISO         |         |         | 0.75      | 9.525            | 16   | 0.46 | 0.6 | 0.6 |        |
|           | 16-0.8ISO        | ●       | ●         | 16-0.8ISO          |         |         | 0.8       | 9.525            | 16   | 0.49 | 0.6 | 0.6 |        |
|           | 16-1.0ISO        | ●       | ●         | 16-1.0ISO          | ●       |         | 1.0       | 9.525            | 16   | 0.61 | 0.7 | 0.7 |        |
|           | 16-1.25ISO       | ●       | ●         | 16-1.25ISO         | ●       |         | 1.25      | 9.525            | 16   | 0.77 | 0.8 | 0.9 |        |
|           | 16-1.5ISO        | ●       | ●         | 16-1.5ISO          | ●       |         | 1.5       | 9.525            | 16   | 0.92 | 0.8 | 1.0 |        |
|           | 16-1.75ISO       | ●       | ●         | 16-1.75ISO         |         |         | 1.75      | 9.525            | 16   | 1.07 | 0.9 | 1.2 |        |
|           | 16-2.0ISO        | ●       | ●         | 16-2.0ISO          | ●       |         | 2.0       | 9.525            | 16   | 1.23 | 1.0 | 1.3 |        |
|           | 16-2.5ISO        | ●       | ●         | 16-2.5ISO          | ●       |         | 2.5       | 9.525            | 16   | 1.53 | 1.1 | 1.5 |        |
|           | 16-3.0ISO        | ●       | ●         | 16-3.0ISO          | ●       |         | 3.0       | 9.525            | 16   | 1.84 | 1.2 | 1.6 |        |
|           | 22-3.5ISO        | ●       | ●         | 22-3.5ISO          | ●       |         | 3.5       | 12.7             | 22   | 2.15 | 1.6 | 2.3 |        |
|           | 22-4.0ISO        | ●       | ●         | 22-4.0ISO          | ●       |         | 4.0       | 12.7             | 22   | 2.45 | 1.6 | 2.3 |        |
|           | 22-4.5ISO        | ●       | ●         | 22-4.5ISO          |         |         | 4.5       | 12.7             | 22   | 2.78 | 1.7 | 2.4 |        |
|           | 22-5.0ISO        | ●       | ●         | 22-5.0ISO          | ●       |         | 5.0       | 12.7             | 22   | 3.07 | 1.7 | 2.5 |        |
|           | 27-5.5ISO        |         |           | 27-5.5ISO          |         |         | 5.5       | 15.875           | 27   | 3.37 | 1.9 | 2.7 |        |
| 27-6.0ISO |                  | ●       | 27-6.0ISO |                    |         | 6.0     | 15.875    | 27               | 3.68 | 2.0  | 2.9 |     |        |

Porta herramientas disponibles D31

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D

Roscado

## ISO Métrico (Rompeviruta Clase M)

| Tipo    | Codigo (Derecho) | PC3030T | PC5300 | Codigo (Izquierdo) | PC3030T | Paso | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|--------|--------------------|---------|------|------------------|----|------|-----|-----|--------|
|         |                  |         |        |                    |         | (mm) | d                | L  | hmin | X   | f   |        |
| Externo | ERM 16-1.0ISO    | ●       |        |                    |         | 1.0  | 9.525            | 16 | 0.61 | 0.7 | 0.7 |        |
|         | 16-1.25ISO       |         |        |                    |         | 1.25 | 9.525            | 16 | 0.77 | 0.8 | 0.9 |        |
|         | 16-1.5ISO        | ●       |        |                    |         | 1.5  | 9.525            | 16 | 0.93 | 0.8 | 1.0 |        |
|         | 16-1.75ISO       | ●       |        |                    |         | 1.75 | 9.525            | 16 | 1.09 | 0.9 | 1.2 |        |
|         | 16-2.0ISO        | ●       |        |                    |         | 2.0  | 9.525            | 16 | 1.25 | 1.0 | 1.3 |        |
|         | 16-2.5ISO        | ●       |        |                    |         | 2.5  | 9.525            | 16 | 1.55 | 1.1 | 1.5 |        |
|         | 16-3.0ISO        | ●       |        |                    |         | 3.0  | 9.525            | 16 | 1.87 | 1.2 | 1.6 |        |

Porta herramientas disponibles D31

● En Almacen

## ISO Métrico (Rompeviruta Clase U) **new**

| Tipo    | Codigo (Derecho) | PC3030T | PC5300 | Codigo (Izquierdo) | PC3030T | Paso | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|--------|--------------------|---------|------|------------------|----|------|-----|-----|--------|
|         |                  |         |        |                    |         | (mm) | d                | L  | hmin | X   | f   |        |
| Externo | ERM 16-1.5ISO-U  |         |        |                    |         | 1.5  | 9.525            | 16 | 0.93 | 0.8 | 1.0 |        |
|         | 16-2.0ISO-U      |         |        |                    |         | 2.0  | 9.525            | 16 | 1.25 | 1.0 | 1.3 |        |

Porta herramientas disponibles D31

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# D Insertos para Roscado

## ISO Métrico

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (mm) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|-----------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |           | d                | L  | hmin | X   | f   |        |
| Interno | IR 11-0.35ISO    | ●       |         | IL 11-0.35ISO      |         |         | 0.35      | 6.35             | 11 | 0.20 | 0.8 | 0.3 |        |
|         | 11-0.4ISO        | ●       |         | 11-0.4ISO          |         |         | 0.4       | 6.35             | 11 | 0.23 | 0.8 | 0.4 |        |
|         | 11-0.45ISO       | ●       |         | 11-0.45ISO         |         |         | 0.45      | 6.35             | 11 | 0.26 | 0.8 | 0.4 |        |
|         | 11-0.5ISO        | ●       |         | 11-0.5ISO          | ●       |         | 0.5       | 6.35             | 11 | 0.29 | 0.6 | 0.4 |        |
|         | 11-0.6ISO        | ●       |         | 11-0.6ISO          |         |         | 0.6       | 6.35             | 11 | 0.35 | 0.6 | 0.6 |        |
|         | 11-0.7ISO        | ●       |         | 11-0.7ISO          |         |         | 0.7       | 6.35             | 11 | 0.40 | 0.6 | 0.6 |        |
|         | 11-0.75ISO       | ●       |         | 11-0.75ISO         | ●       |         | 0.75      | 6.35             | 11 | 0.43 | 0.6 | 0.6 |        |
|         | 11-0.8ISO        |         |         | 11-0.8ISO          |         |         | 0.8       | 6.35             | 11 | 0.46 | 0.6 | 0.6 |        |
|         | 11-1.0ISO        | ●       | ●       | 11-1.0ISO          |         |         | 1.0       | 6.35             | 11 | 0.58 | 0.6 | 0.7 |        |
|         | 11-1.25ISO       | ●       | ●       | 11-1.25ISO         | ●       |         | 1.25      | 6.35             | 11 | 0.72 | 0.8 | 0.9 |        |
|         | 11-1.5ISO        | ●       | ●       | 11-1.5ISO          | ●       | ●       | 1.5       | 6.35             | 11 | 0.87 | 0.8 | 1.0 |        |
|         | 11-1.75ISO       | ●       | ●       | 11-1.75ISO         |         |         | 1.75      | 6.35             | 11 | 1.01 | 0.9 | 1.1 |        |
|         | 11-2.0ISO        | ●       | ●       | 11-2.0ISO          | ●       |         | 2.0       | 6.35             | 11 | 1.15 | 0.9 | 1.1 |        |
|         | 11-2.5ISO        | ●       |         | 11-2.5ISO          | ●       |         | 2.5       | 6.35             | 11 | 1.44 | 0.8 | 1.1 |        |
|         | 16-0.35ISO       | ●       |         | 16-0.35ISO         |         |         | 0.35      | 9.525            | 16 | 0.20 | 0.8 | 0.3 |        |
|         | 16-0.4ISO        | ●       |         | 16-0.4ISO          |         |         | 0.4       | 9.525            | 16 | 0.23 | 0.8 | 0.4 |        |
|         | 16-0.45ISO       | ●       |         | 16-0.45ISO         |         |         | 0.45      | 9.525            | 16 | 0.26 | 0.8 | 0.4 |        |
|         | 16-0.5ISO        | ●       |         | 16-0.5ISO          |         |         | 0.5       | 9.525            | 16 | 0.29 | 0.6 | 0.4 |        |
|         | 16-0.6ISO        |         |         | 16-0.6ISO          |         |         | 0.6       | 9.525            | 16 | 0.35 | 0.6 | 0.6 |        |
|         | 16-0.7ISO        | ●       |         | 16-0.7ISO          |         |         | 0.7       | 9.525            | 16 | 0.40 | 0.6 | 0.6 |        |
|         | 16-0.75ISO       | ●       |         | 16-0.75ISO         |         |         | 0.75      | 9.525            | 16 | 0.43 | 0.6 | 0.6 |        |
|         | 16-0.8ISO        | ●       |         | 16-0.8ISO          |         |         | 0.8       | 9.525            | 16 | 0.46 | 0.6 | 0.6 |        |
|         | 16-1.0ISO        | ●       | ●       | 16-1.0ISO          |         |         | 1.0       | 9.525            | 16 | 0.58 | 0.6 | 0.7 |        |
|         | 16-1.25ISO       | ●       | ●       | 16-1.25ISO         |         |         | 1.25      | 9.525            | 16 | 0.72 | 0.8 | 0.9 |        |
|         | 16-1.5ISO        | ●       | ●       | 16-1.5ISO          | ●       |         | 1.5       | 9.525            | 16 | 0.87 | 0.8 | 1.0 |        |
|         | 16-1.75ISO       | ●       | ●       | 16-1.75ISO         |         |         | 1.75      | 9.525            | 16 | 1.01 | 0.9 | 1.2 |        |
|         | 16-2.0ISO        | ●       | ●       | 16-2.0ISO          | ●       |         | 2.0       | 9.525            | 16 | 1.15 | 1.0 | 1.3 |        |
|         | 16-2.5ISO        | ●       | ●       | 16-2.5ISO          | ●       |         | 2.5       | 9.525            | 16 | 1.44 | 1.1 | 1.5 |        |
|         | 16-3.0ISO        | ●       | ●       | 16-3.0ISO          | ●       |         | 3.0       | 9.525            | 16 | 1.73 | 1.1 | 1.5 |        |
|         | 22-3.5ISO        | ●       | ●       | 22-3.5ISO          |         |         | 3.5       | 12.7             | 22 | 2.02 | 1.6 | 2.3 |        |
|         | 22-4.0ISO        | ●       | ●       | 22-4.0ISO          | ●       |         | 4.0       | 12.7             | 22 | 2.31 | 1.6 | 2.3 |        |
|         | 22-4.5ISO        | ●       | ●       | 22-4.5ISO          |         |         | 4.5       | 12.7             | 22 | 2.60 | 1.6 | 2.4 |        |
|         | 22-5.0ISO        | ●       | ●       | 22-5.0ISO          |         |         | 5.0       | 12.7             | 22 | 2.89 | 1.6 | 2.3 |        |
|         | 27-5.5ISO        | ●       |         | 27-5.5ISO          |         |         | 5.5       | 15.875           | 27 | 3.17 | 1.6 | 2.3 |        |
|         | 27-6.0ISO        | ●       |         | 27-6.0ISO          |         |         | 6.0       | 15.875           | 27 | 3.46 | 1.8 | 2.5 |        |

Porta herramientas disponibles D32

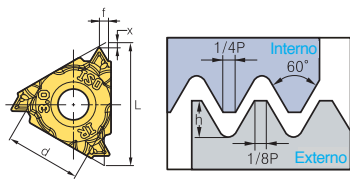
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Roscado

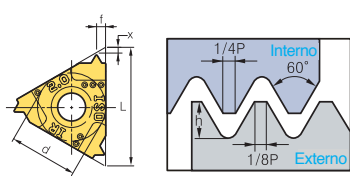
## ISO Métrico (Rompeviruta Clase M)

| Tipo    | Codigo (Derecho) | PC3030T | PC5300 | Codigo (Izquierdo) | PC3030T | Paso | Dimensiones (mm) |    |      |     |     | Imagen  |
|---------|------------------|---------|--------|--------------------|---------|------|------------------|----|------|-----|-----|---|
|         |                  |         |        |                    |         | (mm) | d                | L  | hmin | X   | f   |   |
| Interno | IRM 11-1.5ISO    | ●       |        |                    |         | 1.5  | 6.35             | 11 | 0.85 | 0.8 | 1.0 |  |
|         | 16-1.0ISO        | ●       |        |                    |         | 1.0  | 9.525            | 16 | 0.58 | 0.6 | 0.7 |   |
|         | 16-1.25ISO       |         |        |                    |         | 1.25 | 9.525            | 16 | 0.72 | 0.8 | 0.9 |   |
|         | 16-1.5ISO        | ●       |        |                    |         | 1.5  | 9.525            | 16 | 0.85 | 0.8 | 1.0 |   |
|         | 16-1.75ISO       |         |        |                    |         | 1.75 | 9.525            | 16 | 1.01 | 0.9 | 1.2 |   |
|         | 16-2.0ISO        | ●       |        |                    |         | 2.0  | 9.525            | 16 | 1.12 | 1.0 | 1.3 |   |
|         | 16-2.5ISO        | ●       |        |                    |         | 2.5  | 9.525            | 16 | 1.44 | 1.1 | 1.5 |   |
|         | 16-3.0ISO        | ●       |        |                    |         | 3.0  | 9.525            | 16 | 1.69 | 1.1 | 1.5 |   |

Porta herramientas disponibles D32

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## ISO Métrico (Rompeviruta Clase U) new

| Tipo    | Codigo (Derecho) | PC3030T | PC5300 | Codigo (Izquierdo) | PC3030T | Paso | Dimensiones (mm) |    |      |     |     | Imagen  |
|---------|------------------|---------|--------|--------------------|---------|------|------------------|----|------|-----|-----|---|
|         |                  |         |        |                    |         | (mm) | d                | L  | hmin | X   | f   |   |
| Interno | IRM 16-1.5ISO-U  |         |        |                    |         | 1.5  | 9.525            | 16 | 0.85 | 0.8 | 1.0 |  |
|         | 16-2.0ISO-U      |         |        |                    |         | 2.0  | 9.525            | 16 | 1.12 | 1.0 | 1.3 |   |

Porta herramientas disponibles D32

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## American UN (UN, UNC, UNF, UNEF, UNS)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |        |
| Externo | ER 11-72UN       | ●       |         | EL 11-72UN         |         |         | 72         | 6.35             | 11 | 0.22 | 0.8 | 0.4 |        |
|         | 11-64UN          | ●       |         | 11-64UN            |         |         | 64         | 6.35             | 11 | 0.24 | 0.8 | 0.4 |        |
|         | 11-56UN          | ●       |         | 11-56UN            |         |         | 56         | 6.35             | 11 | 0.28 | 0.7 | 0.4 |        |
|         | 11-48UN          | ●       |         | 11-48UN            |         |         | 48         | 6.35             | 11 | 0.32 | 0.6 | 0.6 |        |
|         | 11-44UN          | ●       |         | 11-44UN            |         |         | 44         | 6.35             | 11 | 0.35 | 0.6 | 0.6 |        |
|         | 11-40UN          | ●       |         | 11-40UN            |         |         | 40z        | 6.35             | 11 | 0.39 | 0.6 | 0.6 |        |
|         | 11-36UN          | ●       |         | 11-36UN            |         |         | 36         | 6.35             | 11 | 0.43 | 0.6 | 0.6 |        |
|         | 11-32UN          | ●       |         | 11-32UN            |         |         | 32         | 6.35             | 11 | 0.49 | 0.6 | 0.6 |        |
|         | 11-28UN          | ●       |         | 11-28UN            |         |         | 28         | 6.35             | 11 | 0.56 | 0.6 | 0.7 |        |
|         | 11-27UN          | ●       |         | 11-27UN            |         |         | 27         | 6.35             | 11 | 0.58 | 0.7 | 0.8 |        |
|         | 11-24UN          | ●       |         | 11-24UN            |         |         | 24         | 6.35             | 11 | 0.65 | 0.7 | 0.8 |        |
|         | 11-20UN          | ●       |         | 11-20UN            |         |         | 20         | 6.35             | 11 | 0.78 | 0.8 | 0.9 |        |
|         | 11-18UN          | ●       |         | 11-18UN            |         |         | 18         | 6.35             | 11 | 0.87 | 0.8 | 1.0 |        |
|         | 11-16UN          | ●       |         | 11-16UN            |         |         | 16         | 6.35             | 11 | 0.97 | 0.9 | 1.1 |        |
|         | 11-14UN          | ●       |         | 11-14UN            |         |         | 14         | 6.35             | 11 | 1.11 | 0.9 | 1.1 |        |
|         | 16-72UN          |         |         | 16-72UN            |         |         | 72         | 9.525            | 16 | 0.22 | 0.8 | 0.4 |        |
|         | 16-64UN          |         |         | 16-64UN            |         |         | 64         | 9.525            | 16 | 0.24 | 0.8 | 0.4 |        |
|         | 16-56UN          |         |         | 16-56UN            |         |         | 56         | 9.525            | 16 | 0.28 | 0.7 | 0.4 |        |
|         | 16-48UN          |         |         | 16-48UN            |         |         | 48         | 9.525            | 16 | 0.32 | 0.6 | 0.6 |        |
|         | 16-44UN          |         |         | 16-44UN            |         |         | 44         | 9.525            | 16 | 0.35 | 0.6 | 0.6 |        |
|         | 16-40UN          |         |         | 16-40UN            |         |         | 40         | 9.525            | 16 | 0.39 | 0.6 | 0.6 |        |
|         | 16-36UN          |         |         | 16-36UN            |         |         | 36         | 9.525            | 16 | 0.43 | 0.6 | 0.6 |        |
|         | 16-32UN          | ●       |         | 16-32UN            |         |         | 32         | 9.525            | 16 | 0.49 | 0.6 | 0.6 |        |
|         | 16-28UN          |         |         | 16-28UN            |         |         | 28         | 9.525            | 16 | 0.56 | 0.6 | 0.7 |        |
|         | 16-27UN          | ●       |         | 16-27UN            |         |         | 27         | 9.525            | 16 | 0.58 | 0.7 | 0.8 |        |
|         | 16-24UN          | ●       | ●       | 16-24UN            |         |         | 24         | 9.525            | 16 | 0.65 | 0.7 | 0.8 |        |
|         | 16-20UN          | ●       | ●       | 16-20UN            |         |         | 20         | 9.525            | 16 | 0.78 | 0.8 | 0.9 |        |
|         | 16-18UN          | ●       | ●       | 16-18UN            | ●       |         | 18         | 9.525            | 16 | 0.87 | 0.8 | 1.0 |        |
|         | 16-16UN          | ●       | ●       | 16-16UN            | ●       |         | 16         | 9.525            | 16 | 0.97 | 0.9 | 1.1 |        |
|         | 16-14UN          | ●       | ●       | 16-14UN            |         |         | 14         | 9.525            | 16 | 1.11 | 1.0 | 1.2 |        |
|         | 16-13UN          |         |         | 16-13UN            |         |         | 13         | 9.525            | 16 | 1.20 | 1.0 | 1.3 |        |
|         | 16-12UN          | ●       | ●       | 16-12UN            |         |         | 12         | 9.525            | 16 | 1.30 | 1.1 | 1.4 |        |
|         | 16-11.5UN        | ●       |         | 16-11.5UN          |         |         | 11.5       | 9.525            | 16 | 1.35 | 1.1 | 1.5 |        |
|         | 16-11UN          | ●       | ●       | 16-11UN            |         |         | 11         | 9.525            | 16 | 1.42 | 1.1 | 1.5 |        |
|         | 16-10UN          | ●       | ●       | 16-10UN            |         |         | 10         | 9.525            | 16 | 1.56 | 1.1 | 1.5 |        |
|         | 16-9UN           | ●       |         | 16-9UN             |         |         | 9          | 9.525            | 16 | 1.73 | 1.2 | 1.7 |        |
|         | 16-8UN           | ●       | ●       | 16-8UN             |         |         | 8          | 9.525            | 16 | 1.95 | 1.2 | 1.6 |        |
|         | 22-7UN           |         |         | 22-7UN             |         |         | 7          | 12.7             | 22 | 2.22 | 1.6 | 2.3 |        |
|         | 22-6UN           | ●       |         | 22-6UN             |         |         | 6          | 12.7             | 22 | 2.60 | 1.6 | 2.3 |        |
|         | 22-5UN           | ●       |         | 22-5UN             |         |         | 5          | 12.7             | 22 | 3.12 | 1.7 | 2.5 |        |
|         | 27-4.5UN         |         |         | 27-4.5UN           |         |         | 4.5        | 15.875           | 27 | 3.46 | 1.9 | 2.7 |        |
|         | 27-4UN           |         |         | 27-4UN             |         |         | 4          | 15.875           | 27 | 3.89 | 2.1 | 3.0 |        |

Porta herramientas disponibles D31

●: En Almacen





## American UN (UN, UNC, UNF, UNEF, UNS)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |        |
| Interno | IR 11-72UN       |         |         | IL 11-72UN         |         |         | 72         | 6.35             | 11 | 0.20 | 0.8 | 0.3 |        |
|         | 11-64UN          |         |         | 11-64UN            |         |         | 64         | 6.35             | 11 | 0.23 | 0.8 | 0.4 |        |
|         | 11-56UN          |         |         | 11-56UN            |         |         | 56         | 6.35             | 11 | 0.26 | 0.7 | 0.4 |        |
|         | 11-48UN          |         |         | 11-48UN            |         |         | 48         | 6.35             | 11 | 0.31 | 0.6 | 0.6 |        |
|         | 11-44UN          |         |         | 11-44UN            |         |         | 44         | 6.35             | 11 | 0.33 | 0.6 | 0.6 |        |
|         | 11-40UN          |         |         | 11-40UN            |         |         | 40         | 6.35             | 11 | 0.37 | 0.6 | 0.6 |        |
|         | 11-36UN          |         |         | 11-36UN            |         |         | 36         | 6.35             | 11 | 0.41 | 0.6 | 0.6 |        |
|         | 11-32UN          |         |         | 11-32UN            |         |         | 32         | 6.35             | 11 | 0.46 | 0.6 | 0.6 |        |
|         | 11-28UN          |         |         | 11-28UN            |         |         | 28         | 6.35             | 11 | 0.52 | 0.6 | 0.7 |        |
|         | 11-27UN          |         |         | 11-27UN            |         |         | 27         | 6.35             | 11 | 0.54 | 0.7 | 0.8 |        |
|         | 11-24UN          |         |         | 11-24UN            |         |         | 24         | 6.35             | 11 | 0.61 | 0.7 | 0.8 |        |
|         | 11-20UN          |         | ●       | 11-20UN            |         |         | 20         | 6.35             | 11 | 0.73 | 0.8 | 0.9 |        |
|         | 11-18UN          | ●       |         | 11-18UN            |         |         | 18         | 6.35             | 11 | 0.81 | 0.8 | 1.0 |        |
|         | 11-16UN          |         | ●       | 11-16UN            |         |         | 16         | 6.35             | 11 | 0.92 | 0.9 | 1.1 |        |
|         | 11-14UN          |         |         | 11-14UN            |         |         | 14         | 6.35             | 11 | 1.05 | 0.9 | 1.1 |        |
|         | 11-12UN          |         | ●       | 11-12UN            |         |         | 12         | 6.35             | 11 | 1.22 | 0.8 | 1.1 |        |
|         | 11-11UN          | ●       |         | 11-11UN            | ●       |         | 11         | 6.35             | 11 | 1.33 | 0.8 | 1.1 |        |
|         | 16-72UN          |         |         | 16-72UN            |         |         | 72         | 9.525            | 16 | 0.20 | 0.8 | 0.3 |        |
|         | 16-64UN          |         |         | 16-64UN            |         |         | 64         | 9.525            | 16 | 0.23 | 0.8 | 0.4 |        |
|         | 16-56UN          |         |         | 16-56UN            |         |         | 56         | 9.525            | 16 | 0.26 | 0.7 | 0.4 |        |
|         | 16-48UN          |         |         | 16-48UN            |         |         | 48         | 9.525            | 16 | 0.31 | 0.6 | 0.6 |        |
|         | 16-44UN          |         |         | 16-44UN            |         |         | 44         | 9.525            | 16 | 0.33 | 0.6 | 0.6 |        |
|         | 16-40UN          |         |         | 16-40UN            |         |         | 40         | 9.525            | 16 | 0.37 | 0.6 | 0.6 |        |
|         | 16-36UN          |         |         | 16-36UN            |         |         | 36         | 9.525            | 16 | 0.41 | 0.6 | 0.6 |        |
|         | 16-32UN          |         |         | 16-32UN            |         |         | 32         | 9.525            | 16 | 0.51 | 0.6 | 0.6 |        |
|         | 16-28UN          | ●       |         | 16-28UN            |         |         | 28         | 9.525            | 16 | 0.52 | 0.6 | 0.7 |        |
|         | 16-27UN          |         |         | 16-27UN            |         |         | 27         | 9.525            | 16 | 0.54 | 0.7 | 0.8 |        |
|         | 16-24UN          |         |         | 16-24UN            |         |         | 24         | 9.525            | 16 | 0.61 | 0.7 | 0.8 |        |
|         | 16-20UN          | ●       |         | 16-20UN            |         |         | 20         | 9.525            | 16 | 0.73 | 0.8 | 0.9 |        |
|         | 16-18UN          |         | ●       | 16-18UN            |         |         | 18         | 9.525            | 16 | 0.81 | 0.8 | 1.0 |        |
|         | 16-16UN          | ●       | ●       | 16-16UN            |         |         | 16         | 9.525            | 16 | 0.92 | 0.9 | 1.1 |        |
|         | 16-14UN          | ●       |         | 16-14UN            |         |         | 14         | 9.525            | 16 | 1.05 | 0.9 | 1.2 |        |
|         | 16-13UN          |         |         | 16-13UN            |         |         | 13         | 9.525            | 16 | 1.13 | 1.0 | 1.3 |        |
|         | 16-12UN          | ●       | ●       | 16-12UN            |         |         | 12         | 9.525            | 16 | 1.22 | 1.1 | 1.4 |        |
|         | 16-11.5UN        | ●       |         | 16-11.5UN          |         |         | 11.5       | 9.525            | 16 | 1.28 | 1.1 | 1.5 |        |
|         | 16-11UN          | ●       | ●       | 16-11UN            |         |         | 11         | 9.525            | 16 | 1.33 | 1.1 | 1.5 |        |
|         | 16-10UN          | ●       |         | 16-10UN            | ●       |         | 10         | 9.525            | 16 | 1.47 | 1.1 | 1.5 |        |
|         | 16-9UN           | ●       | ●       | 16-9UN             |         |         | 9          | 9.525            | 16 | 1.63 | 1.2 | 1.7 |        |
|         | 16-8UN           | ●       | ●       | 16-8UN             | ●       |         | 8          | 9.525            | 16 | 1.83 | 1.2 | 1.5 |        |
|         | 22-7UN           |         |         | 22-7UN             |         |         | 7          | 12.7             | 22 | 2.09 | 1.6 | 2.3 |        |
|         | 22-6UN           |         |         | 22-6UN             |         |         | 6          | 12.7             | 22 | 2.44 | 1.6 | 2.3 |        |
|         | 22-5UN           |         |         | 22-5UN             |         |         | 5          | 12.7             | 22 | 2.93 | 1.7 | 2.3 |        |
|         | 27-4.5UN         |         |         | 27-4.5UN           |         |         | 4.5        | 15.875           | 27 | 3.26 | 1.9 | 2.4 |        |
|         | 27-4UN           |         |         | 27-4UN             |         |         | 4          | 15.875           | 27 | 3.67 | 2.1 | 2.7 |        |

Porta herramientas disponibles D32

●: En Almacen

## Whitworth (BSW, BSF, BSP, BSB)

| Tipo    | Codigo (Derecho) | PC3030T |   | Codigo (Izquierdo) | PC9070T |  | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---|--------------------|---------|--|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |   |                    |         |  |            | d                | L  | hmin | X   | f   |        |
| Externo | ER 11-72W        | ●       |   | EL 11-72W          |         |  | 72         | 6.35             | 11 | 0.23 | 0.7 | 0.4 |        |
|         | 11-60W           | ●       |   | 11-60W             |         |  | 60         | 6.35             | 11 | 0.27 | 0.7 | 0.4 |        |
|         | 11-56W           | ●       |   | 11-56W             |         |  | 56         | 6.35             | 11 | 0.29 | 0.7 | 0.4 |        |
|         | 11-48W           | ●       |   | 11-48W             |         |  | 48         | 6.35             | 11 | 0.34 | 0.6 | 0.6 |        |
|         | 11-40W           | ●       |   | 11-40W             |         |  | 40         | 6.35             | 11 | 0.41 | 0.6 | 0.6 |        |
|         | 11-36W           | ●       |   | 11-36W             |         |  | 36         | 6.35             | 11 | 0.45 | 0.6 | 0.6 |        |
|         | 11-32W           | ●       |   | 11-32W             |         |  | 32         | 6.35             | 11 | 0.51 | 0.6 | 0.6 |        |
|         | 11-28W           | ●       |   | 11-28W             |         |  | 28         | 6.35             | 11 | 0.58 | 0.6 | 0.7 |        |
|         | 11-26W           | ●       |   | 11-26W             |         |  | 26         | 6.35             | 11 | 0.63 | 0.7 | 0.8 |        |
|         | 11-24W           | ●       |   | 11-24W             |         |  | 24         | 6.35             | 11 | 0.68 | 0.7 | 0.8 |        |
|         | 11-22W           | ●       |   | 11-22W             |         |  | 22         | 6.35             | 11 | 0.74 | 0.8 | 0.9 |        |
|         | 11-20W           | ●       |   | 11-20W             |         |  | 20         | 6.35             | 11 | 0.81 | 0.8 | 0.9 |        |
|         | 11-19W           |         |   | 11-19W             |         |  | 19         | 6.35             | 11 | 0.86 | 0.8 | 1.0 |        |
|         | 11-18W           | ●       |   | 11-18W             |         |  | 18         | 6.35             | 11 | 0.90 | 0.8 | 1.0 |        |
|         | 11-16W           | ●       |   | 11-16W             |         |  | 16         | 6.35             | 11 | 1.02 | 0.9 | 1.1 |        |
|         | 11-14W           |         |   | 11-14W             |         |  | 14         | 6.35             | 11 | 1.16 | 1.0 | 1.2 |        |
|         | 16-72W           | ●       |   | 16-72W             |         |  | 72         | 9.525            | 16 | 0.23 | 0.7 | 0.4 |        |
|         | 16-60W           | ●       |   | 16-60W             |         |  | 60         | 9.525            | 16 | 0.27 | 0.7 | 0.4 |        |
|         | 16-56W           | ●       |   | 16-56W             |         |  | 56         | 9.525            | 16 | 0.29 | 0.7 | 0.4 |        |
|         | 16-48W           | ●       |   | 16-48W             |         |  | 48         | 9.525            | 16 | 0.34 | 0.6 | 0.6 |        |
|         | 16-40W           | ●       |   | 16-40W             |         |  | 40         | 9.525            | 16 | 0.41 | 0.6 | 0.6 |        |
|         | 16-36W           | ●       |   | 16-36W             |         |  | 36         | 9.525            | 16 | 0.45 | 0.6 | 0.6 |        |
|         | 16-32W           | ●       |   | 16-32W             |         |  | 32         | 9.525            | 16 | 0.51 | 0.6 | 0.6 |        |
|         | 16-30W           | ●       |   | 16-30W             |         |  | 30         | 9.525            | 16 | 0.55 | 0.6 | 0.7 |        |
|         | 16-28W           | ●       | ● | 16-28W             |         |  | 28         | 9.525            | 16 | 0.58 | 0.6 | 0.7 |        |
|         | 16-26W           | ●       |   | 16-26W             |         |  | 26         | 9.525            | 16 | 0.63 | 0.7 | 0.8 |        |
|         | 16-24W           | ●       |   | 16-24W             |         |  | 24         | 9.525            | 16 | 0.68 | 0.7 | 0.8 |        |
|         | 16-22W           | ●       |   | 16-22W             |         |  | 22         | 9.525            | 16 | 0.74 | 0.8 | 0.9 |        |
|         | 16-20W           | ●       |   | 16-20W             |         |  | 20         | 9.525            | 16 | 0.81 | 0.8 | 0.9 |        |
|         | 16-19W           | ●       | ● | 16-19W             |         |  | 19         | 9.525            | 16 | 0.86 | 0.8 | 1.0 |        |
|         | 16-18W           | ●       |   | 16-18W             |         |  | 18         | 9.525            | 16 | 0.90 | 0.8 | 1.0 |        |
|         | 16-16W           | ●       |   | 16-16W             |         |  | 16         | 9.525            | 16 | 1.02 | 0.9 | 1.1 |        |
|         | 16-14W           | ●       | ● | 16-14W             |         |  | 14         | 9.525            | 16 | 1.16 | 1.0 | 1.2 |        |
|         | 16-12W           | ●       |   | 16-12W             |         |  | 12         | 9.525            | 16 | 1.36 | 1.1 | 1.4 |        |
|         | 16-11W           | ●       | ● | 16-11W             |         |  | 11         | 9.525            | 16 | 1.48 | 1.1 | 1.5 |        |
|         | 16-10W           | ●       |   | 16-10W             |         |  | 10         | 9.525            | 16 | 1.63 | 1.1 | 1.5 |        |
|         | 16-9W            | ●       |   | 16-9W              |         |  | 9          | 9.525            | 16 | 1.81 | 1.2 | 1.7 |        |
|         | 16-8W            | ●       |   | 16-8W              |         |  | 8          | 9.525            | 16 | 2.03 | 1.2 | 1.5 |        |
|         | 22-7W            | ●       |   | 22-7W              |         |  | 7          | 12.7             | 22 | 3.32 | 1.6 | 2.3 |        |
|         | 22-6W            | ●       |   | 22-6W              | ●       |  | 6          | 12.7             | 22 | 2.71 | 1.6 | 2.3 |        |
|         | 22-5W            | ●       |   | 22-5W              |         |  | 5          | 12.7             | 22 | 3.25 | 1.7 | 2.4 |        |
|         | 27-4.5W          | ●       |   | 27-4.5W            |         |  | 4.5        | 15.875           | 27 | 3.61 | 1.8 | 2.6 |        |
|         | 27-4W            |         |   | 27-4W              |         |  | 4          | 15.875           | 27 | 4.07 | 2.0 | 2.9 |        |

Porta herramientas disponibles D31

●: En Almacen

## Whitworth (Rompeviruta Clase M) **new**

| Tipo    | Codigo (Derecho) | PC3030T | PC5300 | Codigo (Izquierdo) | PC3030T | Paso  | Dimensiones (mm) |       |      |      |     | Imagen |
|---------|------------------|---------|--------|--------------------|---------|-------|------------------|-------|------|------|-----|--------|
|         |                  |         |        |                    |         | (tpi) | d                | L     | hmin | X    | f   |        |
| Externo | ERM 16-11W       | ●       |        |                    |         | 14    | 9.525            | 16    | 1.16 | 1.0  | 1.2 |        |
|         | 16-14W           | ●       |        |                    |         | 11    | 9.525            | 16    | 1.48 | 1.1  | 1.5 |        |
|         | 16-19W           | ●       |        |                    |         |       | 19               | 9.525 | 16   | 0.86 | 0.8 |        |

Porta herramientas disponibles D31

●: En Almacen

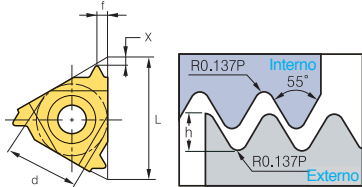
## Whitworth (Rompeviruta Clase U) **new**

| Tipo    | Codigo (Derecho) | PC3030T | PC5300 | Codigo (Izquierdo) | PC3030T | Paso  | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|--------|--------------------|---------|-------|------------------|----|------|-----|-----|--------|
|         |                  |         |        |                    |         | (tpi) | d                | L  | hmin | X   | f   |        |
| Externo | ERM 16-14W-U     |         |        |                    |         | 14    | 9.525            | 16 | 1.16 | 1.0 | 1.2 |        |
|         | 16-11W-U         |         |        |                    |         | 11    | 9.525            | 16 | 1.48 | 1.1 | 1.5 |        |

Porta herramientas disponibles D31

●: En Almacen

## Whitworth (BSW, BSF, BSP, BSB)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen   |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |  |
| Interno | IR 11-72W        | ●       |         | IL 11-72W          |         |         | 72         | 6.35             | 11 | 0.23 | 0.7 | 0.4 |  |
|         | 11-60W           | ●       |         | 11-60W             |         |         | 60         | 6.35             | 11 | 0.27 | 0.7 | 0.4 |  |
|         | 11-56W           | ●       |         | 11-56W             |         |         | 56         | 6.35             | 11 | 0.29 | 0.7 | 0.4 |  |
|         | 11-48W           | ●       |         | 11-48W             |         |         | 48         | 6.35             | 11 | 0.34 | 0.6 | 0.6 |  |
|         | 11-40W           | ●       |         | 11-40W             |         |         | 40         | 6.35             | 11 | 0.41 | 0.6 | 0.6 |  |
|         | 11-36W           | ●       |         | 11-36W             |         |         | 36         | 6.35             | 11 | 0.45 | 0.6 | 0.6 |  |
|         | 11-32W           | ●       |         | 11-32W             |         |         | 32         | 6.35             | 11 | 0.51 | 0.6 | 0.6 |  |
|         | 11-28W           | ●       |         | 11-28W             |         |         | 28         | 6.35             | 11 | 0.58 | 0.6 | 0.7 |  |
|         | 11-26W           | ●       |         | 11-26W             |         |         | 26         | 6.35             | 11 | 0.63 | 0.7 | 0.8 |  |
|         | 11-24W           | ●       |         | 11-24W             |         |         | 24         | 6.35             | 11 | 0.68 | 0.7 | 0.8 |  |
|         | 11-22W           | ●       |         | 11-22W             |         |         | 22         | 6.35             | 11 | 0.74 | 0.8 | 0.9 |  |
|         | 11-20W           |         |         | 11-20W             |         |         | 20         | 6.35             | 11 | 0.81 | 0.8 | 0.9 |  |
|         | 11-19W           | ●       | ●       | 11-19W             | ●       |         | 19         | 6.35             | 11 | 0.86 | 0.8 | 1.0 |  |
|         | 11-18W           | ●       |         | 11-18W             | ●       |         | 18         | 6.35             | 11 | 0.90 | 0.8 | 1.0 |  |
|         | 11-16W           | ●       |         | 11-16W             | ●       |         | 16         | 6.35             | 11 | 1.02 | 0.9 | 1.1 |  |
|         | 11-14W           | ●       |         | 11-14W             | ●       |         | 14         | 6.35             | 11 | 1.16 | 0.9 | 1.1 |  |
|         | 11-12W           | ●       |         | 11-12W             | ●       |         | 12         | 6.35             | 11 | 1.32 | 0.9 | 1.2 |  |
|         | 16-72W           | ●       |         | 16-72W             |         |         | 72         | 9.525            | 16 | 0.23 | 0.7 | 0.4 |  |
|         | 16-60W           | ●       |         | 16-60W             |         |         | 60         | 9.525            | 16 | 0.27 | 0.7 | 0.4 |  |
|         | 16-56W           | ●       |         | 16-56W             |         |         | 56         | 9.525            | 16 | 0.29 | 0.7 | 0.4 |  |
|         | 16-48W           | ●       |         | 16-48W             |         |         | 48         | 9.525            | 16 | 0.34 | 0.6 | 0.6 |  |
|         | 16-40W           | ●       |         | 16-40W             |         |         | 40         | 9.525            | 16 | 0.41 | 0.6 | 0.6 |  |
|         | 16-36W           | ●       |         | 16-36W             |         |         | 36         | 9.525            | 16 | 0.45 | 0.6 | 0.6 |  |
|         | 16-32W           | ●       |         | 16-32W             |         |         | 32         | 9.525            | 16 | 0.51 | 0.6 | 0.6 |  |
|         | 16-30W           | ●       |         | 16-30W             |         |         | 30         | 9.525            | 16 | 0.55 | 0.6 | 0.7 |  |
|         | 16-28W           | ●       |         | 16-28W             |         |         | 28         | 9.525            | 16 | 0.58 | 0.6 | 0.7 |  |
|         | 16-26W           | ●       |         | 16-26W             |         |         | 26         | 9.525            | 16 | 0.63 | 0.7 | 0.8 |  |
|         | 16-24W           | ●       |         | 16-24W             |         |         | 24         | 9.525            | 16 | 0.68 | 0.7 | 0.8 |  |
|         | 16-22W           | ●       |         | 16-22W             |         |         | 22         | 9.525            | 16 | 0.74 | 0.8 | 0.9 |  |
|         | 16-20W           | ●       |         | 16-20W             |         |         | 20         | 9.525            | 16 | 0.81 | 0.8 | 0.9 |  |
|         | 16-19W           | ●       |         | 16-19W             |         |         | 19         | 9.525            | 16 | 0.86 | 0.8 | 1.0 |  |
|         | 16-18W           | ●       |         | 16-18W             |         |         | 18         | 9.525            | 16 | 0.90 | 0.8 | 1.0 |  |
|         | 16-16W           |         |         | 16-16W             |         |         | 16         | 9.525            | 16 | 1.02 | 0.9 | 1.1 |  |
|         | 16-14W           | ●       | ●       | 16-14W             |         |         | 14         | 9.525            | 16 | 1.16 | 1.0 | 1.2 |  |
|         | 16-12W           | ●       |         | 16-12W             |         |         | 12         | 9.525            | 16 | 1.36 | 1.1 | 1.4 |  |
|         | 16-11W           | ●       | ●       | 16-11W             |         |         | 11         | 9.525            | 16 | 1.48 | 1.1 | 1.5 |  |
|         | 16-10W           | ●       |         | 16-10W             |         |         | 10         | 9.525            | 16 | 1.63 | 1.1 | 1.5 |  |
|         | 16-9W            | ●       |         | 16-9W              |         |         | 9          | 9.525            | 16 | 1.81 | 1.2 | 1.7 |  |
|         | 16-8W            | ●       |         | 16-8W              |         |         | 8          | 9.525            | 16 | 2.03 | 1.2 | 1.5 |  |
|         | 22-7W            |         |         | 22-7W              |         |         | 7          | 12.7             | 22 | 3.32 | 1.6 | 2.3 |  |
|         | 22-6W            | ●       |         | 22-6W              |         |         | 6          | 12.7             | 22 | 2.71 | 1.6 | 2.3 |  |
|         | 22-5W            | ●       |         | 22-5W              |         |         | 5          | 12.7             | 22 | 3.25 | 1.7 | 2.4 |  |
|         | 27-4.5W          | ●       |         | 27-4.5W            |         |         | 4.5        | 15.875           | 27 | 3.61 | 1.8 | 2.6 |  |
|         | 27-4W            | ●       |         | 27-4W              |         |         | 4          | 15.875           | 27 | 4.07 | 2.0 | 2.9 |  |

Porta herramientas disponibles D32

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## Whitworth (Rompeviruta Clase M) **new**

| Tipo    | Codigo (Derecho) | PC3030T | PC5300 | Codigo (Izquierdo) | PC3030T | Paso  | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|--------|--------------------|---------|-------|------------------|----|------|-----|-----|--------|
|         |                  |         |        |                    |         | (tpi) | d                | L  | hmin | X   | f   |        |
| Interno | IRM 16-14W       |         |        |                    |         | 14    | 9.525            | 16 | 1.16 | 1.0 | 1.2 |        |
|         | 16-11W           | ●       |        |                    |         | 11    | 9.525            | 16 | 1.48 | 1.1 | 1.5 |        |

➔ Porta herramientas disponibles D32

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## Whitworth (Rompeviruta Clase U) **new**

| Tipo    | Codigo (Derecho) | PC3030T | PC5300 | Codigo (Izquierdo) | PC3030T | Paso  | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|--------|--------------------|---------|-------|------------------|----|------|-----|-----|--------|
|         |                  |         |        |                    |         | (tpi) | d                | L  | hmin | X   | f   |        |
| Interno | IRM 16-14W-U     |         |        |                    |         | 14    | 9.525            | 16 | 1.16 | 1.0 | 1.2 |        |
|         | 16-11W-U         |         |        |                    |         | 11    | 9.525            | 16 | 1.48 | 1.1 | 1.5 |        |

➔ Porta herramientas disponibles D32

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## Roscado de Tuberia (BSPT)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |        |
| Externo | ER 11-28BSPT     |         |         | EL 11-28BSPT       |         |         | 28         | 6.35             | 11 | 0.58 | 0.6 | 0.6 |        |
|         | 11-19BSPT        |         |         | 11-19BSPT          |         |         | 19         | 6.35             | 11 | 0.86 | 0.8 | 0.9 |        |
|         | 11-14BSPT        |         |         | 11-14BSPT          |         |         | 14         | 6.35             | 11 | 1.16 | 0.9 | 1.0 |        |
|         | 16-28BSPT        |         |         | 16-28BSPT          |         |         | 28         | 9.525            | 16 | 0.58 | 0.6 | 0.6 |        |
|         | 16-19BSPT        | ●       | ●       | 16-19BSPT          |         |         | 19         | 9.525            | 16 | 0.86 | 0.8 | 0.9 |        |
|         | 16-14BSPT        |         | ●       | 16-14BSPT          |         |         | 14         | 9.525            | 16 | 1.16 | 1.0 | 1.2 |        |
|         | 16-11BSPT        | ●       | ●       | 16-11BSPT          |         |         | 11         | 9.525            | 16 | 1.48 | 1.1 | 1.5 |        |
| Interno | IR 11-28BSPT     |         |         | IL 11-28BSPT       |         |         | 28         | 6.35             | 11 | 0.58 | 0.6 | 0.6 |        |
|         | 11-19BSPT        |         | ●       | 11-19BSPT          |         |         | 19         | 6.35             | 11 | 0.86 | 0.8 | 0.9 |        |
|         | 11-14BSPT        |         | ●       | 11-14BSPT          |         |         | 14         | 6.35             | 11 | 1.16 | 0.9 | 1.0 |        |
|         | 16-28BSPT        |         |         | 16-28BSPT          |         |         | 28         | 9.525            | 16 | 0.58 | 0.6 | 0.6 |        |
|         | 16-19BSPT        | ●       | ●       | 16-19BSPT          |         |         | 19         | 9.525            | 16 | 0.86 | 0.8 | 0.9 |        |
|         | 16-14BSPT        | ●       | ●       | 16-14BSPT          |         |         | 14         | 9.525            | 16 | 1.16 | 1.0 | 1.2 |        |
|         | 16-11BSPT        |         | ●       | 16-11BSPT          |         |         | 11         | 9.525            | 16 | 1.48 | 1.1 | 1.5 |        |

Porta herramientas disponibles D31, D32

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## Roscado de Tuberia (NPT)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |        |
| Externo | ER 11-27NPT      | ●       |         | EL 11-27NPT        |         |         | 27         | 6.35             | 11 | 0.66 | 0.7 | 0.8 |        |
|         | 11-18NPT         | ●       |         | 11-18NPT           |         |         | 18         | 6.35             | 11 | 1.01 | 0.8 | 1.0 |        |
|         | 11-14NPT         | ●       |         | 11-14NPT           |         |         | 14         | 6.35             | 11 | 1.33 | 0.8 | 1.0 |        |
|         | 16-27NPT         | ●       |         | 16-27NPT           |         |         | 27         | 9.525            | 16 | 0.66 | 0.7 | 0.8 |        |
|         | 16-18NPT         | ●       | ●       | 16-18NPT           |         |         | 18         | 9.525            | 16 | 1.01 | 0.8 | 1.0 |        |
|         | 16-14NPT         | ●       | ●       | 16-14NPT           |         |         | 14         | 9.525            | 16 | 1.33 | 0.9 | 1.2 |        |
|         | 16-11.5NPT       | ●       |         | 16-11.5NPT         |         |         | 11.5       | 9.525            | 16 | 1.64 | 1.1 | 1.5 |        |
|         | 16-8NPT          | ●       |         | 16-8NPT            |         |         | 8          | 9.525            | 16 | 2.42 | 1.3 | 1.8 |        |
| Interno | IR 11-27NPT      | ●       |         | IL 11-27NPT        |         |         | 27         | 6.35             | 11 | 0.66 | 0.7 | 0.8 |        |
|         | 11-18NPT         | ●       |         | 11-18NPT           |         |         | 18         | 6.35             | 11 | 1.01 | 0.8 | 1.0 |        |
|         | 11-14NPT         | ●       | ●       | 11-14NPT           | ●       |         | 14         | 6.35             | 11 | 1.33 | 0.8 | 1.0 |        |
|         | 16-27NPT         | ●       |         | 16-27NPT           |         |         | 27         | 9.525            | 16 | 0.66 | 0.7 | 0.8 |        |
|         | 16-18NPT         | ●       |         | 16-18NPT           |         |         | 18         | 9.525            | 16 | 1.01 | 0.8 | 1.0 |        |
|         | 16-14NPT         | ●       | ●       | 16-14NPT           |         |         | 14         | 9.525            | 16 | 1.33 | 0.9 | 1.2 |        |
|         | 16-11.5NPT       | ●       | ●       | 16-11.5NPT         | ●       |         | 11.5       | 9.525            | 16 | 1.64 | 1.1 | 1.5 |        |
|         | 16-8NPT          |         |         | 16-8NPT            | ●       |         | 8          | 9.525            | 16 | 2.42 | 1.3 | 1.8 |        |

Porta herramientas disponibles D31, D32

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## Roscado de Tuberia (NPTF)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |        |
| Externo | ER 11-27NPTF     |         |         | EL 11-27NPTF       |         |         | 27         | 6.35             | 11 | 0.64 | 0.7 | 0.8 |        |
|         | 11-18NPTF        |         |         | 11-18NPTF          |         |         | 18         | 6.35             | 11 | 1.00 | 0.8 | 1.0 |        |
|         | 11-14NPTF        |         |         | 11-14NPTF          |         |         | 14         | 6.35             | 11 | 1.35 | 0.8 | 1.0 |        |
|         | 16-27NPTF        |         |         | 16-27NPTF          |         |         | 27         | 9.525            | 16 | 0.64 | 0.7 | 0.8 |        |
|         | 16-18NPTF        | ●       |         | 16-18NPTF          |         |         | 18         | 9.525            | 16 | 1.00 | 0.8 | 1.0 |        |
|         | 16-14NPTF        |         |         | 16-14NPTF          |         |         | 14         | 9.525            | 16 | 1.35 | 0.9 | 1.2 |        |
|         | 16-11.5NPTF      |         |         | 16-11.5NPTF        |         |         | 11.5       | 9.525            | 16 | 1.63 | 1.1 | 1.5 |        |
|         | 16-8NPTF         |         |         | 16-8NPTF           | ●       |         | 8          | 9.525            | 16 | 2.38 | 1.3 | 1.8 |        |
| Interno | IR 11-27NPTF     |         |         | IL 11-27NPTF       |         |         | 27         | 6.35             | 11 | 0.64 | 0.7 | 0.8 |        |
|         | 11-18NPTF        |         |         | 11-18NPTF          |         |         | 18         | 6.35             | 11 | 1.00 | 0.8 | 1.0 |        |
|         | 11-14NPTF        |         |         | 11-14NPTF          |         |         | 14         | 6.35             | 11 | 1.35 | 0.8 | 1.0 |        |
|         | 16-27NPTF        |         |         | 16-27NPTF          |         |         | 27         | 9.525            | 16 | 0.64 | 0.7 | 0.8 |        |
|         | 16-18NPTF        |         |         | 16-18NPTF          |         |         | 18         | 9.525            | 16 | 1.00 | 0.8 | 1.0 |        |
|         | 16-14NPTF        |         |         | 16-14NPTF          |         |         | 14         | 9.525            | 16 | 1.35 | 0.9 | 1.2 |        |
|         | 16-11.5NPTF      |         |         | 16-11.5NPTF        |         |         | 11.5       | 9.525            | 16 | 1.63 | 1.1 | 1.5 |        |
|         | 16-8NPTF         |         |         | 16-8NPTF           |         |         | 8          | 9.525            | 16 | 2.38 | 1.3 | 1.8 |        |

Porta herramientas disponibles D31, D32

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## Round DIN 405

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |        |
| Externo | ER 16-10RD       |         |         | EL 16-10RD         |         |         | 10         | 9.525            | 16 | 1.27 | 1.1 | 1.2 |        |
|         | 16-8RD           | ●       |         | 16-8RD             |         |         | 8          | 9.525            | 16 | 1.59 | 1.4 | 1.3 |        |
|         | 16-6RD           | ●       |         | 16-6RD             |         |         | 6          | 9.525            | 16 | 2.12 | 1.5 | 1.7 |        |
|         | 22-6RD           |         |         | 22-6RD             |         |         | 6          | 12.7             | 22 | 2.12 | 1.5 | 1.7 |        |
|         | 22-4RD           | ●       |         | 22-4RD             |         |         | 4          | 12.7             | 22 | 3.18 | 2.2 | 2.3 |        |
|         | 27-4RD           |         |         | 27-4RD             |         |         | 4          | 15.875           | 27 | 3.18 | 2.2 | 2.3 |        |
| Interno | IR 16-10RD       |         |         | IL 16-10RD         |         |         | 10         | 9.525            | 16 | 1.27 | 1.1 | 1.2 |        |
|         | 16-8RD           |         |         | 16-8RD             |         |         | 8          | 9.525            | 16 | 1.59 | 1.4 | 1.4 |        |
|         | 16-6RD           | ●       |         | 16-6RD             |         |         | 6          | 9.525            | 16 | 2.12 | 1.4 | 1.5 |        |
|         | 22-6RD           |         |         | 22-6RD             |         |         | 6          | 12.7             | 22 | 2.12 | 1.5 | 1.7 |        |
|         | 22-4RD           | ●       |         | 22-4RD             |         |         | 4          | 12.7             | 22 | 3.18 | 2.2 | 2.3 |        |
|         | 27-4RD           |         |         | 27-4RD             |         |         | 4          | 15.875           | 27 | 3.18 | 2.2 | 2.3 |        |

Porta herramientas disponibles D31, D32

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## Trapez DIN 103 (TR)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (mm) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|-----------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |           | d                | L  | hmin | X   | f   |        |
| Externo | ER 11-1.5TR      | ●       |         | EL 11-1.5TR        | ●       |         | 1.5       | 6.35             | 11 | 0.90 | 0.8 | 0.9 |        |
|         | 16-1.5TR         |         |         | 16-1.5TR           |         |         | 1.5       | 9.525            | 16 | 0.90 | 1.0 | 1.1 |        |
|         | 16-2.0TR         | ●       |         | 16-2.0TR           | ●       |         | 2.0       | 9.525            | 16 | 1.25 | 1.1 | 1.3 |        |
|         | 16-3.0TR         | ●       | ●       | 16-3.0TR           | ●       |         | 3.0       | 9.525            | 16 | 1.75 | 1.3 | 1.5 |        |
|         | 22-4.0TR         | ●       | ●       | 22-4.0TR           | ●       |         | 4.0       | 12.7             | 22 | 2.25 | 1.7 | 1.9 |        |
|         | 22-5.0TR         | ●       | ●       | 22-5.0TR           | ●       |         | 5.0       | 12.7             | 22 | 2.75 | 2.1 | 2.5 |        |
|         | 27-6.0TR         | ●       | ●       | 27-6.0TR           | ●       |         | 6.0       | 15.875           | 27 | 3.50 | 2.3 | 2.7 |        |
|         |                  |         |         |                    |         |         |           |                  |    |      |     |     |        |
| Interno | IR 11-1.5TR      |         |         | IL 11-1.5TR        | ●       |         | 1.5       | 6.35             | 11 | 0.90 | 0.8 | 0.9 |        |
|         | 16-1.5TR         | ●       |         | 16-1.5TR           | ●       |         | 1.5       | 9.525            | 16 | 0.90 | 1.0 | 1.1 |        |
|         | 16-2.0TR         | ●       |         | 16-2.0TR           | ●       |         | 2.0       | 9.525            | 16 | 1.25 | 1.1 | 1.3 |        |
|         | 16-2.5TR         | ●       |         | 16-2.5TR           | ●       |         | 2.5       | 9.525            | 16 | 1.53 | 1.2 | 1.4 |        |
|         | 16-3.0TR         | ●       |         | 16-3.0TR           | ●       |         | 3.0       | 9.525            | 16 | 1.75 | 1.3 | 1.5 |        |
|         | 22-4.0TR         | ●       | ●       | 22-4.0TR           | ●       |         | 4.0       | 12.7             | 22 | 2.25 | 1.7 | 1.9 |        |
|         | 22-5.0TR         | ●       | ●       | 22-5.0TR           | ●       |         | 5.0       | 12.7             | 22 | 2.75 | 2.1 | 2.5 |        |
|         | 27-6.0TR         | ●       | ●       | 27-6.0TR           | ●       |         | 6.0       | 15.875           | 27 | 3.50 | 2.3 | 2.7 |        |

Porta herramientas disponibles D31, D32

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## American ACME (ACME)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |        |
| Externo | ER 11-16ACME     |         |         | EL 11-16ACME       |         |         | 16         | 6.35             | 11 | 0.92 | 1.0 | 1.1 |        |
|         | 16-16ACME        |         |         | 16-16ACME          |         |         | 16         | 9.525            | 16 | 0.92 | 1.0 | 1.1 |        |
|         | 16-14ACME        |         |         | 16-14ACME          |         |         | 14         | 9.525            | 16 | 1.03 | 1.0 | 1.2 |        |
|         | 16-12ACME        |         |         | 16-12ACME          |         |         | 12         | 9.525            | 16 | 1.19 | 1.1 | 1.2 |        |
|         | 16-10ACME        | ●       |         | 16-10ACME          |         |         | 10         | 9.525            | 16 | 1.52 | 1.3 | 1.4 |        |
|         | 16-8ACME         |         |         | 16-8ACME           |         |         | 8          | 9.525            | 16 | 1.84 | 1.4 | 1.5 |        |
|         | 16-6ACME         |         |         | 16-6ACME           |         |         | 6          | 9.525            | 16 | 2.37 | 1.7 | 1.9 |        |
|         | 22-6ACME         | ●       |         | 22-6ACME           | ●       |         | 6          | 12.7             | 22 | 2.37 | 1.8 | 2.1 |        |
|         | 22-5ACME         | ●       |         | 22-5ACME           | ●       |         | 5          | 12.7             | 22 | 2.79 | 2.0 | 2.3 |        |
|         | 27-4ACME         |         |         | 27-4ACME           |         |         | 4          | 15.875           | 27 | 3.43 | 2.4 | 2.7 |        |
| Interno | IR 11-16ACME     |         |         | IL 11-16ACME       |         |         | 16         | 6.35             | 11 | 0.92 | 0.9 | 0.9 |        |
|         | 16-16ACME        |         |         | 16-16ACME          |         |         | 16         | 9.525            | 16 | 0.92 | 1.0 | 1.1 |        |
|         | 16-14ACME        |         |         | 16-14ACME          |         |         | 14         | 9.525            | 16 | 1.03 | 1.1 | 1.2 |        |
|         | 16-12ACME        |         |         | 16-12ACME          |         |         | 12         | 9.525            | 16 | 1.19 | 1.2 | 1.3 |        |
|         | 16-10ACME        |         |         | 16-10ACME          |         |         | 10         | 9.525            | 16 | 1.52 | 1.2 | 1.3 |        |
|         | 16-8ACME         | ●       |         | 16-8ACME           |         |         | 8          | 9.525            | 16 | 1.84 | 1.4 | 1.5 |        |
|         | 16-6ACME         |         |         | 16-6ACME           |         |         | 6          | 9.525            | 16 | 2.37 | 1.7 | 1.9 |        |
|         | 22-6ACME         | ●       |         | 22-6ACME           |         |         | 6          | 12.7             | 22 | 2.37 | 1.8 | 2.1 |        |
|         | 22-5ACME         | ●       |         | 22-5ACME           |         |         | 5          | 12.7             | 22 | 2.79 | 2.0 | 2.3 |        |
|         | 27-4ACME         | ●       |         | 27-4ACME           |         |         | 4          | 15.875           | 27 | 3.43 | 2.3 | 2.6 |        |

Porta herramientas disponibles D31, D32

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## Stub ACME (STACME)

| Tipo        | Codigo (Derecho) | PC3030T        | PC9070T | Codigo (Izquierdo) | PC3030T        | PC9070T | Paso (tpi) | Dimensiones (mm) |      |      |      |     | Imagen |
|-------------|------------------|----------------|---------|--------------------|----------------|---------|------------|------------------|------|------|------|-----|--------|
|             |                  |                |         |                    |                |         |            | d                | L    | hmin | X    | f   |        |
| Externo     | ER 11-16STACME   |                |         | EL 11-16STACME     |                |         | 16         | 6.35             | 11   | 0.60 | 1.0  | 1.0 |        |
|             | 16-16STACME      |                |         | 16-16STACME        |                |         | 16         | 9.525            | 16   | 0.60 | 1.0  | 1.0 |        |
|             | 16-14STACME      |                |         | 16-14STACME        |                |         | 14         | 9.525            | 16   | 0.67 | 1.1  | 1.1 |        |
|             | 16-12STACME      |                |         | 16-12STACME        |                |         | 12         | 9.525            | 16   | 0.76 | 1.2  | 1.2 |        |
|             | 16-10STACME      |                |         | 16-10STACME        |                |         | 10         | 9.525            | 16   | 1.02 | 1.2  | 1.3 |        |
|             | 16-8STACME       |                |         | 16-8STACME         |                |         | 8          | 9.525            | 16   | 1.21 | 1.4  | 1.5 |        |
|             | 16-6STACME       |                |         | 16-6STACME         |                |         | 6          | 9.525            | 16   | 1.52 | 1.7  | 1.8 |        |
|             | 22-6STACME       |                |         | 22-6STACME         |                |         | 6          | 12.7             | 22   | 1.52 | 1.7  | 1.8 |        |
|             | 22-5STACME       |                |         | 22-5STACME         |                |         | 5          | 12.7             | 22   | 1.78 | 2.1  | 2.3 |        |
|             | 27-4STACME       |                |         | 27-4STACME         |                |         | 4          | 15.875           | 27   | 2.16 | 2.3  | 2.4 |        |
|             | 27-3STACME       |                |         | 27-3STACME         |                |         | 3          | 15.875           | 27   | 2.79 | 2.9  | 2.9 |        |
|             | Interno          | IR 11-16STACME |         |                    | IL 11-16STACME |         |            | 16               | 6.35 | 11   | 0.60 | 1.0 |        |
| 16-16STACME |                  |                |         | 16-16STACME        |                |         | 16         | 9.525            | 16   | 0.60 | 1.0  | 1.0 |        |
| 16-14STACME |                  |                |         | 16-14STACME        |                |         | 14         | 9.525            | 16   | 0.67 | 1.1  | 1.1 |        |
| 16-12STACME |                  |                |         | 16-12STACME        |                |         | 12         | 9.525            | 16   | 0.76 | 1.1  | 1.2 |        |
| 16-10STACME |                  |                |         | 16-10STACME        |                |         | 10         | 9.525            | 16   | 1.02 | 1.2  | 1.3 |        |
| 16-8STACME  |                  |                |         | 16-8STACME         |                |         | 8          | 9.525            | 16   | 1.21 | 1.4  | 1.5 |        |
| 16-6STACME  |                  |                |         | 16-6STACME         |                |         | 6          | 9.525            | 16   | 1.52 | 1.7  | 1.8 |        |
| 22-6STACME  |                  |                |         | 22-6STACME         |                |         | 6          | 12.7             | 22   | 1.52 | 1.7  | 1.8 |        |
| 22-5STACME  |                  |                |         | 22-5STACME         |                |         | 5          | 12.7             | 22   | 1.78 | 2.1  | 2.3 |        |
| 27-4STACME  |                  |                |         | 27-4STACME         |                |         | 4          | 15.875           | 27   | 2.16 | 2.3  | 2.4 |        |
| 27-3STACME  |                  |                |         | 27-3STACME         |                |         | 3          | 15.875           | 27   | 2.79 | 2.9  | 2.9 |        |

Porta herramientas disponibles D31, D32

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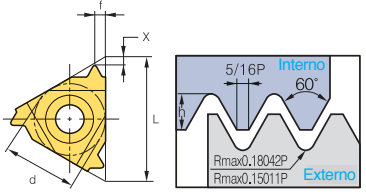
## UNJ (Constante Unificación Roscado)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |        |
| Externo | ER 11-48UNJ      |         |         | EL 11-48UNJ        |         |         | 48         | 6.35             | 11 | 0.31 | 0.6 | 0.5 |        |
|         | 11-44UNJ         |         |         | 11-44UNJ           |         |         | 44         | 6.35             | 11 | 0.33 | 0.6 | 0.6 |        |
|         | 11-40UNJ         |         |         | 11-40UNJ           |         |         | 40         | 6.35             | 11 | 0.37 | 0.6 | 0.6 |        |
|         | 11-36UNJ         |         |         | 11-36UNJ           |         |         | 36         | 6.35             | 11 | 0.41 | 0.6 | 0.6 |        |
|         | 11-32UNJ         |         |         | 11-32UNJ           |         |         | 32         | 6.35             | 11 | 0.46 | 0.6 | 0.7 |        |
|         | 11-28UNJ         |         |         | 11-28UNJ           |         |         | 28         | 6.35             | 11 | 0.52 | 0.7 | 0.7 |        |
|         | 11-24UNJ         | ●       |         | 11-24UNJ           |         |         | 24         | 6.35             | 11 | 0.61 | 0.7 | 0.8 |        |
|         | 11-20UNJ         |         |         | 11-20UNJ           |         |         | 20         | 6.35             | 11 | 0.73 | 0.8 | 0.9 |        |
|         | 11-18UNJ         |         |         | 11-18UNJ           |         |         | 18         | 6.35             | 11 | 0.81 | 0.8 | 1.0 |        |
|         | 11-16UNJ         |         |         | 11-16UNJ           |         |         | 16         | 6.35             | 11 | 0.92 | 0.9 | 1.1 |        |
|         | 11-14UNJ         |         |         | 11-14UNJ           |         |         | 14         | 6.35             | 11 | 1.05 | 1.0 | 1.2 |        |
|         | 16-48UNJ         |         |         | 16-48UNJ           |         |         | 48         | 9.525            | 16 | 0.31 | 0.6 | 0.5 |        |
|         | 16-44UNJ         |         |         | 16-44UNJ           |         |         | 44         | 9.525            | 16 | 0.33 | 0.6 | 0.6 |        |
|         | 16-40UNJ         |         |         | 16-40UNJ           |         |         | 40         | 9.525            | 16 | 0.37 | 0.6 | 0.6 |        |
|         | 16-36UNJ         |         |         | 16-36UNJ           |         |         | 36         | 9.525            | 16 | 0.41 | 0.6 | 0.6 |        |
|         | 16-32UNJ         | ●       |         | 16-32UNJ           |         |         | 32         | 9.525            | 16 | 0.46 | 0.6 | 0.7 |        |
|         | 16-28UNJ         | ●       |         | 16-28UNJ           |         |         | 28         | 9.525            | 16 | 0.52 | 0.7 | 0.7 |        |
|         | 16-24UNJ         | ●       |         | 16-24UNJ           |         |         | 24         | 9.525            | 16 | 0.61 | 0.7 | 0.8 |        |
|         | 16-20UNJ         | ●       |         | 16-20UNJ           |         |         | 20         | 9.525            | 16 | 0.73 | 0.8 | 0.9 |        |
|         | 16-18UNJ         |         |         | 16-18UNJ           |         |         | 18         | 9.525            | 16 | 0.81 | 0.8 | 1.0 |        |
|         | 16-16UNJ         | ●       |         | 16-16UNJ           |         |         | 16         | 9.525            | 16 | 0.92 | 0.9 | 1.1 |        |
|         | 16-14UNJ         |         |         | 16-14UNJ           |         |         | 14         | 9.525            | 16 | 1.05 | 1.0 | 1.2 |        |
|         | 16-13UNJ         |         |         | 16-13UNJ           |         |         | 13         | 9.525            | 16 | 1.13 | 1.0 | 1.3 |        |
|         | 16-12UNJ         | ●       |         | 16-12UNJ           |         |         | 12         | 9.525            | 16 | 1.22 | 1.1 | 1.3 |        |
|         | 16-11UNJ         |         |         | 16-11UNJ           |         |         | 11         | 9.525            | 16 | 1.33 | 1.2 | 1.5 |        |
|         | 16-10UNJ         |         |         | 16-10UNJ           | ●       |         | 10         | 9.525            | 16 | 1.47 | 1.2 | 1.5 |        |
|         | 16-9UNJ          |         |         | 16-9UNJ            |         |         | 9          | 9.525            | 16 | 1.63 | 1.3 | 1.7 |        |
|         | 16-8UNJ          |         |         | 16-8UNJ            |         |         | 8          | 9.525            | 16 | 1.83 | 1.2 | 1.6 |        |
|         | 22-7UNJ          |         |         | 22-7UNJ            |         |         | 7          | 12.7             | 22 | 2.09 | 1.7 | 2.3 |        |
|         | 22-6UNJ          |         |         | 22-6UNJ            |         |         | 6          | 12.7             | 22 | 2.44 | 1.7 | 2.3 |        |
|         | 22-5UNJ          |         |         | 22-5UNJ            |         |         | 5          | 12.7             | 22 | 2.93 | 1.8 | 2.5 |        |
|         | 27-4.5UNJ        |         |         | 27-4.5UNJ          |         |         | 4.5        | 15.875           | 27 | 3.26 | 2.0 | 2.7 |        |
|         | 27-4UNJ          |         |         | 27-4UNJ            |         |         | 4          | 15.875           | 27 | 3.67 | 2.2 | 3.0 |        |

Porta herramientas disponibles D31

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## UNJ (Constante Unificación Roscado)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |      |      |     |     | Imagen  |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|------|------|-----|-----|---|
|         |                  |         |         |                    |         |         |            | d                | L    | hmin | X   | f   |   |
| Interno | IR 11-48UNJ      |         |         | IL 11-48UNJ        |         |         | 48         | 6.35             | 11   | 0.28 | 0.6 | 0.5 |  |
|         | 11-44UNJ         |         |         | 11-44UNJ           |         |         | 44         | 6.35             | 11   | 0.30 | 0.6 | 0.6 |   |
|         | 11-40UNJ         |         |         | 11-40UNJ           |         |         | 40         | 6.35             | 11   | 0.33 | 0.6 | 0.6 |   |
|         | 11-36UNJ         |         |         | 11-36UNJ           |         |         | 36         | 6.35             | 11   | 0.37 | 0.6 | 0.6 |   |
|         | 11-32UNJ         |         |         | 11-32UNJ           |         |         | 32         | 6.35             | 11   | 0.42 | 0.6 | 0.7 |   |
|         | 11-28UNJ         |         |         | 11-28UNJ           |         |         | 28         | 6.35             | 11   | 0.47 | 0.7 | 0.7 |   |
|         | 11-24UNJ         |         |         | 11-24UNJ           |         |         | 24         | 6.35             | 11   | 0.55 | 0.7 | 0.8 |   |
|         | 11-20UNJ         |         |         | 11-20UNJ           |         |         | 20         | 6.35             | 11   | 0.66 | 0.8 | 0.9 |   |
|         | 11-18UNJ         |         |         | 11-18UNJ           |         |         | 18         | 6.35             | 11   | 0.74 | 0.8 | 1.0 |   |
|         | 11-16UNJ         |         |         | 11-16UNJ           |         |         | 16         | 6.35             | 11   | 0.83 | 0.9 | 1.1 |   |
|         | 11-14UNJ         |         |         | 11-14UNJ           |         |         | 14         | 9.525            | 11   | 0.95 | 1.0 | 1.2 |   |
|         | 16-48UNJ         |         |         | 16-48UNJ           |         |         | 48         | 9.525            | 16   | 0.28 | 0.6 | 0.5 |   |
|         | 16-44UNJ         |         |         | 16-44UNJ           |         |         | 44         | 9.525            | 16   | 0.30 | 0.6 | 0.6 |   |
|         | 16-40UNJ         |         |         | 16-40UNJ           |         |         | 40         | 9.525            | 16   | 0.33 | 0.6 | 0.6 |   |
|         | 16-36UNJ         |         |         | 16-36UNJ           |         |         | 36         | 9.525            | 16   | 0.37 | 0.6 | 0.6 |   |
|         | 16-32UNJ         |         |         | 16-32UNJ           |         |         | 32         | 9.525            | 16   | 0.42 | 0.6 | 0.7 |   |
|         | 16-28UNJ         |         |         | 16-28UNJ           |         |         | 28         | 9.525            | 16   | 0.47 | 0.7 | 0.7 |   |
|         | 16-24UNJ         |         |         | 16-24UNJ           |         |         | 24         | 9.525            | 16   | 0.55 | 0.7 | 0.8 |   |
|         | 16-20UNJ         |         |         | 16-20UNJ           |         |         | 20         | 9.525            | 16   | 0.66 | 0.8 | 0.9 |   |
|         | 16-18UNJ         |         |         | 16-18UNJ           |         |         | 18         | 9.555            | 16   | 0.74 | 0.8 | 1.0 |   |
|         | 16-16UNJ         |         |         | 16-16UNJ           |         |         | 16         | 9.525            | 16   | 0.83 | 0.9 | 1.1 |   |
|         | 16-14UNJ         |         |         | 16-14UNJ           |         |         | 14         | 9.525            | 16   | 0.95 | 1.0 | 1.2 |   |
|         | 16-13UNJ         |         |         | 16-13UNJ           |         |         | 13         | 9.525            | 16   | 1.02 | 1.0 | 1.3 |   |
|         | 16-12UNJ         |         |         | 16-12UNJ           | ●       |         | 12         | 9.525            | 16   | 1.11 | 1.1 | 1.3 |   |
|         | 16-11UNJ         |         |         | 16-11UNJ           |         |         | 11         | 9.525            | 16   | 1.21 | 1.2 | 1.5 |   |
|         | 16-10UNJ         |         |         | 16-10UNJ           |         |         | 10         | 9.525            | 16   | 1.33 | 1.2 | 1.5 |   |
|         | 16-9UNJ          |         |         | 16-9UNJ            |         |         | 9          | 9.525            | 16   | 1.48 | 1.3 | 1.7 |   |
|         | 16-8UNJ          |         |         | 16-8UNJ            |         |         | 8          | 9.525            | 16   | 1.66 | 1.2 | 1.6 |   |
|         | 22-7UNJ          |         |         | 22-7UNJ            |         |         | 7          | 12.7             | 22   | 1.90 | 1.7 | 2.3 |   |
|         | 22-6UNJ          |         |         | 22-6UNJ            |         |         | 6          | 12.7             | 22   | 2.21 | 1.7 | 2.3 |   |
|         | 22-5UNJ          |         |         | 22-5UNJ            |         |         | 5          | 12.7             | 22   | 2.66 | 1.8 | 2.5 |   |
|         | 27-4.5UNJ        |         |         | 27-4.5UNJ          |         |         | 4.5        | 15.875           | 27   | 2.95 | 2.0 | 2.7 |   |
| 27-4UNJ |                  |         | 27-4UNJ |                    |         | 4       | 15.875     | 27               | 3.32 | 2.2  | 3.0 |     |   |

Porta herramientas disponibles D32

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## American Buttress (ABUT)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |        |
| Externo | ER 11-20ABUT     |         |         | EL 11-20ABUT       |         |         | 20         | 6.35             | 11 | 0.84 | 1.0 | 1.4 |        |
|         | 11-16ABUT        |         |         | 11-16ABUT          |         |         | 16         | 6.35             | 11 | 1.05 | 1.3 | 1.9 |        |
|         | 16-20ABUT        | ●       |         | 16-20ABUT          |         |         | 20         | 9.525            | 16 | 0.84 | 1.0 | 1.4 |        |
|         | 16-16ABUT        |         |         | 16-16ABUT          |         |         | 16         | 9.525            | 16 | 1.05 | 1.3 | 1.9 |        |
|         | 16-12ABUT        |         |         | 16-12ABUT          |         |         | 12         | 9.525            | 16 | 1.40 | 1.4 | 2.0 |        |
|         | 16-10ABUT        |         |         | 16-10ABUT          |         |         | 10         | 9.525            | 16 | 1.68 | 1.5 | 2.3 |        |
|         | 22-8ABUT         |         |         | 22-8ABUT           |         |         | 8          | 12.7             | 22 | 2.10 | 2.0 | 3.2 |        |
|         | 22-6ABUT         |         |         | 22-6ABUT           |         |         | 6          | 12.7             | 22 | 2.80 | 2.2 | 3.5 |        |
| Interno | IR 11-20ABUT     |         |         | IL 11-20ABUT       |         |         | 20         | 6.35             | 11 | 0.84 | 1.0 | 1.4 |        |
|         | 11-16ABUT        |         |         | 11-16ABUT          |         |         | 16         | 6.35             | 11 | 1.05 | 1.3 | 1.9 |        |
|         | 16-20ABUT        | ●       |         | 16-20ABUT          |         |         | 20         | 9.525            | 16 | 0.84 | 1.0 | 1.4 |        |
|         | 16-16ABUT        |         |         | 16-16ABUT          |         |         | 16         | 9.525            | 16 | 1.05 | 1.3 | 1.9 |        |
|         | 16-12ABUT        |         |         | 16-12ABUT          |         |         | 12         | 9.525            | 16 | 1.40 | 1.4 | 2.0 |        |
|         | 16-10ABUT        | ●       |         | 16-10ABUT          |         |         | 10         | 9.525            | 16 | 1.68 | 1.5 | 2.3 |        |
|         | 22-8ABUT         |         |         | 22-8ABUT           |         |         | 8          | 12.7             | 22 | 2.10 | 2.0 | 3.2 |        |
|         | 22-6ABUT         |         |         | 22-6ABUT           |         |         | 6          | 12.7             | 22 | 2.80 | 2.2 | 3.5 |        |

Porta herramientas disponibles D31, D32

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## British Buttress (BBUT)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |        |
| Externo | ER 16-16BBUT     | ●       |         | EL 16-16BBUT       |         |         | 16         | 9.525            | 16 | 0.80 | 1.1 | 1.6 |        |
|         | 16-12BBUT        |         |         | 16-12BBUT          |         |         | 12         | 9.525            | 16 | 1.07 | 1.4 | 2.1 |        |
|         | 16-10BBUT        |         |         | 16-10BBUT          |         |         | 10         | 9.525            | 16 | 1.28 | 1.4 | 2.2 |        |
|         | 16-8BBUT         | ●       |         | 16-8BBUT           |         |         | 8          | 9.525            | 16 | 1.61 | 1.6 | 2.5 |        |
|         | 22-8BBUT         |         |         | 22-8BBUT           |         |         | 8          | 12.7             | 22 | 1.61 | 1.6 | 2.5 |        |
| Interno | IR 16-16BBUT     | ●       |         | IL 16-16BBUT       |         |         | 16         | 9.525            | 16 | 0.80 | 1.1 | 1.6 |        |
|         | 16-12BBUT        |         |         | 16-12BBUT          |         |         | 12         | 9.525            | 16 | 1.07 | 1.4 | 2.1 |        |
|         | 16-10BBUT        |         |         | 16-10BBUT          |         |         | 10         | 9.525            | 16 | 1.28 | 1.4 | 2.2 |        |
|         | 16-8BBUT         |         |         | 16-8BBUT           |         |         | 8          | 9.525            | 16 | 1.61 | 1.6 | 2.5 |        |
|         | 22-8BBUT         |         |         | 22-8BBUT           |         |         | 8          | 12.7             | 22 | 1.61 | 1.6 | 2.5 |        |

Porta herramientas disponibles D31, D32

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## Métrico Buttress (SAGE)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (mm) | Dimensiones (mm) |    |      |      |      | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|-----------|------------------|----|------|------|------|--------|
|         |                  |         |         |                    |         |         |           | d                | L  | hmin | X    | f    |        |
| Externo | ER 16-2.0SAGE    |         |         | EL 16-2.0SAGE      |         |         | 2.0       | 9.525            | 16 | 1.74 | 1.47 | 2.08 |        |
|         | 22-2.0SAGE       |         |         | 22-2.0SAGE         |         |         | 2.0       | 12.7             | 22 | 1.74 | 1.47 | 2.08 |        |
|         | 22-3.0SAGE       | ●       |         | 22-3.0SAGE         |         |         | 3.0       | 12.7             | 22 | 2.60 | 1.79 | 2.60 |        |
|         | 27-4.0SAGE       | ●       |         | 27-4.0SAGE         |         |         | 4.0       | 15.875           | 27 | 3.55 | 1.93 | 3.20 |        |
| Interno | IR 16-2.0SAGE    | ●       |         | IL 16-2.0SAGE      |         |         | 2.0       | 9.525            | 16 | 1.50 | 1.52 | 2.2  |        |
|         | 22-3.0SAGE       |         |         | 22-3.0SAGE         |         |         | 3.0       | 12.7             | 22 | 2.25 | 1.66 | 2.9  |        |
|         | 27-4.0SAGE       | ●       |         | 27-4.0SAGE         |         |         | 4.0       | 5/8              | 27 | 3.09 | 2.12 | 3.2  |        |

Porta herramientas disponibles D31, D32

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## API

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |        |
| Externo | ER 22-4API382    | ●       |         | EL 22-4API382      |         |         | 4          | 12.7             | 22 | 3.09 | 2.1 | 2.8 |        |
|         | 22-4API383       |         |         | 22-4API383         |         |         | 4          | 12.7             | 22 | 3.08 | 2.1 | 2.8 |        |
|         | 22-4API502       | ●       |         | 22-4API502         |         |         | 4          | 12.7             | 22 | 3.75 | 2.0 | 2.9 |        |
|         | 22-4API503       | ●       |         | 22-4API503         |         |         | 4          | 12.7             | 22 | 3.74 | 2.0 | 2.9 |        |
|         | 22-5API403       |         |         | 22-5API403         |         |         | 5          | 12.7             | 22 | 2.99 | 1.8 | 2.6 |        |
|         | 22-6API551       |         |         | 22-6API551         |         |         | 6          | 12.7             | 22 | 1.41 | 2.6 | 2.0 |        |
|         | 27-4API382       |         |         | 27-4API382         |         |         | 4          | 15.875           | 27 | 3.09 | 2.1 | 2.8 |        |
|         | 27-4API383       |         |         | 27-4API383         |         |         | 4          | 15.875           | 27 | 3.08 | 2.1 | 2.8 |        |
|         | 27-4API502       |         |         | 27-4API502         |         |         | 4          | 15.875           | 27 | 3.75 | 2.1 | 3.1 |        |
|         | 27-4API503       | ●       |         | 27-4API503         |         |         | 4          | 15.875           | 27 | 3.74 | 2.1 | 3.1 |        |
|         | 27-5API403       |         |         | 27-5API403         |         |         | 5          | 15.875           | 27 | 2.99 | 1.9 | 2.7 |        |
| Interno | IR 22-4API382    |         |         | IL 22-4API382      |         |         | 4          | 12.7             | 22 | 3.09 | 2.1 | 2.8 |        |
|         | 22-4API383       |         |         | 22-4API383         |         |         | 4          | 12.7             | 22 | 3.08 | 2.1 | 2.8 |        |
|         | 22-4API502       | ●       |         | 22-4API502         |         |         | 4          | 12.7             | 22 | 3.75 | 2.1 | 3.1 |        |
|         | 22-4API503       |         |         | 22-4API503         |         |         | 4          | 12.7             | 22 | 3.74 | 2.0 | 2.9 |        |
|         | 22-5API403       | ●       |         | 22-5API403         |         |         | 5          | 12.7             | 22 | 2.99 | 1.8 | 2.6 |        |
|         | 22-6API551       | ●       |         | 22-6API551         |         |         | 6          | 12.7             | 22 | 1.41 | 2.6 | 2.0 |        |
|         | 27-4API382       |         |         | 27-4API382         |         |         | 4          | 15.875           | 27 | 3.09 | 2.1 | 2.8 |        |
|         | 27-4API383       | ●       |         | 27-4API383         |         |         | 4          | 15.875           | 27 | 3.08 | 2.1 | 2.8 |        |
|         | 27-4API502       | ●       |         | 27-4API502         |         |         | 4          | 15.875           | 27 | 3.75 | 2.1 | 3.1 |        |
|         | 27-4API503       | ●       |         | 27-4API503         |         |         | 4          | 15.875           | 27 | 3.74 | 2.1 | 3.1 |        |
|         | 27-5API403       | ●       |         | 27-5API403         |         |         | 5          | 15.875           | 27 | 2.99 | 1.9 | 2.7 |        |

Porta herramientas disponibles D31, D32

●: En Almacen

## API Buttress Casing (BUT)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |      |    |      |     | Imagen |   |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|------|----|------|-----|--------|---|
|         |                  |         |         |                    |         |         |            | IPF              | d    | L  | hmin | X   |        | f |
| Externo | ER 22-5BUT75     |         |         | EL 22-5BUT75       |         |         | 5          | 0.75             | 12.7 | 22 | 1.55 | 3.1 | 1.9    |   |
|         | 22-5BUT1         |         |         | 22-5BUT1           |         |         | 5          | 1                | 12.7 | 22 | 1.55 | 3.1 | 1.9    |   |
| Interno | IR 22-5BUT75     |         |         | IL 22-5BUT75       |         |         | 5          | 0.75             | 12.7 | 22 | 1.55 | 2.8 | 1.9    |   |
|         | 22-5BUT1         | ●       |         | 22-5BUT1           |         |         | 5          | 1                | 12.7 | 22 | 1.55 | 2.8 | 1.9    |   |

Porta herramientas disponibles D31, D32

●: En Almacen

## API Round Casing & Tubing (APIRD)

| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |    |      |     |     | Imagen |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|----|------|-----|-----|--------|
|         |                  |         |         |                    |         |         |            | d                | L  | hmin | X   | f   |        |
| Externo | ER 16-10APIRD    | ●       |         | EL 16-10APIRD      |         |         | 10         | 9.525            | 16 | 1.41 | 1.2 | 1.4 |        |
|         | 16-8APIRD        | ●       |         | 16-8APIRD          |         |         | 8          | 9.525            | 16 | 1.81 | 1.3 | 1.5 |        |
| Interno | IR 16-10APIRD    | ●       |         | IL 16-10APIRD      |         |         | 10         | 9.525            | 16 | 1.41 | 1.2 | 1.4 |        |
|         | 16-8APIRD        | ●       |         | 16-8APIRD          |         |         | 8          | 9.525            | 16 | 1.81 | 1.3 | 1.5 |        |

Porta herramientas disponibles D31, D32

●: En Almacen

## Extreme Line Casing (EL)

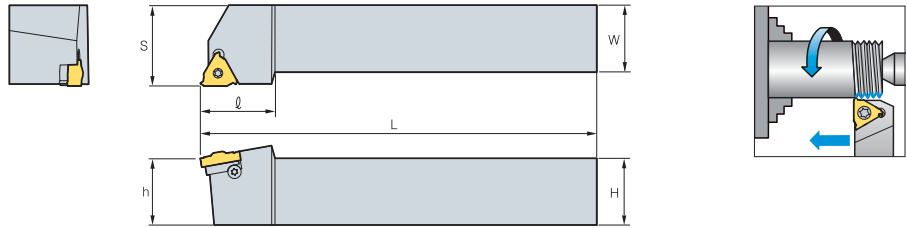
| Tipo    | Codigo (Derecho) | PC3030T | PC9070T | Codigo (Izquierdo) | PC3030T | PC9070T | Paso (tpi) | Dimensiones (mm) |      |    |      |     | Imagen |   |
|---------|------------------|---------|---------|--------------------|---------|---------|------------|------------------|------|----|------|-----|--------|---|
|         |                  |         |         |                    |         |         |            | IPF              | d    | L  | hmin | X   |        | f |
| Externo | ER 22-6EL15      |         |         | EL 22-6EL15        |         |         | 6          | 1.5              | 12.7 | 22 | 1.21 | 1.9 | 1.9    |   |
|         | 22-5EL125        |         |         | 22-5EL125          |         |         | 5          | 1.25             | 12.7 | 22 | 1.71 | 2.3 | 2.4    |   |
| Interno | IR 22-6EL15      |         |         | IL 22-6EL15        |         |         | 6          | 1.5              | 12.7 | 22 | 1.39 | 1.8 | 1.9    |   |
|         | 22-5EL125        |         |         | 22-5EL125          |         |         | 5          | 1.25             | 12.7 | 22 | 1.91 | 2.2 | 2.4    |   |

Porta herramientas disponibles D31, D32

●: En Almacen

# ER(L)H

(sistema con Tornillo)



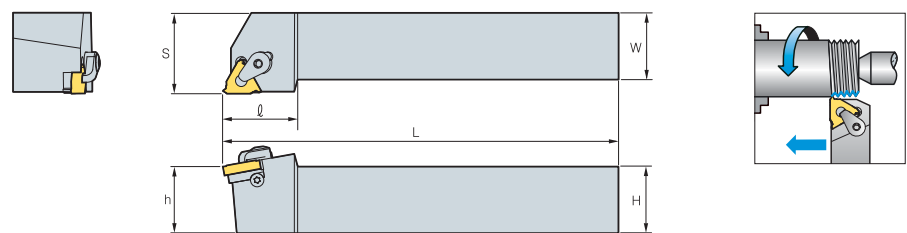
Inserto Tipo R  
(mm)

| Codigo | Circulo Inscrito | H      | W    | L     | S     | H  | ℓ    | Tornillo Inserto | Tornillo Placa | Placa Der | Placa Izq | Llave |       |
|--------|------------------|--------|------|-------|-------|----|------|------------------|----------------|-----------|-----------|-------|-------|
|        |                  |        |      |       |       |    |      |                  |                |           |           |       |       |
| ER(L)H | 08N-11           | 6.35   | 8    | 8     | 136.4 | 11 | 8    | 17.5             |                |           |           |       |       |
|        | 10N-11           | 6.35   | 10   | 10    | 70.0  | 11 | 10   | 17.5             | ST11N          | -         | -         | -     | TW08P |
|        | 12N-11           | 6.35   | 12   | 12    | 80.0  | 12 | 12   | 17.5             |                |           |           |       |       |
|        | 12N-16           | 9.525  | 12   | 12    | 83.2  | 16 | 12   | 22               | ST16N          | -         | -         | -     | TW10P |
|        | 09-16            | 9.525  | 9.52 | 9.52  | 63.6  | 16 | 9.52 | 20.5             |                |           |           |       |       |
|        | 12-16            | 9.525  | 12   | 12    | 83.2  | 16 | 12   | 22               |                |           |           |       |       |
|        | 16-16            | 9.525  | 16   | 16    | 100.0 | 16 | 16   | 20.5             |                |           |           |       |       |
|        | 20-16            | 9.525  | 20   | 20    | 128.6 | 20 | 20   | 30               | ST16           | STA16     | ATE16     | ATI22 | TW10P |
|        | 25-16            | 9.525  | 25   | 25    | 153.6 | 25 | 25   | 30               |                |           |           |       |       |
|        | 32-16            | 9.525  | 32   | 32    | 173.6 | 32 | 32   | 30               |                |           |           |       |       |
|        | 25-22            | 12.7   | 25   | 25    | 155.7 | 25 | 25   | 36               |                |           |           |       |       |
|        | 32-22            | 12.7   | 32   | 32    | 175.7 | 32 | 32   | 36               | ST22           | STA22     | ATE22     | ATI22 | TW20P |
|        | 40-22            | 12.7   | 40   | 40    | 205.7 | 40 | 40   | 36               |                |           |           |       |       |
|        | 25-27            | 15.875 | 25   | 25    | 151.6 | 32 | 25   | 35               |                |           |           |       |       |
|        | 32-27            | 15.875 | 32   | 32    | 176.6 | 32 | 32   | 40               |                |           |           |       |       |
|        | 40-27            | 15.875 | 40   | 40    | 206.6 | 40 | 40   | 40               | ST27           | STA27     | ATE27     | ATI27 | TW25L |
| 50-27  | 15.875           | 50     | 50   | 256.6 | 50    | 50 | 40   |                  |                |           |           |       |       |

↻ Insertos Disponibles D10~D13, D16, D18, D19, D22, D23~D26 • Angulo Helice 1.5° para todos los porta herramientas • porta herramienta Tipo "N" No requiere de Apoyo

# ER(L)H-C

(sistema con Brida)

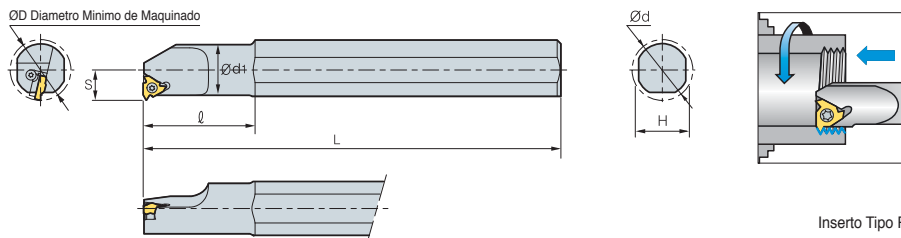


Inserto Tipo R  
(mm)

| Codigo | Circulo Inscrito | H      | W  | L  | S     | H  | ℓ  | Tornillo Placa | Brida | Placa Der | Placa Izq | Llave |       |
|--------|------------------|--------|----|----|-------|----|----|----------------|-------|-----------|-----------|-------|-------|
|        |                  |        |    |    |       |    |    |                |       |           |           |       |       |
| ER(L)H | 20-16C           | 9.525  | 20 | 20 | 128.6 | 20 | 20 | 30             |       |           |           |       |       |
|        | 25-16C           | 9.525  | 25 | 25 | 153.6 | 25 | 25 | 30             | STA16 | CTH16     | ATE16     | ATI16 | TW10P |
|        | 32-16C           | 9.525  | 32 | 32 | 173.6 | 32 | 32 | 30             |       |           |           |       | TW15P |
|        | 25-22C           | 12.7   | 25 | 25 | 155.7 | 25 | 25 | 36             |       |           |           |       |       |
|        | 32-22C           | 12.7   | 32 | 32 | 175.7 | 32 | 32 | 36             | STA22 | CTH22     | ATE22     | ATI22 | TW20P |
|        | 40-22C           | 12.7   | 40 | 40 | 205.7 | 40 | 40 | 36             |       |           |           |       |       |
|        | 25-27C           | 15.875 | 25 | 25 | 151.6 | 25 | 25 | 35             |       |           |           |       |       |
|        | 32-27C           | 15.875 | 32 | 32 | 176.6 | 32 | 32 | 40             |       |           |           |       |       |
|        | 40-27C           | 15.875 | 40 | 40 | 206.6 | 40 | 40 | 40             | STA27 | CTH27     | ATE27     | ATI27 | TW25L |
|        | 50-27C           | 15.875 | 50 | 50 | 256.6 | 50 | 50 | 40             |       |           |           |       |       |

↻ Insertos Disponibles D10~D13, D16, D18, D19, D22, D23~D26 • Angulo Helice 1.5° para todos los porta herramientas

## IR(L)H (Sistema con Tornillo)



Inserto Tipo R

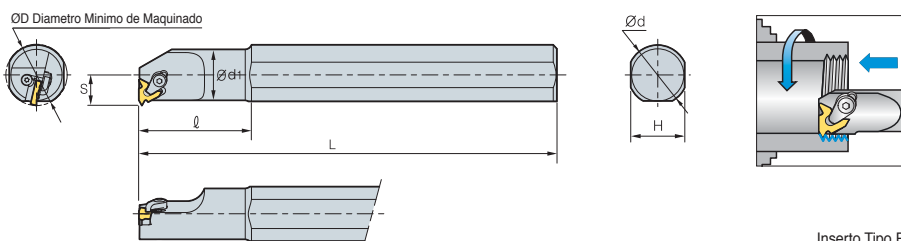
(mm)

| Codigo | Circulo Inscrito | ØD     | Ød | Ød <sub>1</sub> | H    | L    | S   | l    | Tornillo Inserto | Tornillo Placa | Placa Izq | Placa Der | Llave |       |
|--------|------------------|--------|----|-----------------|------|------|-----|------|------------------|----------------|-----------|-----------|-------|-------|
| IR(L)H | 10DN-11          | 6.35   | 13 | 10              | 10.0 | 9.5  | 100 | 7.3  | -                |                |           |           |       |       |
|        | 10N-11           | 6.35   | 13 | 20              | 10.0 | 18.0 | 180 | 7.3  | 25               | ST11N          | -         | -         | -     | TW08P |
|        | 13N-11           | 6.35   | 16 | 20              | 13.0 | 18.0 | 180 | 8.9  | 32               |                |           |           |       |       |
|        | 13N-16           | 9.525  | 17 | 20              | 12.7 | 18.0 | 180 | 10.3 | 32               |                |           |           |       |       |
|        | 16N-16           | 9.525  | 20 | 20              | 16.0 | 18.0 | 180 | 11.5 | 40               | ST16N          | -         | -         | -     | TW10P |
|        | 16DN-16          | 9.525  | 20 | 16              | 16.0 | 15.2 | 150 | 11.3 | 32               |                |           |           |       |       |
|        | 20-16            | 9.525  | 24 | 20              | 20.0 | 18.0 | 180 | 13.4 | 40               |                |           |           |       |       |
|        | 25-16            | 9.525  | 29 | 32              | 25.0 | 29.0 | 250 | 16.3 | 60               |                |           |           |       |       |
|        | 25D-16           | 9.525  | 29 | 25              | 24.5 | 22.6 | 200 | 16.1 | 45               | ST16           | STA16     | ATI16     | ATE16 | TW10P |
|        | 32-16            | 9.525  | 36 | 32              | 32.0 | 29.0 | 250 | 19.6 | 60               |                |           |           |       |       |
|        | 40-16            | 9.525  | 44 | 40              | 40.0 | 36.0 | 300 | 23.8 | 60               |                |           |           |       |       |
|        | 20N-22           | 12.7   | 27 | 20              | 20.0 | 18.0 | 180 | 15.6 | 50               | ST22N          | -         | -         | -     | TW20P |
|        | 25-22            | 12.7   | 32 | 32              | 25.0 | 29.0 | 250 | 17.4 | 60               |                |           |           |       |       |
|        | 25D-22           | 12.7   | 32 | 25              | 24.6 | 22.6 | 200 | 17.2 | 45               |                |           |           |       |       |
|        | 32-22            | 12.7   | 39 | 32              | 32.0 | 29.0 | 250 | 21.5 | 60               | ST22           | STA22     | ATI22     | ATE22 | TW20P |
|        | 40-22            | 12.7   | 47 | 40              | 40.0 | 36.0 | 300 | 25.8 | 60               |                |           |           |       |       |
|        | 32-27            | 15.875 | 40 | 32              | 32.0 | 29.0 | 250 | 22.4 | 60               |                |           |           |       |       |
|        | 40-27            | 15.875 | 48 | 40              | 40.0 | 36.0 | 300 | 26.4 | 60               |                |           |           |       |       |
|        | 50-27            | 15.875 | 58 | 50              | 50.0 | 45.0 | 350 | 31.4 | 75               |                |           |           |       |       |
|        | 60-27            | 15.875 | 69 | 60              | 60.0 | 54.0 | 400 | 36.4 | 75               | ST27           | STA27     | ATI27     | ATE27 | TW25L |

Insertos Disponibles D10, D11, D14, D15, D17, D20~D25, D27~D30

• Angulo Helice 1.5° para todos los porta herramientas  
• porta herramienta Tipo "N" No requiere de Apoyo

## IR(L)H-C (Sistema con Brida)



Inserto Tipo R

(mm)

| Codigo | Circulo Inscrito | ØD     | Ød | Ød <sub>1</sub> | H    | L    | S   | l    | Tornillo Placa | Brida | Placa Izq | Placa Der | Llave |                |
|--------|------------------|--------|----|-----------------|------|------|-----|------|----------------|-------|-----------|-----------|-------|----------------|
| IR(L)H | 20-16C           | 9.525  | 24 | 20              | 20.0 | 18.0 | 180 | 13.4 | 50             |       |           |           |       |                |
|        | 25-16C           | 9.525  | 29 | 32              | 25.0 | 28.0 | 250 | 16.3 | 60             |       |           |           |       |                |
|        | 25D-16C          | 9.525  | 29 | 25              | 24.6 | 22.6 | 200 | 16.1 | 45             | STA16 | CTH16     | ATI16     | ATE16 | TW10P<br>TW15P |
|        | 32-16C           | 9.525  | 36 | 32              | 32.0 | 29.0 | 250 | 19.6 | 60             |       |           |           |       |                |
|        | 40-16C           | 9.525  | 44 | 40              | 40.0 | 36.0 | 300 | 23.8 | 60             |       |           |           |       |                |
|        | 25-22C           | 12.7   | 32 | 32              | 25.0 | 29.0 | 250 | 17.4 | 60             |       |           |           |       |                |
|        | 25D-22C          | 12.7   | 32 | 25              | 24.6 | 22.6 | 200 | 17.2 | 45             |       |           |           |       |                |
|        | 32-22C           | 12.7   | 39 | 32              | 32.0 | 29.0 | 250 | 21.5 | 60             | STA22 | CTH22     | ATI22     | ATE22 | TW20P          |
|        | 40-22C           | 12.7   | 47 | 40              | 40.0 | 36.0 | 300 | 25.8 | 60             |       |           |           |       |                |
|        | 32-27C           | 15.875 | 40 | 32              | 32.0 | 29.0 | 250 | 22.4 | 60             |       |           |           |       |                |
|        | 40-27C           | 15.875 | 48 | 40              | 40.0 | 36.0 | 300 | 26.4 | 60             |       |           |           |       |                |
|        | 50-27C           | 15.875 | 58 | 50              | 50.0 | 45.0 | 350 | 31.4 | 75             |       |           |           |       |                |
|        | 60-27C           | 15.875 | 69 | 60              | 60.5 | 54.0 | 400 | 36.4 | 75             | STA27 | CTH27     | ATI27     | ATE27 | TW25L          |

Insertos Disponibles D10, D11, D14, D15, D17, D20~D25, D27~D30

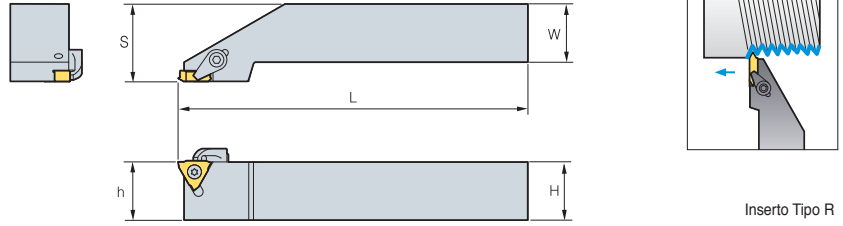
• Angulo Helice 1.5° para todos los porta herramientas



# VTH



VETR



Inserto Tipo R  
(mm)

| Codigo | H = (h) | W  | L  | S   | Insertos | Brida | Tornillo Brida | Tornillo | Llave     |                 |
|--------|---------|----|----|-----|----------|-------|----------------|----------|-----------|-----------------|
| VTH    | 2020R   | 20 | 20 | 125 | 26.4     | VETR  | CS6R1          | DHA0617  | FTKA03510 | TW15P,<br>HW30L |
|        | 2525R   | 25 | 25 | 150 | 33.4     |       |                |          |           |                 |
|        | 3225R   | 32 | 25 | 170 | 33.4     |       |                |          |           |                 |

## ➤ Inserto para Roscado Vertical

| Imagen | Codigo   | Cermet |          | Dimensiones |          |     | Imagen |
|--------|----------|--------|----------|-------------|----------|-----|--------|
|        |          | CN20   | Sin Rec. | Paso (mm)   | $\theta$ | f   |        |
|        | VETR 080 |        |          | 0.8         | 60°      | 1.4 |        |
|        | 100      |        | ●        | 1.0         | 60°      | 1.4 |        |
|        | 125      |        |          | 1.25        | 60°      | 1.4 |        |
|        | 150      |        | ●        | 1.5         | 60°      | 1.2 |        |
|        | 175      |        |          | 1.75        | 60°      | 1.2 |        |
|        | 200      |        | ●        | 2.0         | 60°      | 1.2 |        |
|        | 250      |        |          | 2.5         | 60°      | 1.4 |        |
|        | 300      |        | ●        | 3.0         | 60°      | 1.6 |        |
|        | 150F     | ●      | ●        | 0.8~1.5     | 60°      | 1.4 |        |
|        | 300F     | ●      | ●        | 1.5~3.0     | 60°      | 1.6 |        |

d : 9.525 t : 4.76

● : En Almacen

## Sistema Codificación Roscado en Fresado

|                |                              |                  |            |                |   |                        |
|----------------|------------------------------|------------------|------------|----------------|---|------------------------|
| TM             | S                            | R                | L          | 25             | - | 11                     |
| 1              | 2                            | 3                | 4          | 5              |   | 6                      |
| Estilo Inserto | Estilo del portaherramientas | Mano Herramienta | Tipo Zanco | Diámetro Zanco |   | Longitud Filo de Corte |

|                         |                           |                         |
|-------------------------|---------------------------|-------------------------|
| 1 <b>Estilo Inserto</b> | 3 <b>Mano Herramienta</b> | 5 <b>Diámetro Zanco</b> |
| TM S R L 25 - 11        | TM S R L 25 - 11          | TM S R L 25 - 11        |
| Roscado en Fresado      | R: Derecho L: Izquierdo   | 25: 25.0                |

|                                       |   |  |
|---------------------------------------|---|--|
| 2 <b>Estilo del portaherramientas</b> | 4 <b>Tipo Zanco</b>                               | 6 <b>Longitud Filo de Corte</b>  |
| TM S R L 25 - 11                      | TM S R L 25 - 11                                  | TM S R L 25 - 11   |
| S: Zanco Tipo                         | None: Estándar<br>L: Larga Tipo<br>T: Conica Tipo | 10: 10.4      22: 22<br>11: 11          27: 27<br>16: 16          38: 38.5 |

## Sistema Codificación Insertos Roscado por Fresado

|                |            |              |                     |   |      |            |
|----------------|------------|--------------|---------------------|---|------|------------|
| TM             | 2          | I            | 16                  | - | 1.5  | ISO        |
| 1              | 2          | 3            | 4                   |   | 5    | 6          |
| Estilo Inserto | Filo Corte | Tipo Inserto | Longitud Filo Corte |   | Paso | Tipo Rosca |

|                         |  |  |
|-------------------------|--|--|
| 1 <b>Estilo Inserto</b> | 4 <b>Longitud Filo Corte</b>                                 | 6 <b>Estándar</b>  |
| TM 2 I 16 - 1.5 ISO     | TM 2 I 16 - 1.5 ISO  | TM 2 I 16 - 1.5 ISO  |
| Roscado en Fresado      | 10: 10.4<br>11: 11<br>16: 16<br>22: 22<br>27: 27<br>38: 38.5 | ISO Métrico<br>American UN(UNC, UNF, UNEF)<br>UNJ<br>Whit Worth (BSW, BSF, BSP, BSB)<br>National PipeRosca (NPT)<br>National PipeRosca (NPTF)<br>British Estándar PipeRosca (BSPT) |

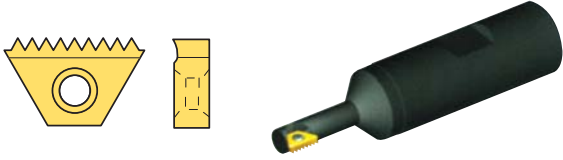
  

|   |   |                            |
|---|---|----------------------------|
| 2 <b>Filo Corte</b>                         | 3 <b>Tipo Inserto</b>                             | 5 <b>Paso</b>              |
| TM 2 I 16 - 1.5 ISO                         | TM 2 I 16 - 1.5 ISO                               | TM 2 I 16 - 1.5 ISO        |
| None: 1 Filo de corte<br>2: 2 Filo de corte | I: Interno<br>E: Externo<br>EI: Externo & Interno | mm: 0.5~6.0      tpi: 48~6 |

# Roscado por Fresado

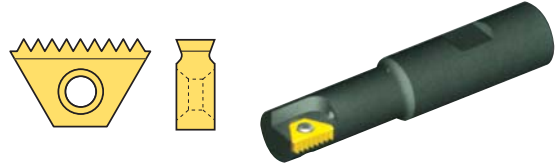
## Herramienta para Trabajo derecho

### Tipo diametro pequeño



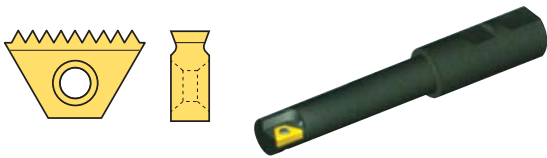
**Portainserto:** TMSR **Inserto:** TM L = 10.4mm  
Para diámetros de taladro pequeños abajo de 9.5mm

### Tipo estandar



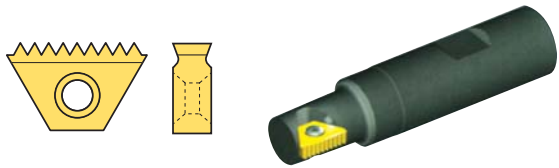
**Portainserto:** TMSR **Inserto:** TM2  
Para Longitud de Roscado Estandar

### Tipo largo



**Portainserto:** TMSR **Inserto:** TM2  
Para Roscado Largo ó Profundo

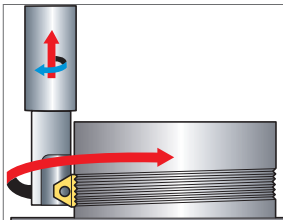
### Tipo Cónico



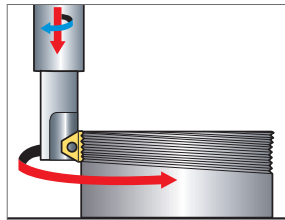
**Portainserto:** TMSR **Inserto:** TM2 (BSPT, NPT, NPTF)  
Para Longitud de Roscado Estandar

## Metodos de Roscado por Fresado

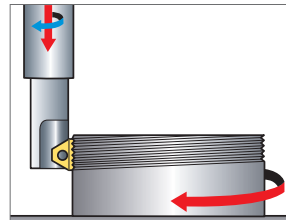
### Roscado Externo



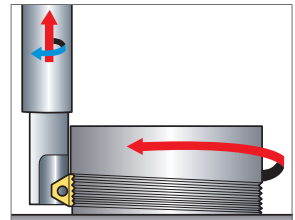
Roscado Derecho  
Convencional Milimetrica



Roscado Izquierdo  
Convencional Milimetrica

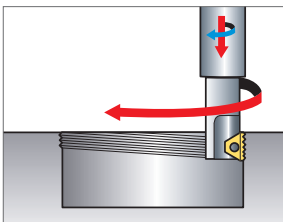


Roscado Derecho  
Convencional Milimetrica

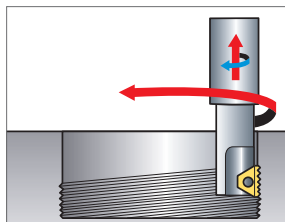


Roscado Izquierdo  
Convencional Milimetrica

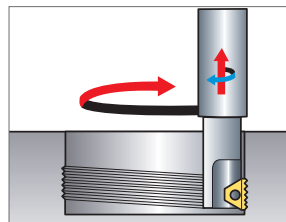
### Roscado Interno



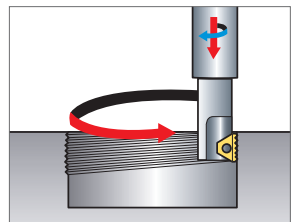
Roscado Derecho  
Convencional Milimetrica



Roscado Izquierdo  
Convencional Milimetrica



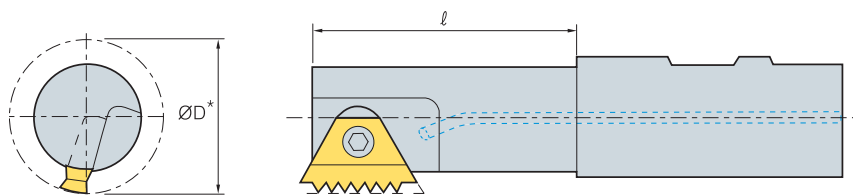
Roscado Derecho  
Convencional Milimetrica



Roscado Izquierdo  
Convencional Milimetrica

# D Información Técnica de Roscado por Fresado

## Recomendación para Especificación dada Roscado Interno



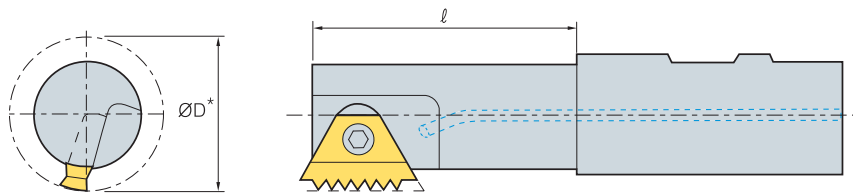
### ISO

| Paso (mm) | Diam. Nominal (mm) | Porta herramientas | Inserto         | Q-Herramienta Proyección | D-Herramienta Diam. Corte* | Profundidad de Roscado.Min Profundidad de Corte |
|-----------|--------------------|--------------------|-----------------|--------------------------|----------------------------|---|
| 0.75      | 11                 | TMSR 12-10         | TM2I 10-0.75ISO | 12.0                     | 9.0                        | 0.43  |
|           | 12-14              | TMSR 12-10         | TM2I 10-1.0ISO  | 12.0                     | 9.0                        |   |
| 1.0       | 15-18              | TMSR 12-11         | TM2I 11-1.0ISO  | 12.0                     | 11.5                       | 0.58  |
|           | 20                 | TMSR 16-16         | TM2I 16-1.0ISO  | 22.0                     | 17.0                       |   |
|           | 22                 | TMSR 20-22         | TM2I 22-1.0ISO  | 29.0                     | 19.0                       |   |
|           | 24                 | TMSR 20-16         | TM2I 16-1.0ISO  | 43.0                     | 20.0                       |   |
|           | 25-28              | TMSRL 25-16        | TM2I 16-1.0ISO  | 25.0                     | 22.0                       |   |
| 1.25      | 14                 | TMSR 12-10         | TM2I 10-1.25ISO | 12.0                     | 9.0                        | 0.72  |
| 1.5       | 14-15              | TMSR 12-10         | TM2I 10-1.5ISO  | 12.0                     | 9.0                        | 0.87  |
|           | 16-20              | TMSR 12-11         | TM2I 11-1.5ISO  | 12.0                     | 11.5                       |   |
|           | 22                 | TMSR 16-16         | TM2I 16-1.5ISO  | 22.0                     | 17.0                       |   |
|           | 24                 | TMSR 20-22         | TM2I 22-1.5ISO  | 29.0                     | 19.0                       |   |
|           | 25-26              | TMSR 20-16         | TM2I 16-1.5ISO  | 43.0                     | 20.0                       |   |
|           | 27-30              | TMSRL 25-16        | TM2I 16-1.5ISO  | 25.0                     | 22.0                       |   |
|           | 35-42              | TMSR 25-27         | TM2I 27-1.5ISO  | 52.0                     | 30.0                       |   |
| 2.0       | 45                 | TMSR 32-27         | TM2I 27-1.5ISO  | 58.0                     | 37.0                       | 1.15  |
|           | 22                 | TMSRT 16-16        | TM2I16-2.0ISO   | 22.0                     | 15.5                       |   |
|           | 24                 | TMSR 16-16         | TM2I 16-2.0ISO  | 22.0                     | 17.0                       |   |
|           | 25                 | TMSR 20-22         | TM2I 22-2.0ISO  | 29.0                     | 19.0                       |   |
|           | 27                 | TMSR 20-16         | TM2I 16-2.0ISO  | 43.0                     | 20.0                       |   |
|           | 28-32              | TMSRL 25-16        | TM2I 16-2.0ISO  | 25.0                     | 22.0                       |   |
|           | 39-42              | TMSR 25-27         | TM2I 27-2.0ISO  | 52.0                     | 30.0                       |   |
| 3.0       | 45-48              | TMSR 32-27         | TM2I 27-2.0ISO  | 58.0                     | 37.0                       | 1.73  |
|           | 42-48              | TMSR 25-27         | TM2I 27-3.0ISO  | 52.0                     | 30.0                       |   |
|           | 50-52              | TMSR 32-27         | TM2I 27-3.0ISO  | 58.0                     | 37.0                       |   |
| 4.0       | 45-52              | TMSR 25-27         | TM2I 27-4.0ISO  | 52.0                     | 30.0                       | 2.31  |
|           | 55                 | TMSR 32-38         | TM2I 38-4.0ISO  | 55.0                     | 35.0                       |   |
|           | 56-58              | TMSR 32-27         | TM2I 27-4.0ISO  | 58.0                     | 37.0                       |   |
|           | 60-65              | TMSR 40-38         | TM2I 38-4.0ISO  | 65.0                     | 46.0                       |   |
| 5.0       | 48-52              | TMSR 32-38         | TM2I 38-5.0ISO  | 55.0                     | 35.0                       | 2.89  |
| 5.5       | 56                 | TMSR 32-38         | TM2I 38-5.5ISO  | 55.0                     | 35.0                       | 3.17  |
|           | 60                 | TMSR 40-38         | TM2I 38-5.5ISO  | 65.0                     | 46.0                       |   |
| 6.0       | 64-68              | TMSR 40-38         | TM2I 38-6.0ISO  | 65.0                     | 46.0                       | 3.46  |

- El porta herramientas recomendado es el más grande para las especificaciones de rosca dadas
- También se puede utilizar un porta herramientas con diámetros de corte más pequeños o iguales (D2)



## Recomendación para Especificación dada Roscado Interno



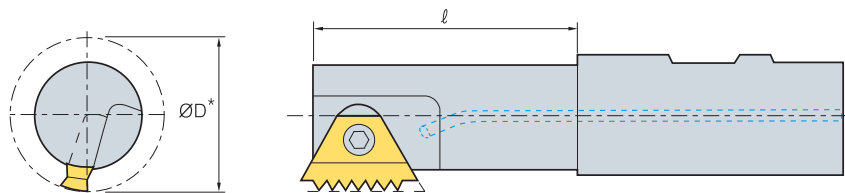
**UN**

| Paso (tpi) | Diam. Nominal (inch) | Porta herramientas | Inserto       | Q-Herramienta Proyección | D-Herramienta Diam. Corte* | Profundidad de Roscado.Min Profundidad de Corte |
|------------|----------------------|--------------------|---------------|--------------------------|----------------------------|---|
| 32         | 7/16-1/2             | TMSR 12-10         | TMI 10-32UN   | 12.0                     | 9.0                        | 0.46  |
|            | 9/16-11/16           | TMSR 12-11         | TM2I 11-32UN  | 12.0                     | 11.5                       |   |
|            | 3/4-13/16            | TMSR 16-16         | TM2I 16-32UN  | 22.0                     | 17.0                       |   |
|            | 7/8-15/16            | TMSR 20-16         | TM2I 16-32UN  | 43.0                     | 20.0                       |   |
|            | 1                    | TMSR 25-16         | TM2I 16-32UN  | 25.0                     | 22.0                       |   |
| 28         | 7/16-1/2             | TMSR 12-10         | TMI 10-28UN   | 12.0                     | 9.0                        | 0.52  |
|            | 9/16-3/4             | TMSR 12-11         | TM2I 11-28UN  | 12.0                     | 11.5                       |   |
|            | 13/16-7/8            | TMSR 16-16         | TM2I 16-28UN  | 22.0                     | 17.0                       |   |
|            | 15/16                | TMSR 20-16         | TM2I 16-28UN  | 43.0                     | 20.0                       |   |
|            | 1-1 1/8              | TMSRL 25-16        | TM2I 16-28UN  | 25.0                     | 22.0                       |   |
| 24         | 9/16-11/16           | TMSR 12-11         | TM2I 11-24UN  | 12.0                     | 11.5                       | 0.61  |
| 20         | 1/2-9/16             | TMSR 12-10         | TMI 10-20UN   | 12.0                     | 9.0                        | 0.73  |
|            | 5/8-13/16            | TMSR 12-11         | TM2I 11-20UN  | 12.0                     | 11.5                       |   |
|            | 7/8                  | TMSR 16-16         | TM2I 16-20UN  | 22.0                     | 17.0                       |   |
|            | 15/16-1              | TMSR 20-16         | TM2I 16-20UN  | 43.0                     | 20.0                       |   |
|            | 1 1/16-1 1/8         | TMSRL 25-16        | TM2I 16-20UN  | 25.0                     | 22.0                       |   |
|            | 1 3/8-1 5/8          | TMSR 25-27         | TM2I 27-20UN  | 52.0                     | 30.0                       |   |
|            | 1 11/16-1 13/16      | TMSR 32-27         | TM2I 27-20UN  | 28.0                     | 37.0                       |   |
| 18         | 5/8                  | TMSR 12-11         | TM2I 11-18UN  | 12.0                     | 11.5                       | 0.81  |
|            | 1 1/16-1 3/16        | TMSRL 25-16        | TM2I 16-18UN  | 25.0                     | 22.0                       |   |
|            | 1 7/16-1 5/8         | TMSR 25-27         | TM2I 27-18UN  | 52.0                     | 30.0                       |   |
|            | 1 11/16              | TMSR 32-27         | TM2I 27-18UN  | 58.0                     | 37.0                       |   |
| 16         | 11/16-13/16          | TMSR 12-11         | TM2I 11-16UN  | 12.0                     | 11.5                       | 0.92  |
|            | 7/8-15/16            | TMSR 16-16         | TM2I 16-16UN  | 22.0                     | 17.0                       |   |
|            | 1                    | TMSR 20-16         | TM2I 16-16UN  | 43.0                     | 20.0                       |   |
|            | 1 1/16-1 3/16        | TMSRL 25-16        | TM2I 16-16UN  | 25.0                     | 22.0                       |   |
|            | 1 7/16-1 5/8         | TMSR 25-27         | TM2I 27-16UN  | 52.0                     | 30.0                       |   |
|            | 1 11/16-1 7/8        | TMSR 32-27         | TM2I 27-16UN  | 58.0                     | 37.0                       |   |
| 14         | 7/8                  | TMSR 12-11         | TM2I 11-14UN  | 12.0                     | 11.5                       | 1.05  |
| 12         | 7/8                  | TMSRT 16-16        | TM2I 16-12UN  | 22.0                     | 15.5                       | 1.22  |
|            | 15/16                | TMSR 16-16         | TM2I 16-12UN  | 22.0                     | 17.0                       |   |
|            | 1                    | TMSR 20-22         | TM2I 22-12UN  | 29.0                     | 19.0                       |   |
|            | 1 1/16               | TMSR 20-16         | TM2I 16-12UN  | 43.0                     | 20.0                       |   |
|            | 1 1/8-1 1/4          | TMSRL 25-16        | TM2I 16-12UN  | 25.0                     | 22.0                       |   |
|            | 1 1/2-1 11/16        | TMSR 25-27         | TM2I 27-12UN  | 52.0                     | 30.0                       |   |
|            | 1 3/4-1 15/16        | TMSR 32-27         | TM2I 27-12UN  | 58.0                     | 37.0                       |   |
| 8          | 1 11/16-1 15/16      | TMSR 25-27         | TM2I 27-8UN   | 52.0                     | 30.0                       | 1.83  |
|            | 2-1 1/8              | TMSR 32-27         | TM2I 27-8UN   | 58.0                     | 37.0                       |   |
| 6          | 2-2 1/8              | TMSR 25-27         | TM2I 27-6UN   | 52.0                     | 30.0                       | 2.44  |
|            | 2 1/4                | TMSR 32-27         | TM2I 27-6UN   | 58.0                     | 37.0                       |   |
|            | 2 3/8-2 1/2          | TMSR 40-38         | TM2I 38-6UN   | 65.0                     | 46.0                       |   |
| 4.5        | 2-2 1/4              | TMSR 32-38         | TM2I 38-4.5UN | 55.0                     | 35.0                       | 3.26  |
| 4          | 2 1/2                | TMSR 40-38         | TM2I 38-4UN   | 65.0                     | 46.0                       | 3.67  |

- El porta herramientas recomendado es el más grande para las especificaciones de rosca dadas
- También se puede utilizar un porta herramientas con diámetros de corte más pequeños o iguales (D2)

# D Información Técnica de Roscado por Fresado

## Recomendación para Especificación dada Roscado Interno



UNJ

| Paso (tpi) | Diam. Nominal (inch) | Porta herramientas | Inserto       | Q-Herramienta Proyección | D-Herramienta Diam. Corte* | Profundidad de Roscado.Min Profundidad de Corte |
|------------|----------------------|--------------------|---------------|--------------------------|----------------------------|---|
| 24         | 9/16-11/16           | TMSR 12-11         | TM2I 11-24UNJ | 12.0                     | 11.5                       | 0.55  |
| 20         | 1/2                  | TMSR 12-10         | TMI 10-20UNJ  | 12.0                     | 9.0                        | 0.66  |
|            | 3/4-13/16            | TMSR 12-11         | TM2I 11-20UNJ | 12.0                     | 11.5                       |   |
|            | 7/8                  | TMSR 16-16         | TM2I 16-20UNJ | 22.0                     | 17.0                       |   |
|            | 15/16-1              | TMSR 20-16         | TM2I 16-20UNJ | 43.0                     | 20.0                       |   |
| 18         | 5/8                  | TMSR 12-11         | TM2I 11-18UNJ | 12.0                     | 11.5                       | 0.74  |
|            | 1 1/16-1 3/16        | TMSRL 25-16        | TM2I 16-18UNJ | 25.0                     | 22.0                       |   |
| 16         | 11/16-13/16          | TMSR 12-11         | TM2I 11-16UNJ | 12.0                     | 11.5                       | 0.83  |
|            | 7/8-15/16            | TMSR 16-16         | TM2I 16-16UNJ | 22.0                     | 17.0                       |   |
|            | 1                    | TMSR 20-16         | TM2I 16-16UNJ | 43.0                     | 20.0                       |   |
|            | 1 1/16-1 3/16        | TMSRL 25-16        | TM2I 16-16UNJ | 25.0                     | 22.0                       |   |
|            | 1 7/16-1 5/8         | TMSR 25-27         | TM2I 27-16UNJ | 52.0                     | 30.0                       |   |
| 14         | 1 11/16-1 7/8        | TMSR 32-27         | TM2I 27-16UNJ | 58.0                     | 37.0                       | 0.95  |
|            | 7/8                  | TMSR 12-11         | TM2I 11-14UNJ | 12.0                     | 11.5                       |   |
| 12         | 7/8                  | TMSRT 16-16        | TM2I 16-12UNJ | 22.0                     | 15.5                       | 1.11  |
|            | 15/16-1              | TMSR 16-16         | TM2I 16-12UNJ | 22.0                     | 17.0                       |   |
|            | 1 1/16               | TMSR 20-16         | TM2I 16-12UNJ | 43.0                     | 20.0                       |   |
|            | 1 1/8-1 1/4          | TMSRL 25-16        | TM2I 16-12UNJ | 25.0                     | 22.0                       |   |
|            | 1 1/2-1 11/16        | TMSR 25-27         | TM2I 27-12UNJ | 52.0                     | 30.0                       |   |
|            | 1 3/4-1 15/16        | TMSR 32-27         | TM2I 27-12UNJ | 58.0                     | 37.0                       |   |

W

| Paso (tpi) | Diam. Nominal (inch) | Porta herramientas | Inserto       | Q-Herramienta Proyección | D-Herramienta Diam. Corte* | Profundidad de Roscado.Min Profundidad de Corte |
|------------|----------------------|--------------------|---------------|--------------------------|----------------------------|---|
| 26         | 1/2-9/16             | TMSR 12-10         | TMEI 10-26W   | 12.0                     | 9.0                        | 0.63  |
|            | 5/8-3/4              | TMSR 12-11         | TM2EI 11-26 W | 12.0                     | 11.5                       |   |
|            | 13/16-7/8            | TMSR 16-16         | TM2EI 16-26W  | 22.0                     | 17.0                       |   |
|            | 15/16-1              | TMSR 20-16         | TM2EI 16-26W  | 43.0                     | 20.0                       |   |
| 20         | 1 1/16-1 1/8         | TMSRL 25-16        | TM2EI 16-26W  | 25.0                     | 22.0                       | 0.81  |
|            | 9/16                 | TMSR 12-10         | TM2EI 10-20W  | 12.0                     | 9.0                        |   |
|            | 5/8-13/16            | TMSR 12-11         | TM2EI 11-20W  | 12.0                     | 11.5                       |   |
|            | 7/8-15/16            | TMSR 16-16         | TM2EI 16-20W  | 22.0                     | 17.0                       |   |
| 16         | 1                    | TMSR 20-16         | TM2EI 16-20W  | 43.0                     | 20.0                       | 1.02  |
|            | 1 1/16-1 3/16        | TMSRL 25-16        | TM2EI 16-20W  | 25.0                     | 22.0                       |   |
|            | 13/16                | TMSR 16-16         | TM2EI 16-16W  | 22.0                     | 15.5                       |   |
|            | 7/8-15/16            | TMSR 16-16         | TM2EI 16-16W  | 22.0                     | 17.0                       |   |
|            | 1-1 1/16             | TMSR 20-16         | TM2EI 16-16W  | 43.0                     | 20.0                       |   |
|            | 1 1/8-1 1/4          | TMSRL 25-16        | TM2EI 16-16W  | 25.0                     | 22.0                       |   |
| 12         | 1.4-1 5/8            | TMSR 25-27         | TM2EI 27-16W  | 52.0                     | 30.0                       | 1.36  |
|            | 1 3/4-1.9            | TMSR 32-27         | TM2EI 27-16W  | 28.0                     | 37.0                       |   |
| 8          | 1 1/2-1 3/4          | TMSR 25-27         | TM2EI 27-12W  | 52.0                     | 30.0                       | 2.03  |
|            | 1 7/8                | TMSR 32-27         | TM2EI 27-12W  | 58.0                     | 37.0                       |   |
| 7          | 1 7/8-1.9            | TMSR 25-27         | TM2EI 27-8W   | 52.0                     | 30.0                       | 2.32  |
|            | 2.1-2 1/8            | TMSR 32-27         | TM2EI 27-8W   | 58.0                     | 37.0                       |   |
| 6          | 2                    | TMSR 25-27         | TM2EI 27-7W   | 52.0                     | 30.0                       | 2.71  |
|            | 2.1-2 1/8            | TMSR 25-27         | TM2EI 27-6W   | 52.0                     | 30.0                       |   |
|            | 2 1/4                | TMSR 32-38         | TM2EI 38-6W   | 55.0                     | 35.0                       |   |
|            | 2 3/8-2.6            | TMSR 32-27         | TM2EI 27-6W   | 58.0                     | 37.0                       |   |
| 5          | 2 5/8-2 3/4          | TMSR 40-38         | TM2EI 38-6W   | 65.0                     | 46.0                       | 3.25  |
|            | 3                    | TMSR 40-38         | TM2EI 38-5W   | 65.0                     | 46.0                       |   |
| 4.5        | 3 1/2                | TMSR 40-38         | TM2EI 38-4.5W | 65.0                     | 46.0                       | 3.61  |

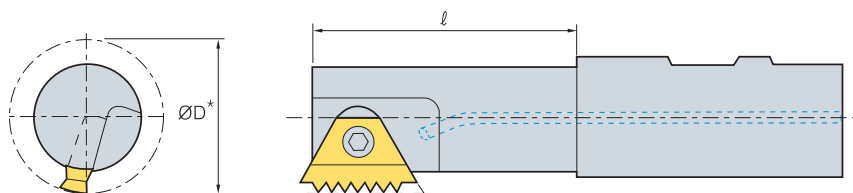
- El porta herramientas recomendado es el más grande para las especificaciones de rosca dadas
- También se puede utilizar un porta herramientas con diámetros de corte más pequeños o iguales (D2)



D

Roscado

## ➤ Recomendación para Especificación dada Roscado Interno



### BSPT

| Paso (tpi) | Diam. Nominal (inch) | Porta herramientas | Inserto          | Ø-Herramienta Proyección | D-Herramienta Diam. Corte* | Profundidad de Roscado.Min Profundidad de Corte |
|------------|----------------------|--------------------|------------------|--------------------------|----------------------------|---|
| 19         | 3/8                  | TMSR 21-11         | TM2EI 11-19 BSPT | 20.0                     | 11.5                       | 0.86  |
| 14         | 1/2-3/4              | TMSRT 16-11        | TM2EI 16-14 BSPT | 22.0                     | 15.5                       | 1.16  |
| 11         | 1-1 1/4              | TMSRT 20-16        | TM2EI 16-11 BSPT | 23.0                     | 19.0                       | 1.48  |
|            | 1 1/2                | TMSR 25-27         | TM2EI 27-11 BSPT | 52.0                     | 30.0                       |   |
|            | 2-6                  | TMSRT 32-27        | TM2EI 27-11 BSPT | 58.0                     | 37.0                       |   |

### NPT

| Paso (tpi) | Diam. Nominal (inch) | Porta herramientas | Inserto           | Ø-Herramienta Proyección | D-Herramienta Diam. Corte* | Profundidad de Roscado.Min Profundidad de Corte |
|------------|----------------------|--------------------|-------------------|--------------------------|----------------------------|---|
| 14         | 1/2                  | TMSRT 16-16        | TM2EI 16-14 NPT   | 22.0                     | 15.5                       | 1.33  |
|            | 3/4                  | TMSRT 20-16        | TM2EI 16-14 NPT   | 23.0                     | 19.0                       |   |
| 11.5       | 1                    | TMSRT 20-16        | TM2EI 16-11.5 NPT | 23.0                     | 19.0                       | 1.64  |
|            | 1 1/4                | TMSR 25-27         | TM2EI 27-11.5 NPT | 52.0                     | 30.0                       |   |
|            | 1 1/2-2              | TMSRT 32-27        | TM2EI 27-11.5 NPT | 58.0                     | 37.0                       |   |
| 8          | 2 1/2                | TMSRT 32-27        | TM2EI 27-8 NPT    | 58.0                     | 37.0                       | 2.42  |
|            | 3-24                 | TMSR 40-38         | TM2EI 38-8 NPT    | 65.0                     | 46.0                       |   |

### NPTF

| Paso (tpi) | Diam. Nominal (inch) | Porta herramientas | Inserto            | Ø-Herramienta Proyección | D-Herramienta Diam. Corte* | Profundidad de Roscado.Min Profundidad de Corte |
|------------|----------------------|--------------------|--------------------|--------------------------|----------------------------|---|
| 14         | 1/2                  | TMSRT 16-16        | TM2EI 16-14 NPTF   | 22.0                     | 15.5                       | 1.35  |
|            | 3/4                  | TMSRT 20-16        | TM2EI 16-14 NPTF   | 23.0                     | 19.0                       |   |
| 11.5       | 1                    | TMSRT 20-16        | TM2EI 16-11.5 NPTF | 23.0                     | 19.0                       | 1.63  |
|            | 1 1/2                | TMSR 25-27         | TM2EI 27-11.5 NPTF | 52.0                     | 30.0                       |   |
|            | 2                    | TMSRT 32-27        | TM2EI 27-11.5 NPTF | 58.0                     | 37.0                       |   |
| 8          | 2 1/2                | TMSRT 32-27        | TM2EI 27-8 NPTF    | 58.0                     | 37.0                       | 2.38  |
|            | 3                    | TMSR 40-38         | TM2EI 38-8 NPTF    | 65.0                     | 46.0                       |   |

- El porta herramientas recomendado es el más grande para las especificaciones de rosca dadas
- También se puede utilizar un porta herramientas con diámetros de corte más pequeños o iguales (D2)

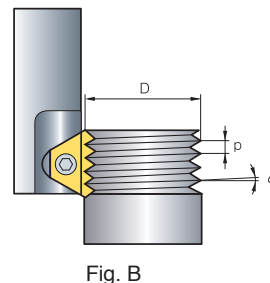
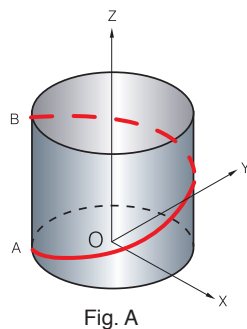
## 🔄 Diámetros Mínimos para Roscado en Fresado

| Paso             | mm       | 0.5                            | 0.6  | 0.7  | 0.75<br>0.80 | 0.9  | 1.0      | 1.25     | 1.5      | 1.75 | 2.0      | -          | 2.5  | 3.0    | 3.5  | 4.0  | 4.5  | 5.0  | 5.5  | -    | 6.0  | -    |  |
|------------------|----------|--------------------------------|------|------|--------------|------|----------|----------|----------|------|----------|------------|------|--------|------|------|------|------|------|------|------|------|--|
|                  | tpi      | 48                             | 44   | 36   | 32           | 28   | 26<br>24 | 20<br>19 | 18<br>16 | 14   | 13<br>12 | 11.5<br>11 | 10   | 9<br>8 | 7    | 6    | -    | 5    | -    | 4.5  | -    | 4    |  |
| Código del porta | díametro | Diámetro mínimo para Maquinado |      |      |              |      |          |          |          |      |          |            |      |        |      |      |      |      |      |      |      |      |  |
| TMSR 12-10       | 9.0      | 9.5                            | 9.7  | 9.9  | 10.0         | 10.4 | 10.7     | 11.4     | 12.0     |      |          |            |      |        |      |      |      |      |      |      |      |      |  |
| TMSR 20-10       | 9.0      | 9.5                            | 9.7  | 9.9  | 10.0         | 10.4 | 10.7     | 11.4     | 12.0     |      |          |            |      |        |      |      |      |      |      |      |      |      |  |
| TMSR 12-11       | 11.5     | 12.0                           | 12.2 | 12.4 | 12.5         | 12.9 | 13.2     | 13.9     | 14.5     | 15.1 |          |            |      |        |      |      |      |      |      |      |      |      |  |
| TMSR 20-11       | 11.5     | 12.0                           | 12.2 | 12.4 | 12.5         | 12.9 | 13.2     | 13.9     | 14.5     | 15.1 |          |            |      |        |      |      |      |      |      |      |      |      |  |
| TMSRL 25-11      | 11.5     | 12.0                           | 12.2 | 12.4 | 12.5         | 12.9 | 13.2     | 13.9     | 14.5     | 15.1 |          |            |      |        |      |      |      |      |      |      |      |      |  |
| TMSRT 16-16      | 15.5     | 16.0                           | 16.2 | 16.4 | 16.5         | 16.9 | 17.2     | 17.9     | 18.5     | 19.0 | 19.5     | 20.0       |      |        |      |      |      |      |      |      |      |      |  |
| TMSR 16-16       | 17.0     | 17.6                           | 17.8 | 18.0 | 18.2         | 18.7 | 19.0     | 19.6     | 20.0     | 20.5 | 21.0     | 21.5       |      |        |      |      |      |      |      |      |      |      |  |
| TMSR 16-22       | 17.0     | 17.6                           | 17.8 | 18.0 | 18.2         | 18.7 | 19.0     | 19.6     | 20.0     | 20.5 | 21.0     | 21.5       |      |        |      |      |      |      |      |      |      |      |  |
| TMSR 20-22       | 19.0     | 19.7                           | 20.0 | 20.2 | 20.4         | 20.8 | 21.0     | 21.6     | 22.0     | 22.5 | 23.0     | 23.5       |      |        |      |      |      |      |      |      |      |      |  |
| TMSRT 20-16      | 19.0     | 19.7                           | 20.0 | 20.2 | 20.4         | 20.8 | 21.0     | 21.6     | 22.0     | 22.5 | 23.0     | 23.5       |      |        |      |      |      |      |      |      |      |      |  |
| TMSR 20-16       | 20.0     | 20.7                           | 21.0 | 21.2 | 21.4         | 21.8 | 22.0     | 22.6     | 23.0     | 23.5 | 24.0     | 24.5       |      |        |      |      |      |      |      |      |      |      |  |
| TMSRW 25-22      | 22.0     | 22.7                           | 23.0 | 23.2 | 23.4         | 23.8 | 24.0     | 24.6     | 25.0     | 25.5 | 26.0     | 26.5       |      |        |      |      |      |      |      |      |      |      |  |
| TMSRL 25-22      | 22.0     | 22.7                           | 23.0 | 23.2 | 23.4         | 23.8 | 24.0     | 24.6     | 25.0     | 25.5 | 26.0     | 26.5       |      |        |      |      |      |      |      |      |      |      |  |
| TMSRL 25-16      | 22.0     | 22.7                           | 23.0 | 23.2 | 23.4         | 23.8 | 24.0     | 24.6     | 25.0     | 25.5 | 26.0     | 26.5       |      |        |      |      |      |      |      |      |      |      |  |
| TMSR 25-27       | 30.0     | 30.7                           | 31.0 | 31.2 | 31.4         | 31.8 | 32.0     | 32.8     | 33.5     | 34.1 | 34.6     | 35.6       | 36.6 | 39.0   | 42.0 | 45.0 | 48.0 |      |      |      |      |      |  |
| TMSRL 25-27      | 30.0     | 30.7                           | 31.0 | 31.2 | 31.4         | 31.8 | 32.0     | 32.8     | 33.5     | 34.1 | 34.6     | 35.6       | 36.6 | 39.0   | 42.0 | 45.0 | 48.0 |      |      |      |      |      |  |
| TMSR 32-38       | 35.0     |                                |      |      |              |      |          |          | 38.5     | 39.1 | 39.6     | 40.6       | 42.0 | 44.0   | 47.0 | 50.0 | 53.4 | 42.5 | 50.0 | 44.6 | 57.5 | 56.6 |  |
| TMSR 32-27       | 37.0     | 38.0                           | 38.2 | 38.4 | 38.6         | 39.1 | 39.5     | 40.4     | 41.0     | 41.5 | 42.0     | 43.0       | 44.0 | 46.5   | 49.0 | 52.0 | 55.5 |      |      |      |      |      |  |
| TMSRL 32-27      | 37.0     | 38.0                           | 38.2 | 38.4 | 38.6         | 39.1 | 39.5     | 40.4     | 41.0     | 41.5 | 42.0     | 43.0       | 44.0 | 46.5   | 49.0 | 52.0 | 55.5 |      |      |      |      |      |  |
| TMSRT 32-27      | 37.0     | 38.0                           | 38.2 | 38.4 | 38.6         | 39.1 | 39.5     | 40.0     | 41.0     | 41.5 | 42.0     | 43.0       | 44.0 | 46.5   | 49.0 | 52.0 | 55.5 |      |      |      |      |      |  |
| TMSR 40-38       | 46.0     |                                |      |      |              |      |          |          | 49.5     | 50.1 | 50.6     | 51.6       | 53.0 | 55.0   | 55.2 | 55.6 | 55.0 | 52.5 | 54.0 | 54.5 | 57.5 | 56.6 |  |
| TMSRL 40-38      | 46.0     |                                |      |      |              |      |          |          | 49.5     | 50.1 | 50.6     | 51.6       | 53.0 | 55.0   | 55.2 | 55.6 | 55.0 | 52.5 | 54.0 | 54.5 | 57.5 | 56.6 |  |

- Para realizar una operación de fresado de roscas, se requiere una fresadora con capacidad de control de tres ejes de interpolación helicoidal
- La interpolación helicoidal es una función CNC que produce un movimiento de herramienta a lo largo de una trayectoria helicoidal. Este movimiento helicoidal combina movimiento circular en un plano con un movimiento lineal simultáneo en un plano perpendicular al primero. Por ejemplo, la ruta desde el punto A al punto B (Fig. A) en la envoltura del cilindro combina un movimiento circular en el plano x-y con un desplazamiento lineal en la dirección z
- En la mayoría de los sistemas CNC, esta función se puede ejecutar de dos maneras diferentes:

G02: Interpolación helicoidal en el sentido de las agujas del reloj

G03: Interpolación helicoidal en el sentido opuesto a las agujas del reloj



La operación de roscado milimétrica (Fig. B) consiste en la rotación circular de la herramienta alrededor de su propio eje con un movimiento que se mueve en órbita alrededor a lo largo de la circunferencia del objeto. Durante tal órbita, la herramienta cambiará de posición verticalmente a una longitud horizontal. Estos movimientos combinados con la geometría del Inserto crean la forma requerida del hilo de la rosca. Hay tres maneras aceptables de acercarse al objeto con la herramienta para iniciar la producción del hilo de rosca:

1. Acercamiento tangencial del arco
2. Acercamiento radial
3. Línea tangencial

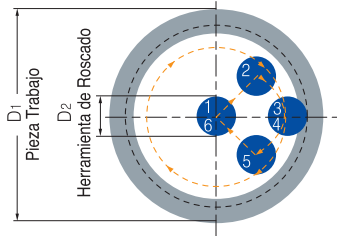




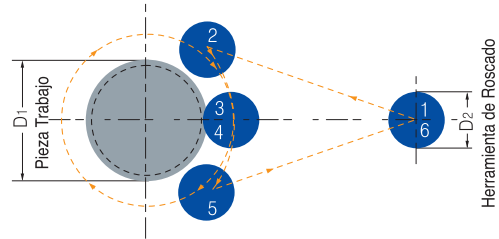
## ➤ Acercamiento Tangencial del Arco

- Con este método, la herramienta entra y sale del objeto suavemente. No se deja ningunas marcas en el objeto y no hay vibración, incluso con materiales más duros. Aunque requiera una programación levemente más compleja que el acercamiento radial (véase abajo), éste es el método recomendado para hacer maquinados de rosca de alta calidad

### Roscado Interno



### Roscado Externo



1-2 : acercamiento rápido

2-3 : entrada de la herramienta a lo largo del arco tangencial, con la alimentación simultánea a lo largo del eje-z

3-4 : movimiento helicoidal durante una órbita completa (360°)

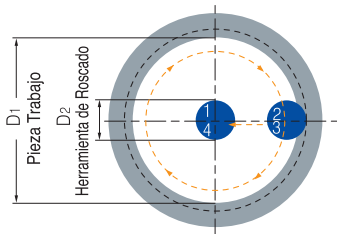
4-5 : salida de la herramienta a lo largo del arco tangencial, con la alimentación de continuación a lo largo del eje-z

5-6 : Retorno rápido

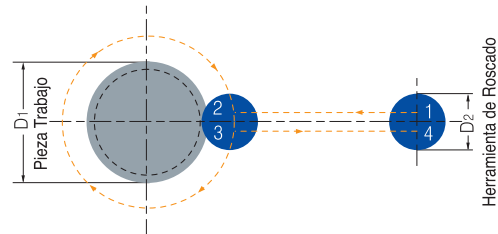
## ➤ Acercamiento Radial

- Éste es el método más simple. Hay dos características dignos sobre el acercamiento radial:
  - A. una pequeña marca vertical puede ser elevación en el punto de la entrada (y salida). Esto no afecta en nada al hilo de la rosca
  - B. al usar este método con los materiales muy duros, puede haber una tendencia de la herramienta a vibrar mientras que se acerca a la profundidad de corte completa
- Nota: La alimentación radial durante la entrada a profundidad completa del perfil debe solamente ser de 1/3 de la alimintación circular

### Roscado Interno



### Roscado Externo



1-2 : entrada radial

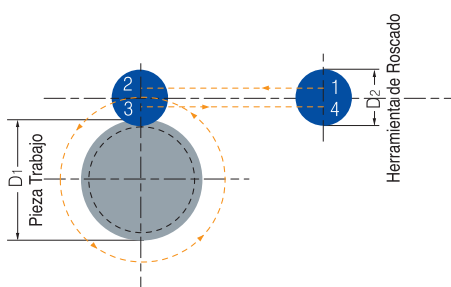
2-3 : movimiento helicoidal durante una órbita completa (360°)

3-4 : salida radial

## ➤ Línea Tangencial de Acercamiento

- Este método es muy simple, y tiene todas las ventajas del método tangencial del arco. Sin embargo, es aplicable solamente con los hilos de rosca externos

### Externo Rosca



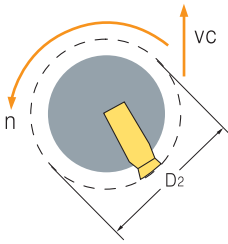
1-2 : entrada radial con la alimentación simultánea a lo largo del eje-z

2-3 : movimiento helicoidal durante una órbita completa (360°)

3-4 : salida radial

## Preparación para la operación de Roscado Milimétrico

### ➤ Cálculo de la velocidad rotatoria y de la alimentación en el filo



$$n = \frac{vc \times 1000}{\pi \times D_2}$$

$$vc = \frac{n \times \pi \times D_2}{1000}$$

$$F_1 = n \times z \times f_n$$

**n:** Velocidad rotatoria (min<sup>-1</sup>)

**vc:** Velocidad del corte (m/min)

**D<sub>2</sub>:** Diámetro del corte del Portainsero (mm)

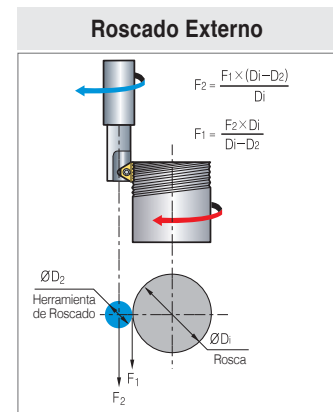
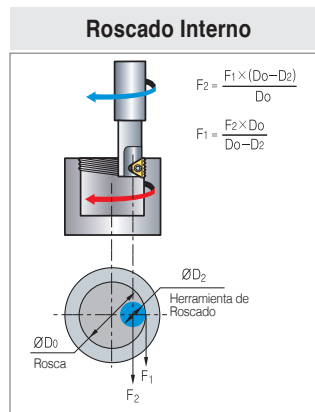
**F<sub>1</sub>:** Nivel de entrada verdadero en los filos (mm/min)

**z:** No. de los filos

**f<sub>n</sub>:** Alimentación por la rotación (mm/rev)

### ➤ Cálculo de los niveles de entrada en la línea del centro de la herramienta

- En la mayoría de las máquinas del CNC, el nivel de entrada requerido para programar es el de la línea central de la herramienta. Al ocuparse del movimiento lineal de la herramienta, el nivel de entrada en el filo y la línea de centro, son idénticos, pero con movimiento circular de la herramienta tal no es el caso. Las ecuaciones definen la relación entre los niveles de entrada en el filo y en la línea del centro de la herramienta



### ➤ Grados & Aplicaciones

- Grado: PC9570T
- Aplicación: Primera elección para Acero y Fundición Un resistente sustrato submicrónico con recubrimiento de TiCN. Proporciona una tenacidad de fractura y resistencia al desgaste excelente

### ➤ Solución de Problemas

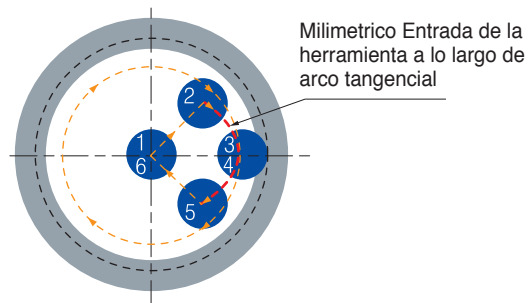
| Problema   | Causa Posible   | Solución  |
|--|---|---|
| <b>Desgaste creciente en el flanco del Inserto</b> | Velocidad del corte demasiado alta .....><br>La viruta es demasiado fina .....><br>Líquido refrigerador escaso .....>                             | Reduzca la velocidad del corte/Use Insertos Recubiertos<br>Aumente el nivel de entrada<br>Aumente el flujo del líquido refrigerador   |
| <b>Fractura en el Filo de Corte</b>                | La viruta es demasiado gruesa .....><br>Vibración .....>  | Reduzca el nivel de entrada/Use el método tangencial del arco/<br>Incremente RPM<br>Compruebe la estabilidad  |
| <b>Adherencia del material en el filo de corte</b> | Velocidad incorrecta del corte .....><br>Grado inadecuado del carburo .....>  | Cambie la Velocidad de Corte<br>Use un inserto recubierto   |
| <b>Rechinido/Vibración</b>                         | El nivel de entrada es demasiado alto .....><br>El perfil es demasiado profundo .....><br>La longitud del hilo de rosca es demasiado larga .....> | Reduzca la alimentación<br>Ejecute dos pasos, cada uno con profundidad de corte creciente<br>Ejecute 2 pasos, cada de la longitud del hilo de rosca del corte solamente mitad |
| <b>Inexactitud en la rosca</b>                     | Desviación de la herramienta .....>   | Reduzca el nivel de entrada/Ejecute un corte "cero"   |

## Condiciones de Corte Recomendadas

| Pieza de Trabajo                |   |   | Dureza Brinell (HB)        | vc (m/min) |           | Feed fz (mm/t)      |                 |            |
|---------------------------------|---|---|----------------------------|------------|-----------|---------------------|-----------------|------------|
|                                 |   |   |                            | Grado      |           | Insertos Indexables | Endmill Solidos |            |
|                                 |   |   |                            | PC9570T    | PC9070M   |                     |                 |            |
| P                               | Acero sin Aleaciones                                | Bajo en Carbon (C=0.1-0.25%)                | 125                        | 100~210    | 80~250    | 0.05~0.3            | 0.03~0.15       |            |
|                                 |   | Medio en Carbon (C=0.25-0.55%)              | 150                        | 100~180    | 80~230    | 0.05~0.25           | 0.03~0.1        |            |
|                                 |   | Alto en Carbon (C=0.55-0.85%)               | 170                        | 100~170    | 80~200    | 0.05~0.2            | 0.03~0.08       |            |
|                                 | Baja Aleación de Acero (Aleación de Elementos ≤ 5%) | No Endurecido                               | 180                        | 90~160     | 60~180    | 0.05~0.25           | 0.03~0.1        |            |
|                                 |   | Endurecido                                  | 275                        | 80~150     | 60~170    | 0.05~0.2            | 0.03~0.07       |            |
|                                 |   | Endurecido                                  | 350                        | 70~140     | 60~160    | 0.05~0.15           | 0.01~0.03       |            |
|                                 | Alta Aleación de Acero                              | Recocido                                    | 200                        | 60~130     | 40~100    | 0.05~0.2            | 0.03~0.05       |            |
|                                 |   | Endurecido                                  | 325                        | 70~110     | 30~80     | 0.05~0.1            | 0.01~0.03       |            |
|                                 | Fundicion   | Aleación Pobre (aleación de Elementos < 5%) | 200                        | 100~170    | 80~250    | 0.05~0.15           | 0.03~0.1        |            |
|                                 |   | Aleación Alta (aleación de Elementos > 5%)  | 225                        | 70~120     | 60~170    | 0.05~0.1            | 0.01~0.03       |            |
| M                               | Acero Inoxidable Ferítico                           | No Endurecidos                              | 200                        | 100~170    | 60~150    | 0.05~0.15           | 0.04~0.1        |            |
|                                 |   | Endurecidos                                 | 330                        | 100~170    | 60~120    | 0.05~0.1            | 0.01~0.05       |            |
|                                 | Acero Inoxidable Austenítico                        | Austenitic                                  | 180                        | 70~140     | 60~140    | 0.05~0.15           | 0.04~0.1        |            |
|                                 |   | Super austenitic                            | 200                        | 70~140     | 60~130    | 0.05~0.1            | 0.04~0.1        |            |
|                                 | Acero Inoxidable Fundicion Ferrítica                | No endurecidos                              | 200                        | 70~140     | 60~160    | 0.05~0.15           | 0.04~0.1        |            |
|                                 |   | Endurecidos                                 | 330                        | 70~140     | 60~110    | 0.05~0.1            | 0.03~0.05       |            |
|                                 | Acero Inoxidable Fundicion Austenítica              | Austenitic                                  | 200                        | 70~120     | 60~150    | 0.05~0.15           | 0.04~0.1        |            |
|                                 |   | Endurecidos                                 | 330                        | 70~120     | 60~100    | 0.05~0.1            | 0.03~0.05       |            |
|                                 | Aleaciones de alta temperatura                      | Recocido (hierro basiado)                   | 200                        | 20~45      | 30~60     | 0.05~0.1            | 0.04~0.1        |            |
|                                 |   | Envejeciendo (hierro basiado)               | 280                        | 20~30      | 20~50     | 0.02~0.05           | 0.01~0.03       |            |
|                                 |   | Recosido (Nickel o Cobalto basiado)         | 250                        | 15~20      | 15~35     | 0.02~0.05           | 0.01~0.03       |            |
|                                 |   | Envejeciendo (Nickel o Cobalto basiado)     | 350                        | 10~15      | 15~30     | 0.02~0.05           | 0.01~0.03       |            |
|                                 | Aleaciones de Titanio                               | Ti 99.5 Puro                                | 400Rm                      | 70~140     | 40~80     | 0.02~0.05           | 0.03~0.05       |            |
|                                 |   | α + β Aleaciones                            | 1050Rm                     | 20~50      | 20~50     | 0.02~0.05           | 0.03~0.05       |            |
|                                 | K   | Acero Extra endurecido                      | Endurecido y Templado      | 55HrC      | 20~45     | 15~45               | 0.01~0.03       | 0.005~0.01 |
|                                 |   | Fundicion Maleable                          | Ferrítico (virutas cortas) | 130        | 60~130    | 70~160              | 0.02~0.08       | 0.01~0.03  |
| Ferrítico (virutas largas)      |   |   | 230                        | 60~120     | 60~150    | 0.02~0.05           | 0.03~0.05       |            |
| Fundicion Gris                  |   | Fuerza extensible baja                      | 180                        | 60~130     | 70~160    | 0.05~0.15           | 0.05~0.1        |            |
|                                 |   | Fuerza extensible Alta                      | 260                        | 60~100     | 40~120    | 0.05~0.1            | 0.03~0.05       |            |
| Hierro Nodular SG               |   | Ferrítico                                   | 160                        | 60~125     | 40~110    | 0.05~0.15           | 0.05~0.1        |            |
|                                 |   | Perlita                                     | 260                        | 50~90      | 40~100    | 0.05~0.1            | 0.03~0.05       |            |
| Aleaciones de Aluminio Wrought  |   | no envejeciendo                             | 60                         | 100~250    | 200~300   | 0.1~0.4             | 0.1~0.25        |            |
|                                 |   | Envejecido                                  | 100                        | 100~180    | 150~250   | 0.1~0.3             | 0.1~0.2         |            |
| Aleaciones de Aluminio          |   | Molde                                       | 75                         | 150~400    | 100~200   | 0.1~0.3             | 0.1~0.2         |            |
|                                 |   | Molde & Envejecido                          | 90                         | 150~280    | 120~220   | 0.05~0.25           | 0.1~0.15        |            |
|                                 |   | Molde Si 13~22%                             | 130                        | 80~150     | 200~300   | 0.1~0.3             | 0.1~0.2         |            |
| Cobre y Aleaciones de CobreBajo | Latón   | 90  | 120~210                    | 200~300    | 0.1~0.3   | 0.1~0.25            |                 |            |
|                                 | Bronze & Cobre no Plomeado                          | 100   | 120~210                    | 150~250    | 0.05~0.25 | 0.1~0.2             |                 |            |

## Exemplo

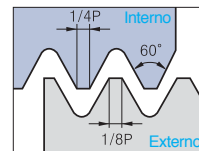
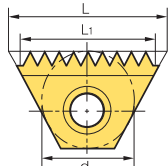
- En la entrada de la herramienta, fije la alimentación f (mm/Dientes) hasta el 70% más baja que la alimentación que rosca
- Avance Roscado: 0.3 mm/t
- Tolerancia del Avance: 0.09 mm/t



# D Insertos de Roscado por Fresado

## ISO Métrico

### Externo/Interno



Definido para : R262 (DIN 13)  
Tolerancia Clase : 6g/6H

(mm)

| Tamaño Inserto |      | Paso (mm) | Codigo  |            |         |            | L1        | Dientes | Portainsero |         |         |
|----------------|------|-----------|---------|------------|---------|------------|-----------|---------|-------------|---------|---------|
| d              | L    |           | Externo | PC9570T    | Interno | PC9570T    |           |         |             |         |         |
| 6.0            | 10.4 | 0.5       | -       |            | TMI     | 10-0.5ISO  | ●         | 10.0    | 20          | TMSR-10 |         |
|                |      | 0.75      | -       |            |         | 10-0.75ISO |           | 9.75    | 13          |         |         |
|                |      | 1.0       | -       |            |         | 10-1.0ISO  | ●         | 9.0     | 9           |         |         |
|                |      | 1.25      | -       |            |         | 10-1.25ISO |           | 8.75    | 7           |         |         |
|                |      | 1.5       | -       |            |         | 10-1.5ISO  |           | 9.0     | 6           |         |         |
| 6.35           | 11   | 0.5       | -       |            | TM2I    | 11-0.5ISO  |           | 10.0    | 20          | TMSR-11 |         |
|                |      | 0.75      | TM2E    | 11-0.75ISO |         | 11-0.75ISO | ●         | 10.5    | 14          |         |         |
|                |      | 1.0       |         | 11-1.0ISO  |         | 11-1.0ISO  | ●         | 10.0    | 10          |         |         |
|                |      | 1.25      |         | 11-1.25ISO |         | -          |           | 10.0    | 8           |         |         |
|                |      | 1.25      |         | -          |         | 11-1.25ISO |           | 8.75    | 7           |         |         |
|                |      | 1.5       |         | 11-1.5ISO  |         | -          |           | 9.0     | 6           |         |         |
|                |      | 1.5       |         | -          |         | 11-1.5ISO  | ●         | 10.5    | 7           |         |         |
| 9.525          | 16   | 0.5       | -       |            | TM2I    | 16-0.5ISO  |           | 15.0    | 30          | TMSR-16 |         |
|                |      | 0.75      | TM2E    | 16-0.75ISO |         | 16-0.75ISO |           | 15.0    | 20          |         |         |
|                |      | 0.8       |         | -          |         | 16-0.8ISO  |           | 14.4    | 18          |         |         |
|                |      | 1.0       |         | 16-1.0ISO  |         | -          |           | 14.0    | 14          |         |         |
|                |      | 1.0       |         | -          |         | 16-1.0ISO  |           | 15.0    | 15          |         |         |
|                |      | 1.25      |         | 16-1.25ISO |         | 16-1.25ISO |           | 15.0    | 12          |         |         |
|                |      | 1.5       |         | 16-1.5ISO  |         | 16-1.5ISO  | ●         | 15.0    | 10          |         |         |
|                |      | 1.75      |         | 16-1.75ISO |         | 16-1.75ISO |           | 14.0    | 8           |         |         |
|                |      | 2.0       |         | 16-2.0ISO  |         | 16-2.0ISO  | ●         | 14.0    | 7           |         |         |
| 9.525B         | 22   | 1.0       | TM2E    | 22-1.0ISO  |         | TM2I       | 22-1.0ISO |         | 22.0        | 22      | TMSR-22 |
|                |      | 1.25      |         | 22-1.25ISO |         | 22-1.25ISO |           | 21.25   | 17          |         |         |
|                |      | 1.5       |         | 22-1.5ISO  |         | 22-1.5ISO  | ●         | 21.0    | 14          |         |         |
|                |      | 1.75      |         | 22-1.75ISO |         | 22-1.75ISO |           | 21.0    | 12          |         |         |
|                |      | 2.0       |         | 22-2.0ISO  | ●       | 22-2.0ISO  | ●         | 22.0    | 11          |         |         |
| 15.875         | 27   | 1.0       | TM2E    | 27-1.0ISO  |         | TM2I       | 27-1.0ISO |         | 26.0        | 26      | TMSR-27 |
|                |      | 1.25      |         | 27-1.25ISO |         | 27-1.25ISO |           | 25.0    | 20          |         |         |
|                |      | 1.5       |         | 27-1.5ISO  |         | 27-1.5ISO  | ●         | 25.5    | 17          |         |         |
|                |      | 1.75      |         | 27-1.75ISO |         | 27-1.75ISO |           | 24.5    | 14          |         |         |
|                |      | 2.0       |         | 27-2.0ISO  |         | 27-2.0ISO  | ●         | 24.0    | 12          |         |         |
|                |      | 2.5       |         | 27-2.5ISO  |         | 27-2.5ISO  |           | 25.0    | 10          |         |         |
|                |      | 3.0       |         | 27-3.0ISO  |         | 27-3.0ISO  | ●         | 24.0    | 8           |         |         |
|                |      | 3.5       |         | 27-3.5ISO  |         | 27-3.5ISO  |           | 24.5    | 7           |         |         |
|                |      | 4.0       |         | 27-4.0ISO  |         | 27-4.0ISO  | ●         | 24.0    | 6           |         |         |
| 4.5            |      | 27-4.5ISO |         | 27-4.5ISO  |         | 22.5       | 5         |         |             |         |         |
| 19.05B         | 38.5 | 1.5       | TM2E    | 38-1.5ISO  |         | TM2I       | 38-1.5ISO |         | 36.0        | 24      | TMSR-38 |
|                |      | 2.0       |         | 38-2.0ISO  |         | 38-2.0ISO  |           | 36.0    | 18          |         |         |
|                |      | 3.0       |         | 38-3.0ISO  |         | 38-3.0ISO  |           | 36.0    | 12          |         |         |
|                |      | 4.0       |         | 38-4.0ISO  |         | 38-4.0ISO  |           | 32.0    | 8           |         |         |
|                |      | 4.5       |         | 38-4.5ISO  |         | 38-4.5ISO  |           | 31.5    | 7           |         |         |
|                |      | 5.0       |         | 38-5.0ISO  |         | 38-5.0ISO  |           | 30.0    | 6           |         |         |
|                |      | 5.5       |         | 38-5.5ISO  |         | 38-5.5ISO  |           | 33.0    | 6           |         |         |
| 6.0            |      | 38-6.0ISO |         | 38-6.0ISO  |         | 30.0       | 5         |         |             |         |         |

Porta herramientas disponibles D49

Todos los insertos excepto el TMI10 tiene 2 bordes cortantes

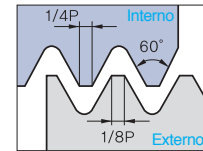
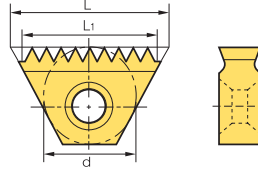
●: En Almacen



D

Roscado

## American UN



Definido para : ANSI B1.1.74  
Tolerancia Clase : 2A/2B

(mm)

### Externo/Interno

| Tamaño Inserto |      | Paso (tpi)    | Codigo      |                  |               |                  | L1               | Dientes | Portainserto |         |         |
|----------------|------|---------------|-------------|------------------|---------------|------------------|------------------|---------|--------------|---------|---------|
| d              | L    |               | Externo     | PC9570T          | Interno       | PC9570T          |                  |         |              |         |         |
| 6.0            | 10.4 | 32            | -           |                  | <b>TMI</b>    | <b>10-32UN</b>   |                  | 9.53    | 12           | TMSR-10 |         |
|                |      | 28            | -           |                  |               | <b>10-28UN</b>   |                  | 9.07    | 10           |         |         |
|                |      | 24            | -           |                  |               | <b>10-24UN</b>   |                  | 9.53    | 9            |         |         |
|                |      | 20            | -           |                  |               | <b>10-20UN</b>   |                  | 8.89    | 7            |         |         |
|                |      | 18            | -           |                  |               | <b>10-18UN</b>   |                  | 8.47    | 6            |         |         |
|                |      | 16            | -           |                  |               | <b>10-16UN</b>   |                  | 7.94    | 5            |         |         |
| 6.35           | 11   | 48            | -           |                  | <b>TM2I</b>   | <b>11-48UN</b>   |                  | 10.05   | 19           | TMSR-11 |         |
|                |      | 40            | -           |                  |               | <b>11-40UN</b>   |                  | 10.16   | 16           |         |         |
|                |      | 32            | -           |                  |               | <b>11-32UN</b>   |                  | 10.32   | 13           |         |         |
|                |      | 28            | <b>TM2E</b> | <b>11-28UN</b>   |               |                  | <b>11-28UN</b>   |         | 9.98         |         | 11      |
|                |      | 27            |             | <b>11-27UN</b>   |               |                  | <b>11-27UN</b>   |         | 10.35        |         | 11      |
|                |      | 24            |             | <b>11-24UN</b>   |               |                  | <b>11-24UN</b>   |         | 9.53         |         | 9       |
|                |      | 20            |             | <b>11-20UN</b>   |               |                  | <b>11-20UN</b>   |         | 10.16        |         | 8       |
|                |      | 18            |             | <b>11-18UN</b>   |               |                  | <b>11-18UN</b>   |         | 9.88         |         | 7       |
|                |      | 16            |             | <b>11-16UN</b>   |               |                  | <b>11-16UN</b>   |         | 9.53         |         | 6       |
|                |      | 14            |             | <b>11-14UN</b>   |               | <b>11-14UN</b>   |                  | 9.07    | 5            |         |         |
| 9.525          | 16   | 40            | -           |                  | <b>TM2I</b>   | <b>16-40UN</b>   |                  | 14.61   | 40           | TMSR-16 |         |
|                |      | 32            | -           |                  |               | <b>16-32UN</b>   |                  | 15.08   | 32           |         |         |
|                |      | 28            | <b>TM2E</b> | <b>16-28UN</b>   |               |                  | <b>16-28UN</b>   |         | 14.51        |         | 28      |
|                |      | 27            |             | <b>16-27UN</b>   |               |                  | <b>16-27UN</b>   |         | 14.11        |         | 27      |
|                |      | 24            |             | <b>16-24UN</b>   |               |                  | <b>16-24UN</b>   |         | 14.82        |         | 24      |
|                |      | 20            |             | <b>16-20UN</b>   |               |                  | <b>16-20UN</b>   |         | 13.97        |         | 20      |
|                |      | 18            |             | <b>16-18UN</b>   |               |                  | <b>16-18UN</b>   |         | 14.11        |         | 18      |
|                |      | 16            |             | <b>16-16UN</b>   |               |                  | <b>16-16UN</b>   | ●       | 14.29        |         | 16      |
|                |      | 14            |             | <b>16-14UN</b>   |               |                  | <b>16-14UN</b>   |         | 14.51        |         | 14      |
|                |      | 13            |             | <b>16-13UN</b>   |               |                  | <b>16-13UN</b>   |         | 13.68        |         | 13      |
|                |      | 12            |             | <b>16-12UN</b>   |               |                  | <b>16-12UN</b>   | ●       | 14.82        |         | 12      |
|                |      | 11.5          |             | <b>16-11.5UN</b> |               | <b>16-11.5UN</b> |                  | 13.25   | 11.5         |         |         |
| 9.525B         | 22   | 24            | <b>TM2E</b> | <b>22-24UN</b>   |               | <b>TM2I</b>      | <b>22-24UN</b>   |         | 21.16        | 20      | TMSR-22 |
|                |      | 20            |             | <b>22-20UN</b>   |               |                  | <b>22-20UN</b>   |         | 21.59        | 17      |         |
|                |      | 18            |             | <b>22-18UN</b>   |               |                  | <b>22-18UN</b>   |         | 21.17        | 15      |         |
|                |      | 16            |             | <b>22-16UN</b>   |               |                  | <b>22-16UN</b>   |         | 20.64        | 13      |         |
|                |      | 14            |             | <b>22-14UN</b>   |               |                  | <b>22-14UN</b>   |         | 21.77        | 12      |         |
|                |      | 13            |             | <b>22-13UN</b>   |               |                  | <b>22-13UN</b>   |         | 21.49        | 11      |         |
|                |      | 12            |             | <b>22-12UN</b>   |               | <b>22-12UN</b>   |                  | 21.17   | 10           |         |         |
| 15.875         | 27   | 24            | <b>TM2E</b> | <b>27-24UN</b>   |               | <b>TM2I</b>      | <b>27-24UN</b>   |         | 25.40        | 24      | TMSR-27 |
|                |      | 20            |             | <b>27-20UN</b>   |               |                  | <b>27-20UN</b>   |         | 25.40        | 20      |         |
|                |      | 18            |             | <b>27-18UN</b>   |               |                  | <b>27-18UN</b>   |         | 25.40        | 18      |         |
|                |      | 16            |             | <b>27-16UN</b>   |               |                  | <b>27-16UN</b>   |         | 25.40        | 16      |         |
|                |      | 14            |             | <b>27-14UN</b>   |               |                  | <b>27-14UN</b>   |         | 25.40        | 14      |         |
|                |      | 13            |             | <b>27-13UN</b>   |               |                  | <b>27-13UN</b>   |         | 25.40        | 13      |         |
|                |      | 12            |             | <b>27-12UN</b>   |               |                  | <b>27-12UN</b>   |         | 25.40        | 12      |         |
|                |      | 11.5          |             | <b>27-11.5UN</b> |               |                  | <b>27-11.5UN</b> |         | 24.30        | 11      |         |
|                |      | 11            |             | <b>27-11UN</b>   |               |                  | <b>27-11UN</b>   |         | 25.40        | 11      |         |
|                |      | 10            |             | <b>27-10UN</b>   |               |                  | -                |         | 22.86        | 9       |         |
|                |      | 10            |             | -                |               |                  | <b>27-10UN</b>   |         | 25.40        | 10      |         |
|                |      | 9             |             | <b>27-9UN</b>    |               |                  | <b>27-9UN</b>    |         | 22.58        | 8       |         |
|                |      | 8             |             | <b>27-8UN</b>    |               |                  | <b>27-8UN</b>    |         | 22.23        | 7       |         |
|                |      | 7             |             | <b>27-7UN</b>    |               |                  | -                |         | 21.77        | 6       |         |
|                |      | 7             |             | -                |               |                  | <b>27-7UN</b>    |         | 25.40        | 7       |         |
| 6              |      | <b>27-6UN</b> |             |                  | -             |                  | 21.17            | 5       |              |         |         |
| 6              |      | -             |             |                  | <b>27-6UN</b> |                  | 25.40            | 6       |              |         |         |
| 19.05          | 38.5 | 6             | <b>TM2E</b> | <b>38-6UN</b>    |               | <b>TM2I</b>      | <b>38-6UN</b>    |         | 38.87        | 8       | TMSR-38 |
|                |      | 5             |             | <b>38-5UN</b>    |               |                  | <b>38-5UN</b>    |         | 30.48        | 6       |         |
|                |      | 4.5           |             | <b>38-4.5UN</b>  |               |                  | <b>38-4.5UN</b>  |         | 33.87        | 6       |         |
|                |      | 4             |             | <b>38-4UN</b>    |               |                  | <b>38-4UN</b>    |         | 31.75        | 5       |         |

➔ Porta herramientas disponibles **D49**

Todos los insertos excepto el TMI10 tiene 2 bordes cortantes

●: En Almacen

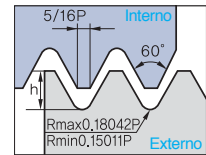
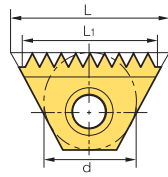
Roscado



D

# D Insertos de Roscado por Fresado

## UNJ (Constante Unificación Roscado)



Definido para : MIL-S-8879C  
Tolerancia Clase : 3A/3B

Externo/Interno

(mm)

| Tamaño Inserto |      | Paso (tpi) | Codigo  |          |         |          | L <sub>1</sub> | Dientes | Portainserto |         |
|----------------|------|------------|---------|----------|---------|----------|----------------|---------|--------------|---------|
| d              | L    |            | Externo | PC9570T  | Interno | PC9570T  |                |         |              |         |
| 6.0            | 10.4 | 24         | -       |          | TMI     | 10-24UNJ | 9.53           | 9       | TMSR-10      |         |
|                |      | 20         | -       |          |         | 10-20UNJ | 8.89           | 7       |              |         |
|                |      | 18         | -       |          |         | 10-18UNJ | 8.47           | 6       |              |         |
|                |      | 16         | -       |          |         | 10-16UNJ | 9.53           | 8       |              |         |
| 6.35           | 11   | 24         | TM2E    | 11-24UNJ |         | TM2I     | 11-24UNJ       | 9.53    | 9            | TMSR-11 |
|                |      | 20         |         | 11-20UNJ |         |          | 11-20UNJ       | 10.16   | 8            |         |
|                |      | 18         |         | -        |         |          | 11-18UNJ       | 9.88    | 7            |         |
|                |      | 16         |         | 11-16UNJ |         |          | 11-16UNJ       | 9.53    | 6            |         |
|                |      | 14         |         | 11-14UNJ |         |          | 11-14UNJ       | 9.07    | 5            |         |
| 9.525          | 16   | 24         | TM2E    | 16-24UNJ |         | TM2I     | 16-24UNJ       | 14.82   | 14           | TMSR-16 |
|                |      | 20         |         | 16-20UNJ |         |          | 16-20UNJ       | 13.97   | 11           |         |
|                |      | 18         |         | 16-18UNJ |         |          | 16-18UNJ       | 14.11   | 10           |         |
|                |      | 16         |         | 16-16UNJ |         |          | 16-16UNJ       | 14.29   | 9            |         |
|                |      | 14         |         | 16-14UNJ |         |          | 16-14UNJ       | 14.51   | 8            |         |
|                |      | 13         |         | 16-13UNJ |         |          | -              | 13.68   | 7            |         |
|                |      | 12         |         | 16-12UNJ |         |          | 16-12UNJ       | 14.82   | 7            |         |
| 15.875         | 27   | 16         | TM2E    | 27-16UNJ |         | TM2I     | 27-16UNJ       | 25.40   | 16           | TMSR-27 |
|                |      | 12         |         | 27-12UNJ |         |          | 27-12UNJ       | 25.40   | 12           |         |
|                |      | 11         |         | 27-11UNJ |         |          | 27-11UNJ       | 25.40   | 11           |         |

Porta herramientas disponibles D49

Todos los insertos excepto el TMI10 tiene 2 bordes cortantes

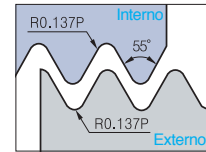
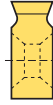
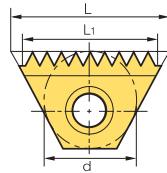
●: En Almacen



D

Roscado

## Whitworth (BSW, BSF, BSP, BSB)



**Externo/Interno**

BSW Definido para : B.S.84:1956, DIN 259, ISO228/1:1982  
 BSP Definido para : B.S.2779:1956  
 Tolerancia Clase : BSW- Clase Media A, BSP-Clase Media

| Tamaño Inserto |      | Paso<br>(tpi) | Codigo              | PC9570T | L1    | Dientes | Portainserto |
|----------------|------|---------------|---------------------|---------|-------|---------|--------------|
| d              | L    |               |                     |         |       |         |              |
| 6.0            | 10.4 | 28            | <b>TMEI</b> 10-28W  |         | 9.07  | 10      | TMSR-10      |
|                |      | 26            | 10-26W              |         | 8.79  | 9       |              |
|                |      | 24            | 10-24W              |         | 9.53  | 9       |              |
|                |      | 20            | 10-20W              |         | 8.89  | 7       |              |
|                |      | 19            | 10-19W              |         | 9.36  | 7       |              |
| 6.35           | 11   | 28            | <b>TM2EI</b> 11-28W |         | 9.98  | 11      | TMSR-11      |
|                |      | 26            | 11-26W              |         | 9.77  | 10      |              |
|                |      | 24            | 11-24W              |         | 9.53  | 9       |              |
|                |      | 20            | 11-20W              |         | 10.16 | 8       |              |
|                |      | 19            | 11-19W              |         | 9.36  | 7       |              |
| 9.525          | 16   | 14            | 11-14W              |         | 9.07  | 5       | TMSR-16      |
|                |      | 26            | <b>TM2EI</b> 16-26W |         | 14.65 | 15      |              |
|                |      | 24            | 16-24W              |         | 14.82 | 14      |              |
|                |      | 20            | 16-20W              |         | 13.97 | 11      |              |
|                |      | 19            | 16-19W              |         | 14.71 | 11      |              |
|                |      | 18            | 16-18W              |         | 14.11 | 10      |              |
|                |      | 16            | 16-16W              |         | 14.29 | 9       |              |
|                |      | 14            | 16-14W              |         | 14.51 | 8       |              |
| 9.525B         | 22   | 12            | 16-12W              |         | 14.82 | 7       | TMSR-16      |
|                |      | 11            | 16-11W              | ●       | 13.85 | 6       |              |
|                |      | 24            | <b>TM2EI</b> 22-24W |         | 21.17 | 20      |              |
|                |      | 20            | 22-20W              |         | 21.59 | 17      |              |
|                |      | 19            | 22-19W              |         | 21.39 | 16      |              |
|                |      | 18            | 22-18W              |         | 21.17 | 15      |              |
|                |      | 16            | 22-16W              |         | 20.64 | 13      |              |
|                |      | 14            | 22-14W              |         | 21.77 | 12      |              |
| 15.875         | 27   | 12            | 22-12W              |         | 21.17 | 10      | TMSR-22      |
|                |      | 11            | 22-11W              |         | 20.78 | 9       |              |
|                |      | 16            | <b>TM2EI</b> 27-16W |         | 25.4  | 16      |              |
|                |      | 14            | 27-14W              |         | 25.4  | 14      |              |
|                |      | 12            | 27-12W              |         | 23.28 | 11      |              |
|                |      | 11            | 27-11W              |         | 23.09 | 10      |              |
|                |      | 10            | 27-10W              |         | 25.40 | 10      |              |
|                |      | 9             | 27-9W               |         | 22.58 | 8       |              |
| 19.05B         | 38.5 | 8             | 27-8W               |         | 22.23 | 7       | TMSR-27      |
|                |      | 7             | 27-7W               |         | 21.77 | 6       |              |
|                |      | 6             | 27-6W               |         | 21.17 | 5       |              |
|                |      | 11            | <b>TM2EI</b> 38-11W |         | 34.64 | 15      |              |
|                |      | 6             | 38-6W               |         | 33.87 | 8       |              |
| 19.05B         | 38.5 | 5             | 38-5W               |         | 30.48 | 6       | TMSR-38      |
|                |      | 4.5           | 38-4.5W             |         | 33.87 | 6       |              |
|                |      | -             | 38-15W              |         | -     | -       |              |

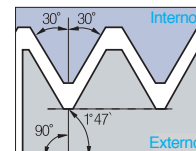
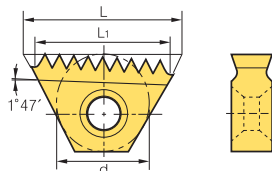
Porta herramientas disponibles **D49**

Todos los insertos excepto el TM110 tiene 2 bordes cortantes

● En Almacen

# D Insertos de Roscado por Fresado

## NPT



Definido para : USAS B2.1:1968  
Tolerancia Clase : Estándar NPT

(mm)

### Externo/Interno

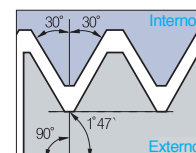
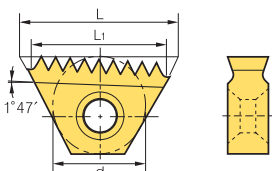
| Tamaño Inserto |      | Paso (tpi) | Codigo          |            | PC9570T | L1    | Dientes | Portainsero |          |
|----------------|------|------------|-----------------|------------|---------|-------|---------|-------------|----------|
| d              | L    |            | Externo+Interno |            |         |       |         | RH          | LH       |
| 9.525          | 16   | 18         | TM2E            | 16-18NPT * |         | 14.11 | 10      | TMSRT-16    | TMSLT-16 |
|                |      | 14         | TM2EI           | 16-14NPT   |         | 14.51 | 8       |             |          |
|                |      | 11.5       |                 | 16-11.5NPT |         | 13.25 | 6       |             |          |
| 9.525B         | 22   | 14         | TM2EI           | 22-14NPT   |         | 21.77 | 12      | TMSRT-22    | TMSLT-22 |
| 15.875         | 27   | 11.5       | TM2EI           | 27-11.5NPT | ●       | 24.30 | 11      | TMSR-27     | TMSL-27  |
|                |      | 8          |                 | 27-8NPT    | ●       | 22.23 | 7       |             |          |
| 19.05B         | 38.5 | 11.5       | TM2EI           | 38-11.5NPT |         | 35.34 | 16      | TMSR-38     | TMSL-38  |
|                |      | 8          |                 | 38-8NPT    |         | 31.75 | 10      |             |          |

Porta herramientas disponibles D49

\* TM2E16-18NPT is for Externo Roscaing

●: En Almacen

## NPTF



Definido para : ANSI 1.20.3-1976  
Tolerancia Clase : Estándar NPTF

(mm)

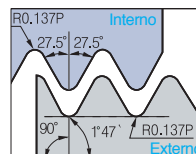
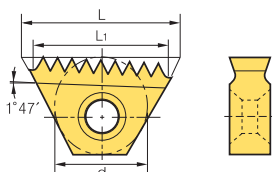
### Externo/Interno

| Tamaño Inserto |      | Paso (tpi) | Codigo          |             | PC9570T | L1    | Dientes | Portainsero |            |
|----------------|------|------------|-----------------|-------------|---------|-------|---------|-------------|------------|
| d              | L    |            | Externo+Interno |             |         |       |         | RH          | LH         |
| 9.525          | 16   | 14         | TM2EI           | 16-14NPTF   | ●       | 14.51 | 8       | TMSRT - 16  | TMSLT - 16 |
|                |      | 11.5       |                 | 16-11.5NPTF |         | 13.25 | 6       |             |            |
| 9.525B         | 22   | 14         | TM2EI           | 22-14NPTF   |         | 21.77 | 12      | TMSRT - 22  | TMSLT - 22 |
|                |      | 11.5       |                 | 22-11.5NPTF |         | 19.88 | 9       |             |            |
| 15.875         | 27   | 11.5       | TM2EI           | 27-11.5NPTF |         | 24.30 | 11      | TMSR - 27   | TMSL - 27  |
|                |      | 8          |                 | 27-8NPTF    |         | 22.23 | 7       |             |            |
| 19.05B         | 38.5 | 11.5       | TM2EI           | 38-11.5NPTF |         | 35.34 | 16      | TMSR - 38   | TMSL - 38  |
|                |      | 8          |                 | 38-8NPTF    |         | 31.75 | 10      |             |            |

Porta herramientas disponibles D49

●: En Almacen

## BSPT



Definido para : B.S 21:1985  
Tolerancia Clase : Estándar BSPT

(mm)

### Externo/Interno

| Tamaño Inserto |    | Paso (tpi) | Codigo          |           | PC9570T | L1    | Dientes | Portainsero |            |
|----------------|----|------------|-----------------|-----------|---------|-------|---------|-------------|------------|
| d              | L  |            | Externo+Interno |           |         |       |         | RH          | LH         |
| 6.35           | 11 | 19         | TM2EI           | 11-19BSPT |         | 9.36  | 7       | TMSR - 10   | TMSL - 10  |
| 9.525          | 16 | 14         | TM2EI           | 16-14BSPT |         | 14.51 | 8       | TMSRT - 16  | TMSLT - 16 |
|                |    | 11         |                 | 16-11BSPT |         | 13.85 | 6       |             |            |
| 15.875         | 27 | 11         | TM2EI           | 27-11BSPT |         | 23.09 | 10      | TMSR - 27   | TMSL - 27  |

Porta herramientas disponibles D49

●: En Almacen

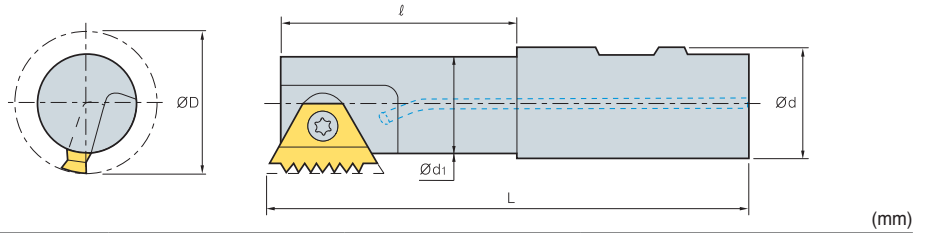


D

Roscado



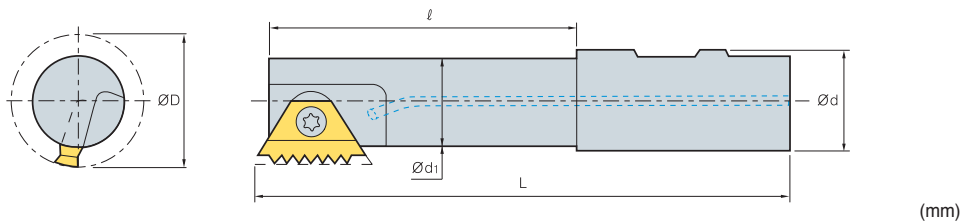
## Tipo Estándar



| Tamaño Inserto | Codigo             | ØD   | Ød | Ød1  | ℓ    | L     | Tornillo | Llave |
|----------------|--------------------|------|----|------|------|-------|----------|-------|
| d              |                    |      |    |      |      |       |          |       |
| 6.0            | <b>TMSR</b> 12-10  | 9.0  | 12 | 6.8  | 12.0 | 69.0  | STM10    | TW07P |
|                | 20-10              | 9.0  | 20 | 6.8  | 17.0 | 84.0  |          |       |
| 6.35           | <b>TMSR</b> 12-11  | 11.5 | 12 | 8.9  | 12.0 | 70.0  | STM11    | TW08P |
|                | 20-11              | 11.5 | 20 | 8.9  | 20.0 | 85.0  |          |       |
| 9.525          | <b>TMSR</b> 16-16  | 17.0 | 16 | 13.6 | 22.0 | 90.0  | STM1622  | TW10P |
|                | 20-16              | 20.0 | 20 | 16.6 | 43.0 | 95.0  |          |       |
| 9.525B         | <b>TMSR</b> 16-22  | 17.0 | 16 | 13.5 | 29.0 | 79.5  | STM1622  | TW10P |
|                | 20-22              | 19.0 | 20 | 15.5 | 29.0 | 81.5  |          |       |
|                | 25-22              | 19.0 | 25 | 15.5 | 30.0 | 92.3  |          |       |
| 15.875         | <b>TMSRW</b> 25-22 | 22.0 | 25 | 18.5 | 30.0 | 90.8  | STM27    | TW25L |
|                | <b>TMSR</b> 25-27  | 30.0 | 25 | 24.0 | 52.0 | 110.0 |          |       |
|                | <b>TMSL</b> 25-27  | 30.0 | 25 | 24.0 | 52.0 | 110.0 |          |       |
| 19.05          | <b>TMSR</b> 32-27  | 37.0 | 32 | 31.0 | 58.0 | 120.0 | STM38    | TW30L |
|                | <b>TMSR</b> 32-38  | 35.0 | 32 | 27.0 | 53.0 | 115.0 |          |       |
|                | 40-38              | 46.0 | 40 | 38.0 | 63.0 | 135.0 |          |       |

Insertos Disponibles D44~48

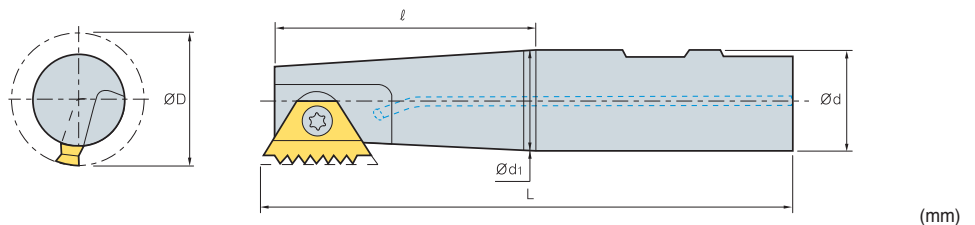
## Tipo Largo



| Tamaño Inserto | Codigo             | ØD   | Ød | Ød1  | ℓ    | L     | Tornillo | Llave |
|----------------|--------------------|------|----|------|------|-------|----------|-------|
| d              |                    |      |    |      |      |       |          |       |
| 6.35           | <b>TMSRL</b> 25-11 | 11.5 | 25 | 8.9  | 17.0 | 125.0 | STM11    | TW08P |
| 9.525B         | <b>TMSRL</b> 25-16 | 22.0 | 25 | 18.6 | 25.0 | 125.0 | STM1622  | TW10P |
| 9.525B         | <b>TMSRL</b> 20-22 | 19.0 | 20 | 15.5 | 44.0 | 96.5  | STM1622  | TW10P |
|                | 25-22              | 22.0 | 25 | 18.6 | 63.5 | 125.0 |          |       |
| 15.875         | <b>TMSRL</b> 25-27 | 30.0 | 25 | 24.0 | 92.0 | 150.0 | STM27    | TW25L |
|                | 32-27              | 37.0 | 32 | 31.0 | 98.0 | 160.0 |          |       |
| 19.05B         | <b>TMSRL</b> 40-38 | 46.0 | 40 | 38.0 | 93.0 | 168.0 | STM38    | TW30L |

Insertos Disponibles D44~48

## Tipo Cónico



| Tamaño Inserto | Codigo             | ØD   | Ød | Ød1  | ℓ    | L     | Tornillo | Llave |
|----------------|--------------------|------|----|------|------|-------|----------|-------|
| d              |                    |      |    |      |      |       |          |       |
| 9.525          | <b>TMSRT</b> 16-16 | 15.5 | 16 | 12.5 | 22.0 | 90.0  | STM1622  | TW10P |
|                | 20-16              | 19.0 | 20 | 15.0 | 23.0 | 85.0  | STMT16   |       |
| 9.525B         | <b>TMSRT</b> 16-22 | 17.0 | 16 | 13.5 | 29.0 | 79.5  | STM1622  | TW10P |
|                | 20-22              | 19.0 | 20 | 15.5 | 29.0 | 81.5  |          |       |
| 15.875         | <b>TMSRT</b> 32-27 | 37.0 | 32 | 31.0 | 58.0 | 120.0 | STM27    | TW25L |

Insertos Disponibles D44~48

## Sistema Codificación de Endmills de Roscado en Fresado

STM D 3T 03 012 L034 - I 0.35 ISO

1 Tipo      2 Estilo Flauta      3 No. Flauta      4 Diam. Zanco      5 Diam. Corte      6 Longitud Filo Corte      7 Tipo Herramienta      8 Paso      9 Tipo Rosca

|  |   |  |
|--|---|--|
| <p><b>1 Tipo</b><br/>STM D 3T 03 012 L034 - I 0.35 ISO</p> <p>Endmill Solido para Roscado</p>  | <p><b>4 Diam. Zanco</b><br/>STM D 3T 03 012 L034 - I 0.35 ISO</p> <p>03: 3.0</p>  | <p><b>8 Paso</b><br/>STM D 3T 03 012 L034 - I 0.35 ISO</p> <p>mm: 0.35~3.0 tpi: 72~12</p>  |
| <p><b>2 Estilo de las Flautas</b><br/>STM D 3T 03 012 L034 - I 0.35 ISO</p> <p>HC: Helice c/Refrigeracion Int<br/>HCR: Helice c/Refr. Int. Radial<br/>HCC: Helice c/Refr. Int. p/Chafflán<br/>HCD: Helice c/Refr. Int. C/F &amp; Barrenado<br/>D: Roscado Profundo</p> | <p><b>5 Diam. Corte</b><br/>STM D 3T 03 012 L034 - I 0.35 ISO</p> <p>012: 1.20</p> <p><b>6 Longitud Filo Corte</b><br/>STM D 3T 03 012 L034 - I 0.35 ISO</p> <p>L034: 3.4</p> | <p><b>9 Tipo</b><br/>STM D 3T 03 012 L034 - I 0.35 ISO</p> <p>ISO Métrico<br/>American UN<br/>Corte Lateral de Orilla (UNJ)<br/>Roscado Tubo Nacional (NPT)<br/>Roscado Tubo Nacional (NPTF)<br/>Roscado Tubo estandar inglés (BSPT)</p> |
| <p><b>3 No. Flauta</b><br/>STM D 3T 03 012 L034 - I 0.35 ISO</p> <p>3T: 3 Flutas<br/>2L: 4 Flutas, Flautas izquierdas</p>  | <p><b>7 Tipo Herramienta</b><br/>STM D 3T 03 012 L034 - I 0.35 ISO</p> <p>I: Interno</p>  |  |

## TM-INFO Guía de Usuario

Programa de Composición CNC  
TM Gen programa para CNC para el proceso de roscado en poco tiempo

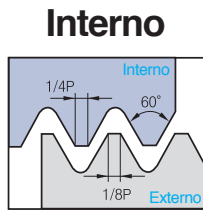
- **Multilinguaje**
- **Visualizacione de la operacion**



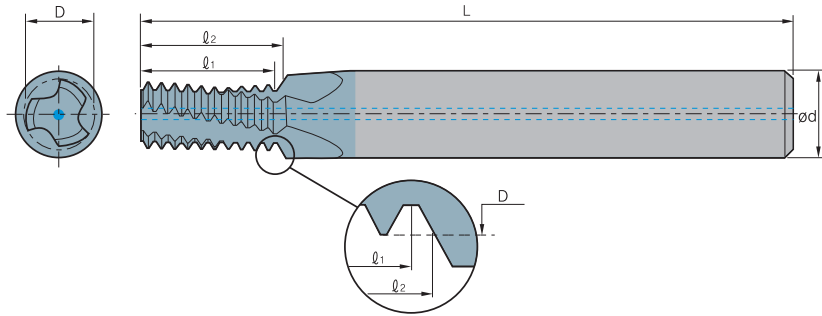
|  |  |   |   |
|--|--|---|---|
| <p><b>1</b> Seleccione el Tipo de Roscado</p>  | <p><b>2</b> Seleccione el Roscado Estándar</p> | <p><b>3</b> Seleccione el tipo de Rosca</p>                   | <p><b>4</b> Introduzca parametros del Roscado</p>   |
| <p><b>5</b> Seleccione la forma de Trabajo</p> | <p><b>6</b> Seleccione el Tipo de Hetta</p>    | <p><b>7</b> Confirme los datos de trabajo &amp; controles</p> | <p style="text-align: center;"><b>Descarga</b></p> <p style="text-align: center;">Para descargarlo visite<br/><a href="http://www.korloy.com">http://www.korloy.com</a></p> |

## ISO Métrico

## Flautas Helicoidales con Orificio de Refrigeración



Definido para : R262 (DIN 13)  
Tolerancia Clase : 6H



( $\varnothing_2 \leq 1.5 \times \text{Diámetro Roscado}$ )

| Rosca    |              | Paso (mm) | Codigo                         | PC9070M | Dimensiones (mm) |       |    |      |      | No.de Flautas | Dientes | *Diam Preforacion mm |
|----------|--------------|-----------|--------------------------------|---------|------------------|-------|----|------|------|---------------|---------|----------------------|
| M Grueso | M Fino       |           |                                |         | Interno          | Ød    | D  | L    | Ø1   |               |         |                      |
| M3x0.5   | M3.5~M16x0.5 | 0.5       | <b>STMHC 04024L04-I0.50ISO</b> |         | 4                | 2.40  | 45 | 4.5  | 4.7  | 3             | 9       | 2.5                  |
| M4x0.7   |              | 0.7       | <b>04031L06-I0.70ISO</b>       |         | 4                | 3.15  | 45 | 6.3  | 6.6  | 3             | 9       | 3.3                  |
| M5x0.8   |              | 0.8       | <b>04039L07-I0.80ISO</b>       |         | 4                | 3.90  | 45 | 7.2  | 7.6  | 3             | 9       | 4.2                  |
| M6x1.0   | M8~M40x1.0   | 1.0       | <b>06048L09-I1.00ISO</b>       |         | 6                | 4.80  | 57 | 9.0  | 9.5  | 3             | 9       | 5.0                  |
| M8x1.25  |              | 1.25      | <b>08065L13-I1.25ISO</b>       |         | 8                | 6.50  | 61 | 12.5 | 13.1 | 3             | 10      | 6.8                  |
| M10x1.5  | M12~M48x1.5  | 1.5       | <b>10082L15-I1.50ISO</b>       |         | 10               | 8.20  | 73 | 15.0 | 15.7 | 3             | 10      | 8.5                  |
| M12x1.75 |              | 1.75      | <b>10099L18-I1.75ISO</b>       |         | 10               | 9.90  | 73 | 17.5 | 18.4 | 4             | 10      | 10.2                 |
| M14x2.0  | M17~M80x2.0  | 2.0       | <b>12116L21-I2.00ISO</b>       |         | 12               | 11.60 | 73 | 20.0 | 21.0 | 4             | 10      | 12.0                 |
| M16x2.0  | M17~M80x2.0  | 2.0       | <b>14136L25-I2.00ISO</b>       |         | 14               | 13.60 | 92 | 24.0 | 25.0 | 4             | 12      | 14.0                 |

( $\varnothing_2 \leq 2 \times \text{Diámetro Roscado}$ )

| Rosca    |              | Paso (mm) | Codigo                   | PC9070M | Dimensiones (mm) |       |     |      |      | No.de Flautas | Dientes | *Diam Preforacion mm |
|----------|--------------|-----------|--------------------------|---------|------------------|-------|-----|------|------|---------------|---------|----------------------|
| M Grueso | M Fino       |           |                          |         | Interno          | Ød    | D   | L    | Ø1   |               |         |                      |
| M3x0.5   | M3.5~M16x0.5 | 0.5       | <b>04024L06-I0.50ISO</b> |         | 4                | 2.40  | 45  | 6.0  | 6.2  | 3             | 12      | 2.5                  |
|          | M4x0.5       | 0.5       | <b>04032L08-I0.50ISO</b> |         | 4                | 3.20  | 45  | 8.0  | 8.2  | 3             | 16      | 3.5                  |
|          | M5x0.5       | 0.5       | <b>06042L10-I0.50ISO</b> |         | 6                | 4.20  | 57  | 10.0 | 10.2 | 3             | 20      | 4.5                  |
| M4x0.7   |              | 0.7       | <b>04031L08-I0.70ISO</b> |         | 4                | 3.15  | 45  | 8.4  | 8.7  | 3             | 12      | 3.3                  |
|          | M6x0.75      | 0.75      | <b>06050L12-I0.75ISO</b> |         | 6                | 5.00  | 57  | 12.0 | 12.4 | 3             | 16      | 5.3                  |
| M5x0.8   |              | 0.8       | <b>04039L10-I0.80ISO</b> |         | 4                | 3.90  | 45  | 10.4 | 10.8 | 3             | 13      | 4.2                  |
| M6x1.0   | M8~M40x1.0   | 1.0       | <b>06048L12-I1.00ISO</b> | ●       | 6                | 4.80  | 57  | 12.0 | 12.5 | 3             | 12      | 5.0                  |
|          | M8x1.0       | 1.0       | <b>08067L16-I1.00ISO</b> |         | 8                | 6.70  | 61  | 16.0 | 16.5 | 3             | 16      | 7.0                  |
|          | M10x1.0      | 1.0       | <b>10087L20-I1.00ISO</b> |         | 10               | 8.70  | 73  | 20.0 | 20.5 | 3             | 20      | 9.0                  |
|          | M12x1.0      | 1.0       | <b>12107L24-I1.00ISO</b> | ●       | 12               | 10.70 | 73  | 24.0 | 24.5 | 4             | 24      | 11.0                 |
| M8x1.25  |              | 1.25      | <b>08065L16-I1.25ISO</b> | ●       | 8                | 6.50  | 61  | 16.2 | 16.9 | 3             | 13      | 6.8                  |
|          | M10x1.25     | 1.25      | <b>10085L20-I1.25ISO</b> | ●       | 10               | 8.50  | 73  | 20.0 | 20.6 | 3             | 16      | 8.8                  |
| M10x1.5  | M12~M48x1.5  | 1.5       | <b>10082L20-I1.50ISO</b> | ●       | 10               | 8.20  | 73  | 19.5 | 20.2 | 3             | 13      | 8.5                  |
|          | M12x1.5      | 1.5       | <b>10099L24-I1.50ISO</b> | ●       | 10               | 9.90  | 73  | 24.0 | 24.7 | 4             | 16      | 10.5                 |
|          | M14x1.5      | 1.5       | <b>12119L29-I1.50ISO</b> |         | 12               | 11.90 | 80  | 28.5 | 29.2 | 4             | 19      | 12.5                 |
|          | M16x1.5      | 1.5       | <b>14139L32-I1.50ISO</b> |         | 14               | 13.90 | 92  | 31.5 | 32.2 | 4             | 21      | 14.5                 |
| M12x1.75 |              | 1.75      | <b>10099L25-I1.75ISO</b> |         | 10               | 9.90  | 73  | 24.5 | 25.4 | 4             | 14      | 10.2                 |
| M14x2.0  | M17~M80x2.0  | 2.0       | <b>12116L29-I2.00ISO</b> |         | 12               | 11.60 | 80  | 28.0 | 29.0 | 4             | 14      | 12.0                 |
| M16x2.0  | M17~M80x2.0  | 2.0       | <b>14136L33-I2.00ISO</b> |         | 14               | 13.60 | 92  | 32.0 | 33.0 | 4             | 16      | 14.0                 |
| M18x2.5  |              | 2.5       | <b>16148L36-I2.50ISO</b> |         | 16               | 14.80 | 92  | 35.0 | 36.2 | 4             | 14      | 15.5                 |
| M 20x2.5 |              | 2.5       | <b>18171L41-I2.50ISO</b> |         | 18               | 17.10 | 102 | 40.0 | 41.2 | 4             | 16      | 17.5                 |
| M 24x3.0 |              | 3.0       | <b>20199L49-I3.00ISO</b> |         | 20               | 19.90 | 102 | 48.0 | 49.5 | 4             | 16      | 21.0                 |

\* El diámetro de la perforación se aplica a metros de rosca pequeños

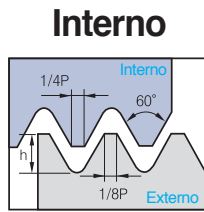
Maxima longitud de Roscado =  $\varnothing_2 - \frac{\text{Paso}}{4}$

● En Almacen

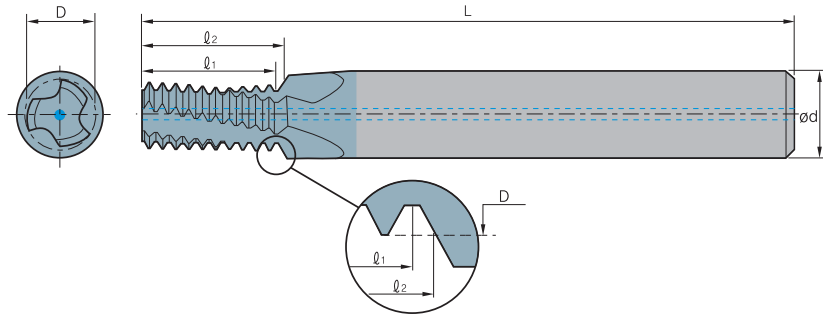
# D Fresas Integrales de Roscado por Fresado

## American UN

## Flautas Helicoidales con Orificio de Refrigeración



Definido para : ANSI B1.1.74  
Tolerancia Clase : 2B



( $\varnothing_2 \leq 1.5 \times \text{Diámetro Roscado}$ )

| Rosca     |                 |                     | Paso (tpi) | Codigo | PC9070M         | Dimensiones (mm) |       |    |      |      | No.de Flautas z | Dientes zt | *Diam Preforacion mm |
|-----------|-----------------|---------------------|------------|--------|-----------------|------------------|-------|----|------|------|-----------------|------------|----------------------|
| UNC       | UNF             | UNEF                |            |        |                 | Interno          | Ød    | D  | L    | Ø1   |                 |            |                      |
| No.10~24  | 5/16", 3/8" x24 | 9/16"~11/16" x24    | 24         | STMHC  | 04035L07-I24UNC | 4                | 3.58  | 45 | 7.4  | 7.9  | 3               | 7          | 3.8                  |
| No.10~24  | 5/16", 3/8" x24 | 9/16"~11/16" x24    | 24         |        | 06041L08-I24UNC | 6                | 4.15  | 57 | 8.5  | 9.0  | 3               | 8          | 4.5                  |
| 1/4" x20  | 7/16", 1/2" x20 | 3/4"~1" x20         | 20         |        | 06048L09-I20UNC | 6                | 4.88  | 57 | 8.9  | 9.5  | 3               | 7          | 5.2                  |
| 5/16" x18 | 9/16", 5/8" x18 | 11/16"~1 11/16" x18 | 18         |        | 08061L11-I18UNC | 8                | 6.15  | 61 | 11.3 | 12.0 | 3               | 8          | 6.5                  |
| 3/8" x16  | 3/4" x16        |                     | 16         |        | 08076L15-I16UNC | 8                | 7.65  | 61 | 14.3 | 15.1 | 3               | 9          | 8.0                  |
| 7/16" x14 | 7/8" x14        |                     | 14         |        | 10090L17-I14UNC | 10               | 9.00  | 73 | 16.3 | 17.2 | 3               | 9          | 9.3                  |
| 1/2" x13  |                 |                     | 13         |        | 12104L20-I13UNC | 12               | 10.35 | 73 | 19.5 | 20.5 | 4               | 10         | 10.8                 |
| 9/16" x12 | 1"~1 1/2" x12   |                     | 12         |        | 12118L22-I12UNC | 12               | 11.80 | 73 | 21.2 | 22.2 | 4               | 10         | 12.3                 |

( $\varnothing_2 \leq 2 \times \text{Diámetro Roscado}$ )

| Rosca     |                 |                     | Paso (tpi) | Codigo           | PC9070M          | Dimensiones (mm) |       |      |      |      | No.de Flautas z | Dientes zt | *Diam Preforacion mm |
|-----------|-----------------|---------------------|------------|------------------|------------------|------------------|-------|------|------|------|-----------------|------------|----------------------|
| UNC       | UNF             | UNEF                |            |                  |                  | Interno          | Ød    | D    | L    | Ø1   |                 |            |                      |
|           | No.10~32        | No. 12~3/8" x32     | 32         | STMHC            | 04038L09-I32UNF  | 4                | 3.80  | 45   | 9.5  | 9.9  | 3               | 12         | 4.0                  |
|           |                 | No. 12~3/8" x32     | 32         |                  | 06044L11-I32UNEF | 6                | 4.40  | 57   | 11.1 | 11.5 | 3               | 14         | 4.7                  |
|           | No.12, 1/4" x28 | 7/16"; 1/2" x28     | 28         |                  | 06043L11-I28UNF  | 6                | 4.30  | 57   | 10.9 | 11.3 | 3               | 12         | 4.6                  |
|           | 1/4" x28        | 7/16"; 1/2" x28     | 28         |                  | 06052L13-I28UNF  | 6                | 5.15  | 57   | 12.7 | 13.1 | 3               | 14         | 5.5                  |
|           |                 | 7/16"; 1/2" x28     | 28         |                  | 10099L22-I28UNEF | 10               | 9.90  | 73   | 21.8 | 22.2 | 3               | 24         | 10.2                 |
| No.10~24  | 5/16", 3/8" x24 | 9/16"~11/16" x24    | 24         |                  | 04035L10-I24UNC  | 4                | 3.58  | 45   | 9.5  | 10.0 | 3               | 9          | 3.8                  |
| No.12~24  | 5/16", 3/8" x24 | 9/16"~11/16" x24    | 24         |                  | 06041L11-I24UNC  | 6                | 4.15  | 57   | 10.6 | 11.1 | 3               | 10         | 4.5                  |
|           | 5/16", 3/8" x24 | 9/16"~11/16" x24    | 24         |                  | 08066L16-I24UNF  | 8                | 6.68  | 61   | 15.9 | 16.4 | 3               | 15         | 6.8                  |
|           | 3/8" x24        | 9/16"~11/16" x24    | 24         |                  | 10082L19-I24UNF  | 10               | 8.20  | 73   | 19.0 | 19.6 | 3               | 18         | 8.5                  |
|           |                 | 9/16"~11/16" x24    | 24         |                  | 14129L29-I24UNEF | 14               | 12.90 | 92   | 28.6 | 29.1 | 4               | 27         | 13.2                 |
| 1/4" x20  | 7/16", 1/2" x20 | 3/4"~1" x20         | 20         |                  | 06048L13-I20UNC  | 6                | 4.88  | 57   | 12.7 | 13.3 | 3               | 10         | 5.2                  |
|           | 7/16", 1/2" x20 | 3/4"~1" x20         | 20         |                  | 10096L22-I20UNF  | 10               | 9.60  | 73   | 21.6 | 22.2 | 3               | 17         | 9.8                  |
|           | 1/2" x20        | 3/4"~1" x20         | 20         | 12111L26-I20UNF  | 12               | 11.10            | 80    | 25.4 | 26.0 | 3    | 20              | 11.5       |                      |
|           |                 | 3/4"~1" x20         | 20         | 18174L38-I20UNEF | 18               | 17.40            | 102   | 38.1 | 38.7 | 4    | 30              | 17.8       |                      |
| 5/16" x18 | 9/16", 5/8" x18 | 11/16"~1 11/16" x18 | 18         | 08061L16-I18UNC  | 8                | 6.15             | 61    | 15.5 | 16.2 | 3    | 11              | 6.5        |                      |
|           | 9/16", 5/8" x18 | 11/16"~1 11/16" x18 | 18         | 14125L28-I18UNF  | 14               | 12.50            | 92    | 28.2 | 28.9 | 4    | 20              | 12.8       |                      |
|           | 5/8" x18        | 11/16"~1 11/16" x18 | 18         | 16141L31-I18UNF  | 16               | 14.10            | 92    | 31.0 | 31.7 | 4    | 22              | 14.5       |                      |
| 3/8" x16  | 3/4" x16        |                     | 16         | 08076L19-I16UNC  | 8                | 7.65             | 61    | 19.0 | 19.8 | 3    | 12              | 8.0        |                      |
|           | 3/4" x16        |                     | 16         | 18170L38-I16UNF  | 18               | 17.00            | 102   | 38.1 | 38.8 | 4    | 24              | 17.5       |                      |
| 7/16" x14 | 7/8" x14        |                     | 14         | 10090L22-I14UNC  | 10               | 9.00             | 73    | 21.8 | 22.7 | 3    | 12              | 9.3        |                      |
|           | 7/8" x14        |                     | 14         | 20199L44-I14UNF  | 20               | 19.90            | 102   | 43.5 | 44.4 | 4    | 24              | 20.5       |                      |
| 1/2" x13  |                 |                     | 13         | 12104L26-I13UNC  | 12               | 10.35            | 80    | 25.4 | 26.4 | 4    | 13              | 10.8       |                      |
| 9/16" x12 | 1"~1 1/2" x12   |                     | 12         | 12118L28-I12UNC  | 12               | 11.80            | 80    | 27.5 | 28.6 | 4    | 13              | 12.3       |                      |
|           | 1"~1 1/2" x12   |                     | 12         | 20199L51-I12UNF  | 20               | 19.90            | 102   | 50.8 | 51.9 | 4    | 24              | 23.5       |                      |
| 5/8" x11  |                 |                     | 11         | 14131L33-I11UNC  | 14               | 13.10            | 92    | 32.3 | 33.5 | 4    | 14              | 13.5       |                      |
| 3/4" x10  |                 |                     | 10         | 16159L39-I10UNC  | 16               | 15.90            | 92    | 38.1 | 39.4 | 4    | 15              | 16.5       |                      |
| 7/8" x9   |                 |                     | 9          | 20190L46-I9UNC   | 20               | 19.00            | 102   | 45.2 | 46.6 | 4    | 16              | 19.5       |                      |
| 1" x8     |                 |                     | 8          | 20199L52-I8UNC   | 20               | 19.90            | 102   | 50.8 | 52.4 | 4    | 16              | 22.0       |                      |

\* El diámetro de la perforación se aplica a metros de roscado pequeños

Maxima longitud de Roscado =  $\varnothing_2 - \frac{\text{Paso}}{4}$

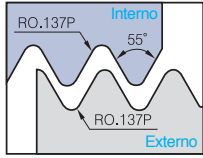
● En Almacen



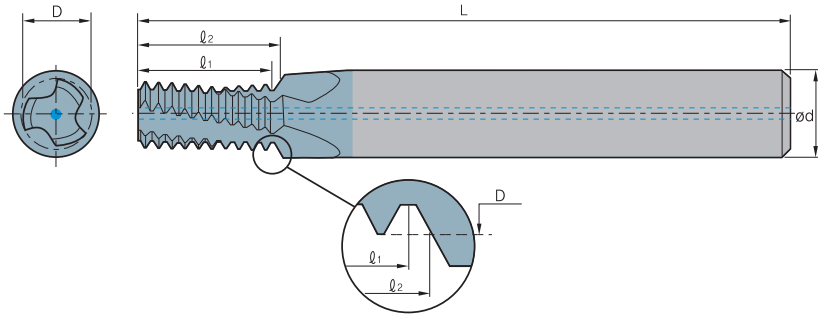
## Whitworth

### Flautas Helicoidales con Orificio de Refrigeración

#### Externo/Interno



Definido para : B.S.84 : 1956,  
DIN 259, ISO228/1 : 1982  
Tolerancia Clase : Medio class A



( $l_2 \leq 2 \times \text{Diametro Roscado}$ )

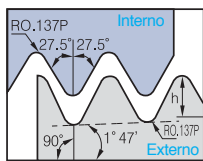
| Rosca     |                 | Paso (tpi) | Codigo                        | PC9070M | Dimensiones (mm) |       |     |      |      | No.de Flautas z | Dientes zt | *Diam Preforacion mm |
|-----------|-----------------|------------|-------------------------------|---------|------------------|-------|-----|------|------|-----------------|------------|----------------------|
| BSW       | BSF             |            |                               |         | Externo/Interno  | Ød    | D   | L    | l1   |                 |            |                      |
|           | 1/4"x26         | 26         | <b>STMHC 06050L13-EI26BSF</b> |         | 6                | 5.00  | 57  | 12.7 | 13.2 | 3               | 13         | 5.3                  |
|           | 5/16"x22        | 22         | <b>08063L16-EI22BSF</b>       |         | 8                | 6.35  | 61  | 16.2 | 16.7 | 3               | 14         | 6.7                  |
| 1/4"x20   | 3/8"x20         | 20         | <b>06044L13-EI20BSW</b>       |         | 6                | 4.45  | 57  | 12.7 | 13.3 | 3               | 10         | 5.0                  |
|           | 3/8"x20         | 20         | <b>08076L19-EI20BSF</b>       |         | 8                | 7.65  | 61  | 19.0 | 19.7 | 3               | 15         | 8.2                  |
| 5/16"x18  | 7/16"x18        | 18         | <b>06058L16-EI18BSW</b>       |         | 6                | 5.85  | 57  | 15.5 | 16.2 | 3               | 11         | 6.5                  |
|           | 7/16"x18        | 18         | <b>10092L23-EI18BSF</b>       |         | 10               | 9.20  | 73  | 22.6 | 23.3 | 3               | 16         | 9.7                  |
| 3/8"x16   | 1/2", 9/16"x16  | 16         | <b>08072L19-EI16BSW</b>       |         | 8                | 7.20  | 61  | 19.0 | 19.8 | 3               | 12         | 7.9                  |
|           | 1/2", 9/16"x16  | 16         | <b>12105L26-EI16BSF</b>       |         | 12               | 10.50 | 80  | 25.4 | 26.2 | 4               | 16         | 11.1                 |
|           | 9/16"x16        | 16         | <b>14122L29-EI16BSF</b>       |         | 14               | 12.15 | 92  | 28.6 | 29.4 | 4               | 18         | 12.6                 |
| 7/16"x14  | 5/8", 11/16"x14 | 14         | <b>10085L22-EI14BSW</b>       |         | 10               | 8.50  | 73  | 21.8 | 22.7 | 3               | 12         | 9.2                  |
|           | 5/8", 11/16"x14 | 14         | <b>14134L31-EI14BSF</b>       |         | 14               | 13.40 | 92  | 30.8 | 31.7 | 4               | 17         | 14.0                 |
|           | 11/16"x14       | 14         | <b>16150L35-EI14BSF</b>       |         | 16               | 15.00 | 92  | 34.5 | 35.4 | 4               | 19         | 15.6                 |
| 1/2"x12   | 3/4"x12         | 12         | <b>10096L26-EI12BSW</b>       |         | 10               | 9.65  | 73  | 25.4 | 26.5 | 3               | 12         | 10.5                 |
| 9/16"x12  | 3/4"x12         | 12         | <b>12113L28-EI12BSW</b>       |         | 12               | 11.25 | 80  | 27.5 | 28.6 | 4               | 13         | 12.1                 |
|           | 3/4"x12         | 12         | <b>18162L39-EI12BSF</b>       |         | 18               | 16.20 | 102 | 38.1 | 39.2 | 4               | 18         | 16.8                 |
| 5/8"x11   | 7/8"x11         | 11         | <b>14126L33-EI11BSW</b>       |         | 14               | 12.60 | 92  | 32.3 | 33.5 | 4               | 14         | 13.4                 |
| 11/16"x11 |                 | 11         | <b>16142L35-EI11BSW</b>       |         | 16               | 14.20 | 92  | 34.6 | 35.8 | 4               | 15         | 15.0                 |

● En Almacen

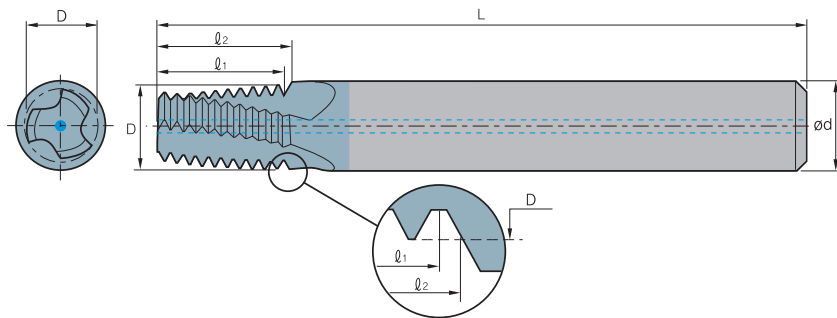
## BSPT

### Flautas Helicoidales con Orificio de Refrigeración

#### Externo/Interno



Definido para : B.S.21 : 1985  
Tolerancia Clase : Estándar BSPT



| Rosca                     |    | Paso (tpi)                     | Codigo | PC9070M | Dimensiones (mm) |     |      |      |    | No.de Flautas z | Dientes zt | *Diam Preforacion mm |
|---------------------------|----|--------------------------------|--------|---------|------------------|-----|------|------|----|-----------------|------------|----------------------|
| Standard                  |    |                                |        |         | Interno          | Ød  | D    | L    | l1 |                 |            |                      |
| 1/16"x28                  | 28 | <b>STMHC 06059L10-EI28BSPT</b> |        | 6       | 5.90             | 57  | 10.0 | 10.2 | 3  | 11              | 6.7        |                      |
| 1/8"x28                   | 28 | <b>08076L10-EI28BSPT</b>       |        | 8       | 7.65             | 61  | 10.0 | 10.2 | 3  | 11              | 8.7        |                      |
| 1/4"x19                   | 19 | <b>10099L15-EI19BSPT</b>       |        | 10      | 9.90             | 73  | 14.7 | 15.4 | 3  | 11              | 11.8       |                      |
| 3/8"x19                   | 19 | <b>12111L15-EI19BSPT</b>       |        | 12      | 11.15            | 73  | 14.7 | 15.4 | 4  | 11              | 15.2       |                      |
| 1/2", 3/4"x14             | 14 | <b>16142L22-EI14BSPT</b>       |        | 16      | 14.25            | 92  | 21.8 | 22.7 | 4  | 12              | 19.0       |                      |
| 1", 1 1/2", 2", 2 1/2"x11 | 11 | <b>20196L28-EI11BSPT</b>       |        | 20      | 19.60            | 102 | 27.7 | 28.9 | 4  | 12              | 30.7       |                      |

\* El diámetro de la perforación se aplica a metros de rosca pequeños

Maxima longitud de Roscado =  $l_2 - \frac{\text{Paso}}{4}$

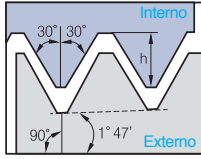
● En Almacen

# D Fresas Integrales de Roscado por Fresado

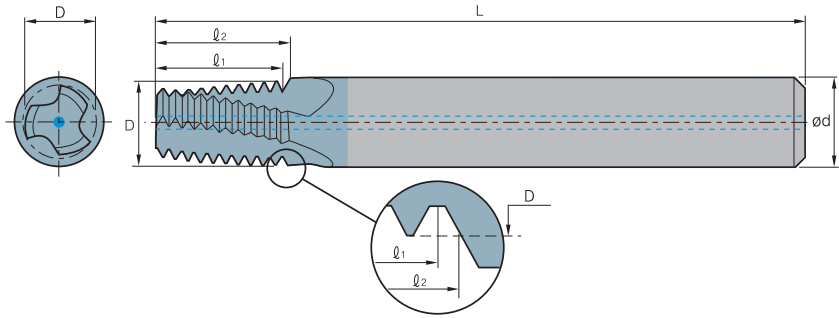
## NPT

### Flautas Helicoidales con Orificio de Refrigeración

#### Externo/Interno



Definido para : USAS B2.1:1968  
Tolerancia Clase : Estándar NPT

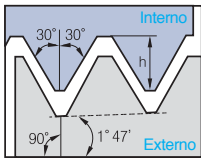


| Rosca<br>Estándar          | Paso<br>(tpi) | Codigo  |                    | PC9070M | Dimensiones (mm) |       |     |      |      | No.de<br>Flautas<br>z | Dientes<br>zt | *Diam Preforacioni<br>mm |
|----------------------------|---------------|---------|--------------------|---------|------------------|-------|-----|------|------|-----------------------|---------------|--------------------------|
|                            |               | Interno |                    |         | Ød               | D     | L   | l1   | l2   |                       |               |                          |
| 1/16"×27                   | 27            | STMHC   | 06059L09-EI27NPT   | ●       | 6                | 5.90  | 57  | 9.4  | 9.9  | 3                     | 10            | 6.3                      |
| 1/8"×27                    | 27            |         | 08076L09-EI27NPT   |         | 8                | 7.65  | 61  | 9.4  | 9.9  | 3                     | 10            | 8.5                      |
| 1/4"×18                    | 18            |         | 10099L14-EI18NPT   |         | 10               | 9.90  | 73  | 14.1 | 14.8 | 3                     | 10            | 11.1                     |
| 3/8"×18                    | 18            |         | 12111L14-EI18NPT   |         | 12               | 11.15 | 73  | 14.1 | 14.8 | 4                     | 10            | 14.5                     |
| 1/2", 3/4"×14              | 14            |         | 16142L19-EI14NPT   |         | 16               | 14.25 | 92  | 18.1 | 19.0 | 4                     | 10            | 17.7, 23.0               |
| 1", 1 1/4, 1 1/2", 2"×11.5 | 11.5          |         | 20196L23-EI11.5NPT |         | 20               | 19.60 | 102 | 22.1 | 23.2 | 4                     | 10            | 29.0, 37.7, 44.0, 56.0   |
| 2 1/2"×8 ; 3"×8            | 8             |         | 20196L33-EI8NPT    |         | 20               | 19.60 | 102 | 31.7 | 33.3 | 4                     | 10            | 66.5, 82.1               |

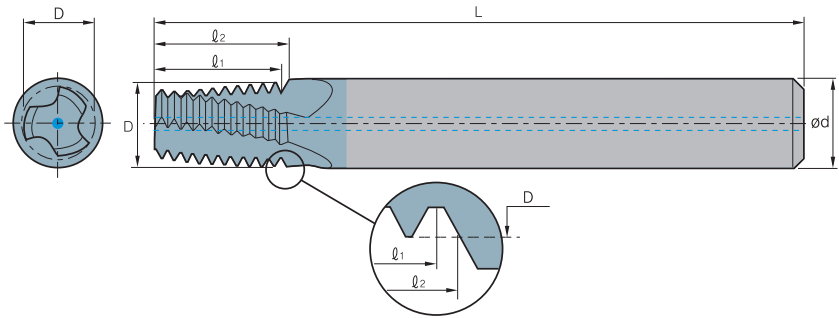
## NPTF

### Flautas Helicoidales con Orificio de Refrigeración

#### Externo/Interno



Definido para : ANSI 1.20.3-1976  
Tolerancia Clase : Estándar NPTF



| Rosca<br>Estándar          | Paso<br>(tpi) | Codigo  |                     | PC9070M | Dimensiones (mm) |       |     |      |      | No.de<br>Flautas<br>z | Dientes<br>zt | *Diam Preforacioni<br>mm |
|----------------------------|---------------|---------|---------------------|---------|------------------|-------|-----|------|------|-----------------------|---------------|--------------------------|
|                            |               | Interno |                     |         | Ød               | D     | L   | l1   | l2   |                       |               |                          |
| 1/16"×27                   | 27            | STMHC   | 06059L09-EI27NPTF   | ●       | 6                | 5.90  | 57  | 9.4  | 9.9  | 3                     | 10            | 6.3                      |
| 1/8"×27                    | 27            |         | 08076L09-EI27NPTF   |         | 8                | 7.65  | 61  | 9.4  | 9.9  | 3                     | 10            | 8.5                      |
| 1/4"×18                    | 18            |         | 10099L14-EI18NPTF   |         | 10               | 9.90  | 73  | 14.1 | 14.8 | 3                     | 10            | 11.1                     |
| 3/8"×18                    | 18            |         | 12111L14-EI18NPTF   |         | 12               | 11.15 | 73  | 14.1 | 14.8 | 4                     | 10            | 14.5                     |
| 1/2", 3/4"×14              | 14            |         | 16142L19-EI14NPTF   |         | 16               | 14.25 | 92  | 18.1 | 19.0 | 4                     | 10            | 17.7, 23.4               |
| 1", 1 1/4, 1 1/2", 2"×11.5 | 11.5          |         | 20196L23-EI11.5NPTF |         | 20               | 19.60 | 102 | 22.1 | 23.2 | 4                     | 10            | 29.0, 37.7, 43.7, 55.6   |
| 2 1/2"×8 ; 3"×8            | 8             |         | 20196L33-EI8NPTF    |         | 20               | 19.60 | 102 | 31.7 | 33.3 | 4                     | 10            | 66.3, 82.1               |

\* El diámetro de la perforación se aplica a 1 metro de rosca pequeños

$$\text{Maxima longitud de Roscado} = l_2 - \frac{\text{Paso}}{4}$$

● En Almacen

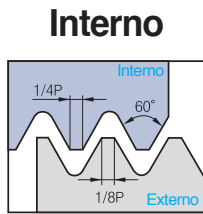


D

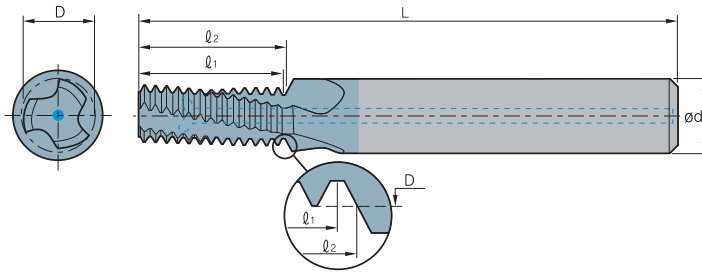
Roscado

## ISO Métrico

### Flautas Helicoidales con Orificio de Refrigeración



Definido para : R262 (DIN 13)  
Tolerancia Clase : 6H

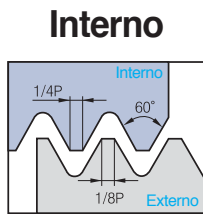


( $l_2 \leq 2 \times \text{Diámetro Roscado}$ )

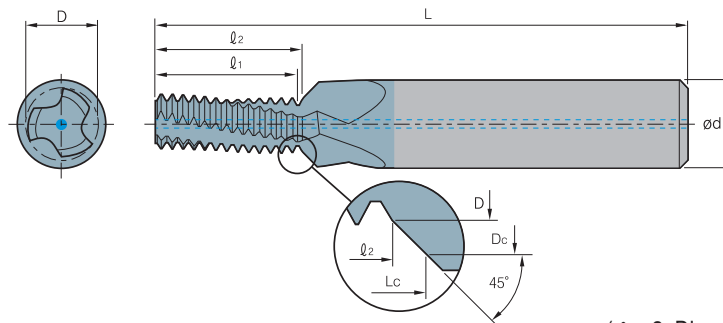
| Rosca    |             | Paso (mm) | Codigo                          | PC9070M | Dimensiones (mm) |      |    |      |      | No.de Flautas z | Dientes zt | *Diam Preforacion mm |
|----------|-------------|-----------|---------------------------------|---------|------------------|------|----|------|------|-----------------|------------|----------------------|
| M Grueso | M Fino      |           |                                 |         | Interno          | Ød   | D  | L    | l1   |                 |            |                      |
| M6x1.0   | M8~M40x1.0  | 1.0       | <b>STMHCR 06048L12-I1.00ISO</b> |         | 6                | 4.8  | 57 | 12.0 | 12.5 | 3               | 12         | 5.0                  |
|          | M10x1.0     | 1.0       | <b>10087L20-I1.00ISO</b>        |         | 10               | 8.7  | 73 | 20.0 | 20.5 | 3               | 20         | 9.0                  |
|          | M12x1.0     | 1.0       | <b>12107L24-I1.00ISO</b>        |         | 12               | 10.7 | 73 | 24.0 | 24.5 | 4               | 24         | 11.0                 |
| M8x1.25  |             | 1.25      | <b>08065L16-I1.25ISO</b>        |         | 8                | 6.5  | 64 | 16.3 | 16.9 | 3               | 13         | 6.8                  |
| M10x1.5  | M12~M48x1.5 | 1.5       | <b>10082L20-I1.50ISO</b>        |         | 10               | 8.2  | 73 | 19.5 | 20.3 | 3               | 13         | 8.5                  |
|          | M12x1.5     | 1.5       | <b>10099L24-I1.50ISO</b>        |         | 10               | 9.9  | 73 | 24.0 | 24.8 | 4               | 16         | 10.5                 |
|          | M14x1.5     | 1.5       | <b>12119L29-I1.50ISO</b>        |         | 12               | 11.9 | 84 | 28.5 | 29.3 | 4               | 19         | 12.5                 |
|          | M16x1.5     | 1.5       | <b>14139L32-I1.50ISO</b>        |         | 14               | 13.9 | 84 | 31.5 | 32.3 | 4               | 21         | 14.5                 |
| M12x1.75 |             | 1.75      | <b>10099L25-I1.75ISO</b>        |         | 10               | 9.9  | 73 | 24.5 | 25.4 | 4               | 14         | 10.2                 |

## ISO Métrico

### Flautas Helicoidales con Orificio de Refrigeración y Fabricador de Chafilán



Definido para : R262 (DIN 13)  
Tolerancia Clase : 6H



( $l_2 \leq 2 \times \text{Diámetro Roscado}$ )

| Rosca    |             | Paso (mm) | Codigo                          | PC9070M | Dimensiones (mm) |      |      |    |      |      |      |    | No.de Flautas z | Dientes zt | *Diam Preforacion mm |
|----------|-------------|-----------|---------------------------------|---------|------------------|------|------|----|------|------|------|----|-----------------|------------|----------------------|
| M Grueso | M Fino      |           |                                 |         | Interno          | Ød   | D    | Dc | L    | l1   | l2   | Lc |                 |            |                      |
| M6x1.0   | M8~M40x1.0  | 1.0       | <b>STMHCC 08048L12-I1.00ISO</b> |         | 8                | 4.8  | 6.3  | 61 | 12.0 | 12.5 | 13.3 | 3  | 12              | 5.0        |                      |
|          | M10x1.0     | 1.0       | <b>12087L20-I1.00ISO</b>        |         | 12               | 8.7  | 10.3 | 73 | 20.0 | 20.5 | 21.3 | 3  | 20              | 9.0        |                      |
|          | M12x1.0     | 1.0       | <b>14107L24-I1.00ISO</b>        |         | 14               | 10.7 | 12.3 | 80 | 24.0 | 24.5 | 25.3 | 4  | 24              | 11.0       |                      |
| M8x1.25  |             | 1.25      | <b>10065L16-I1.25ISO</b>        |         | 10               | 6.5  | 8.3  | 73 | 16.3 | 16.9 | 17.8 | 3  | 13              | 6.8        |                      |
| M10x1.5  | M12~M48x1.5 | 1.5       | <b>12082L20-I1.50ISO</b>        |         | 12               | 8.2  | 10.3 | 80 | 19.5 | 20.3 | 21.3 | 3  | 13              | 8.5        |                      |
|          | M12x1.5     | 1.5       | <b>14099L24-I1.50ISO</b>        |         | 14               | 9.9  | 12.3 | 80 | 24.0 | 24.8 | 26.0 | 4  | 16              | 10.5       |                      |
|          | M14x1.5     | 1.5       | <b>16119L29-I1.50ISO</b>        |         | 16               | 11.9 | 14.3 | 92 | 28.5 | 29.3 | 30.5 | 4  | 19              | 12.5       |                      |
|          | M16x1.5     | 1.5       | <b>18139L32-I1.50ISO</b>        |         | 18               | 13.9 | 16.3 | 92 | 31.5 | 32.3 | 33.5 | 4  | 21              | 14.5       |                      |
| M12x1.75 |             | 1.75      | <b>14099L25-I1.75ISO</b>        |         | 14               | 9.9  | 12.3 | 80 | 24.5 | 25.4 | 26.6 | 4  | 14              | 10.2       |                      |

\* El diámetro de la perforación se aplica a metros de roscado pequeños

Maxima longitud de Roscado =  $l_2 - \frac{\text{Paso}}{4}$

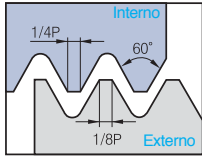
● En Almacen

# D Fresas Integrales de Roscado por Fresado

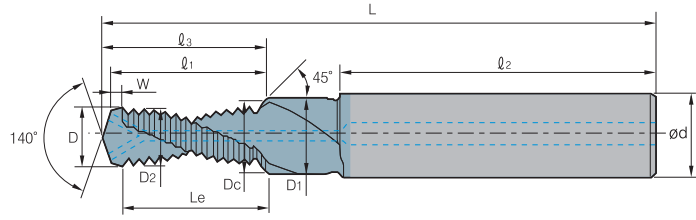
## ISO Métrico

## Barrenado, Chaflán & Roscado con Orificio de Refrigeración

### Interno



Definido para : R262 (DIN 13)  
Tolerancia Clase : 6H



| Rosca    | Paso (mm) | Codigo  |                 | PC9070M | Dimensiones (mm) |      |      |    |     |      |      |    |      |      | No.de Flautas | Dientes |    |
|----------|-----------|---------|-----------------|---------|------------------|------|------|----|-----|------|------|----|------|------|---------------|---------|----|
|          |           | Interno |                 |         | L                | l3   | l1   | l2 | W   | Le   | D    | Ød | D1   | Dc   |               |         | D2 |
| M6x1.0   | 1.0       | STMHCD  | IM6x1.0ISO-2D   |         | 62.0             | 14.5 | 13.7 | 36 | 1.0 | 12.7 | 5.0  | 8  | 6.6  | 6.3  | 4.85          | 2       | 11 |
| M8x1.25  | 1.25      |         | IM8x1.25ISO-2D  |         | 74.0             | 18.2 | 17.1 | 40 | 1.3 | 15.8 | 6.8  | 10 | 9.0  | 8.3  | 6.45          | 2       | 11 |
| M10x1.5  | 1.5       |         | IM10x1.5ISO-2D  |         | 79.0             | 23.4 | 22.1 | 45 | 1.5 | 20.6 | 8.5  | 12 | 11.0 | 10.3 | 8.08          | 2       | 12 |
| M12x1.75 | 1.75      |         | IM12x1.75ISO-2D |         | 89.0             | 27.1 | 25.5 | 45 | 1.5 | 24.0 | 10.3 | 14 | 13.5 | 12.3 | 9.74          | 2       | 12 |

| Rosca   | Paso (mm) | Codigo  |                  | PC9070M | Dimensiones (mm) |      |      |    |     |      |     |    |      |      | No.de Flautas | Dientes |    |
|---------|-----------|---------|------------------|---------|------------------|------|------|----|-----|------|-----|----|------|------|---------------|---------|----|
|         |           | Interno |                  |         | L                | l3   | l1   | l2 | W   | Le   | D   | Ød | D1   | Dc   |               |         | D2 |
| M6x1.0  | 1.0       | STMHCD  | IM6x1.0ISO-2.5D  |         | 62.0             | 16.5 | 15.7 | 36 | 1.0 | 14.7 | 5.0 | 8  | 6.6  | 6.3  | 4.85          | 2       | 13 |
| M8x1.25 | 1.25      |         | IM8x1.25ISO-2.5D |         | 74.0             | 23.2 | 22.1 | 40 | 1.3 | 20.8 | 6.8 | 10 | 9.0  | 8.3  | 6.45          | 2       | 15 |
| M10x1.5 | 1.5       |         | IM10x1.5ISO-2.5D |         | 79.0             | 27.9 | 26.6 | 45 | 1.5 | 25.1 | 8.5 | 12 | 11.0 | 10.3 | 8.08          | 2       | 15 |

$$\text{Maxima longitud de Roscado} = l_2 - \frac{\text{Paso}}{4}$$

●: En Almacen



D

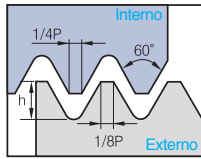
Roscado



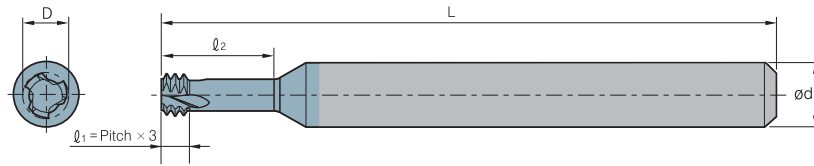
## ISO Métrico

## Roscado Profundo

### Interno



Definido para : R262 (DIN 13)  
Tolerancia Clase : 6H



( $\ell_2 \leq 2 \times \text{Diametro Roscado}$ )

| Rosca     |              | Paso (mm) | Codigo  |                    | PC9070M | Dimensiones (mm) |      |    |      | No.de Flautas | Dientes | *Diam Preforacion mm |
|-----------|--------------|-----------|---------|--------------------|---------|------------------|------|----|------|---------------|---------|----------------------|
| M Grueso  | M Fino       |           | Interno |                    |         | Ød               | D    | L  | ℓ2   |               |         |                      |
| M1.6x0.35 |              | 0.35      | STMD3T  | 03012L034-I0.35ISO |         | 3                | 1.20 | 30 | 3.4  | 3             | 3       | 1.25                 |
| M2x0.4    |              | 0.4       |         | 06015L042-I0.4ISO  |         | 6                | 1.55 | 57 | 4.2  | 3             | 3       | 1.6                  |
| M2.2x0.45 |              | 0.45      |         | 06016L046-I0.45ISO |         | 6                | 1.65 | 57 | 4.6  | 3             | 3       | 1.75                 |
| M2.5x0.45 |              | 0.45      |         | 06019L052-I0.45ISO |         | 6                | 1.95 | 57 | 5.2  | 3             | 3       | 2.05                 |
| M3x0.5    | M3.5~M16x0.5 | 0.5       |         | 06024L062-I0.5ISO  |         | 6                | 2.40 | 57 | 6.2  | 3             | 3       | 2.5                  |
| M3.5x0.6  |              | 0.6       |         | 06027L073-I0.6ISO  |         | 6                | 2.75 | 57 | 7.3  | 3             | 3       | 2.9                  |
| M4x0.7    |              | 0.7       |         | 06031L083-I0.7ISO  |         | 6                | 3.15 | 57 | 8.3  | 3             | 3       | 3.3                  |
| M5x0.8    |              | 0.8       |         | 06040L104-I0.8ISO  |         | 6                | 4.05 | 57 | 10.4 | 3             | 3       | 4.2                  |
| M6x1.0    | M8~M40x1.0   | 1.0       |         | 06048L125-I1.0ISO  |         | 6                | 4.80 | 57 | 12.5 | 3             | 3       | 5.0                  |
| M8x1.25   |              | 1.25      |         | 08065L166-I1.25ISO |         | 8                | 6.50 | 63 | 16.6 | 3             | 3       | 6.8                  |
| M10x1.5   | M12~M48x1.50 | 1.5       |         | 10082L208-I1.50ISO |         | 10               | 8.20 | 73 | 20.8 | 3             | 3       | 8.5                  |
| M12x1.75  |              | 1.75      |         | 10099L250-I1.75ISO |         | 10               | 9.90 | 73 | 25.0 | 3             | 3       | 10.3                 |

3d ( $\ell_2 \leq 3 \times \text{Diametro Roscado}$ )

| Rosca     |              | Paso (mm) | Codigo  |                    | PC9070M | Dimensiones (mm) |      |    |      | No.de Flautas | Dientes | *Diam Preforacion mm |
|-----------|--------------|-----------|---------|--------------------|---------|------------------|------|----|------|---------------|---------|----------------------|
| M Grueso  | M Fino       |           | Interno |                    |         | Ød               | D    | L  | ℓ2   |               |         |                      |
| M1.6x0.35 |              | 0.35      | STMD3T  | 03012L050-I0.35ISO |         | 3                | 1.20 | 30 | 5.0  | 3             | 3       | 1.25                 |
| M2x0.4    |              | 0.4       |         | 06015L062-I0.4ISO  |         | 6                | 1.55 | 57 | 6.2  | 3             | 3       | 1.6                  |
| M2.5x0.45 |              | 0.45      |         | 06019L077-I0.45ISO |         | 6                | 1.95 | 57 | 7.0  | 3             | 3       | 2.05                 |
| M3x0.5    | M3.5~M16x0.5 | 0.5       |         | 06024L092-I0.5ISO  |         | 6                | 2.40 | 57 | 9.2  | 3             | 3       | 2.5                  |
| M4x0.7    |              | 0.7       |         | 06031L123-I0.7ISO  |         | 6                | 3.15 | 57 | 12.3 | 3             | 3       | 3.3                  |
| M5x0.8    |              | 0.8       |         | 06040L154-I0.8ISO  |         | 6                | 4.05 | 57 | 15.4 | 3             | 3       | 4.2                  |
| M6x1.0    | M8~M40x1.0   | 1.0       |         | 06048L185-I1.0ISO  |         | 6                | 4.80 | 57 | 18.5 | 3             | 3       | 5.0                  |
| M8x1.25   |              | 1.25      |         | 08065L246-I1.25ISO |         | 8                | 6.50 | 63 | 24.6 | 3             | 3       | 6.8                  |

\* El diámetro de la perforación se aplica a metros de rosca pequeños

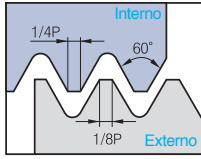
Maxima longitud de Roscado =  $\ell_2 - \frac{\text{Paso}}{4}$

●: En Almacen

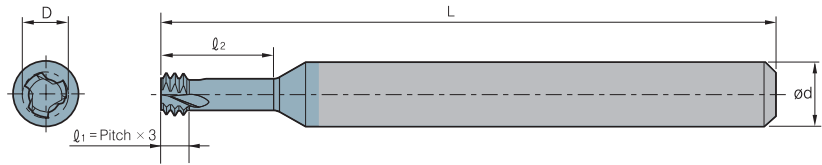
## American UN

## Roscado Profundo

### Interno



Definido para : ANSI B1.1.74  
Tolerancia Clase : 2B



( $\varnothing_2 \leq 2 \times \text{Diametro Roscado}$ )

| Rosca         |            | Paso (tpi) | Codigo                        | PC9070M | Dimensiones (mm) |      |    |      | No.de Flautas z | Dientes zt | *Diam Preforacion mm |
|---------------|------------|------------|-------------------------------|---------|------------------|------|----|------|-----------------|------------|----------------------|
| UNC           | UNF        |            |                               |         | Interno          | Ød   | D  | L    |                 |            |                      |
|               | No.1~72    | 72         | <b>STMD3T 06014L039-I72UN</b> |         | 6                | 1.45 | 57 | 3.9  | 3               | 3          | 1.6                  |
| No.1~64       | No.2~64    | 64         | <b>06014L042-I64UN</b>        |         | 6                | 1.40 | 57 | 4.2  | 3               | 3          | 1.5                  |
| No.2~56       | No.3~56    | 56         | <b>06016L050-I56UN</b>        |         | 6                | 1.65 | 57 | 5.0  | 3               | 3          | 1.8                  |
| No.3~48       | No.4~48    | 48         | <b>06019L060-I48UN</b>        |         | 6                | 1.90 | 57 | 6.0  | 3               | 3          | 2.1                  |
| No.4, No.5~40 | No.6~40    | 40         | <b>06021L060-I40UN</b>        |         | 6                | 2.10 | 57 | 6.0  | 3               | 3          | 2.3                  |
| No.5~40       | No.6~40    | 40         | <b>06024L072-I40UN</b>        |         | 6                | 2.45 | 57 | 7.2  | 3               | 3          | 2.6                  |
|               | No.8~36    | 36         | <b>06033L087-I36UN</b>        |         | 6                | 3.30 | 57 | 8.7  | 3               | 3          | 3.5                  |
| No.6, No.8~32 | No.10~32   | 32         | <b>06025L074-I32UN</b>        |         | 6                | 2.55 | 57 | 7.4  | 3               | 3          | 2.8                  |
| No.8~32       | No.10~32   | 32         | <b>06032L100-I32UN</b>        |         | 6                | 3.20 | 57 | 10.0 | 3               | 3          | 3.5                  |
|               | 1/4" x 28  | 28         | <b>06052L132-I28UN</b>        |         | 6                | 5.25 | 57 | 13.2 | 3               | 3          | 5.5                  |
| No.10~24      | 5/16" x 24 | 24         | <b>06035L102-I24UN</b>        |         | 6                | 3.58 | 57 | 10.2 | 3               | 3          | 3.9                  |
|               | 5/16" x 24 | 24         | <b>08066L165-I24UN</b>        |         | 8                | 6.68 | 63 | 16.5 | 3               | 3          | 6.9                  |
| 1/4" x 20     | 7/16" x 20 | 20         | <b>06048L134-I20UN</b>        |         | 6                | 4.88 | 57 | 13.4 | 3               | 3          | 5.2                  |
|               | 7/16" x 20 | 20         | <b>10095L230-I20UN</b>        |         | 10               | 9.55 | 73 | 23.0 | 3               | 3          | 9.9                  |
| 3/8" x 16     |            | 16         | <b>08067L191-I16UN</b>        |         | 8                | 6.70 | 63 | 19.1 | 3               | 3          | 8.0                  |
| 7/16" x 14    |            | 14         | <b>10090L233-I14UN</b>        |         | 10               | 9.00 | 73 | 23.3 | 3               | 3          | 9.4                  |

( $\varnothing_2 \leq 3 \times \text{Diametro Roscado}$ )

| Rosca         |            | Paso (tpi) | Codigo                        | PC9070M | Dimensiones (mm) |      |    |      | No.de Flautas z | Dientes zt | *Diam Preforacion mm |
|---------------|------------|------------|-------------------------------|---------|------------------|------|----|------|-----------------|------------|----------------------|
| UNC           | UNF        |            |                               |         | Interno          | Ød   | D  | L    |                 |            |                      |
|               | No.1~72    | 72         | <b>STMD3T 06014L057-I72UN</b> |         | 6                | 1.45 | 57 | 5.75 | 3               | 3          | 1.6                  |
| No.4, No.5~40 | No.6~40    | 40         | <b>06021L090-I40UN</b>        |         | 6                | 2.10 | 57 | 9.0  | 3               | 3          | 2.3                  |
| No.5~40       | No.6~40    | 40         | <b>06024L100-I40UN</b>        |         | 6                | 2.45 | 57 | 10.0 | 3               | 3          | 2.6                  |
| No.6, No.8~32 | No.10~32   | 32         | <b>06025L110-I32UN</b>        |         | 6                | 2.55 | 57 | 11.0 | 3               | 3          | 2.8                  |
| No.8~32       | No.10~32   | 32         | <b>06032L130-I32UN</b>        |         | 6                | 3.20 | 57 | 13.0 | 3               | 3          | 3.4                  |
|               | 1/4" 28    | 28         | <b>06052L196-I28UN</b>        |         | 6                | 5.25 | 57 | 19.6 | 3               | 3          | 5.5                  |
|               | 5/16" x 24 | 24         | <b>08066L245-I24UN</b>        |         | 8                | 6.68 | 63 | 24.5 | 3               | 3          | 6.9                  |
| 1/4" x 20     | 7/16" x 20 | 20         | <b>06048L198-I20UN</b>        |         | 6                | 4.88 | 57 | 19.8 | 3               | 3          | 5.1                  |

\* El diámetro de la perforación se aplica a metros de roscado pequeños

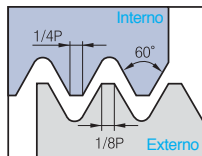
Maxima longitud de Roscado =  $\varnothing_2 - \frac{\text{Paso}}{4}$

●: En Almacen

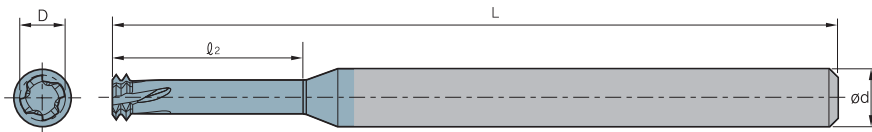
## ISO Metric

## Roscado Profundo para Material Endurecido (~HRC62)

### Interno



Definido para : R262 (DIN 13)  
Tolerancia Clase : 6H



( $\ell_2 \leq 2 \times \text{Diámetro Roscado}$ )

| Rosca     |              | Paso (mm) | Codigo        | PC9070M                   | Dimensiones (mm) |      |     |       | No.de Flautas | Dientes | *Diam Preforacioni |
|-----------|--------------|-----------|---------------|---------------------------|------------------|------|-----|-------|---------------|---------|--------------------|
| M Grueso  | M Fino       |           |               |                           | Interno          | Ød   | D   | L     |               |         |                    |
| M2x0.4    |              | 0.4       | <b>STMD2L</b> | <b>06015L042-I0.4ISO</b>  | 6                | 1.55 | 76  | 4.60  | 4             | 2       | 1.6                |
| M2.2x0.45 |              | 0.45      |               | <b>06016L046-I0.45ISO</b> | 6                | 1.65 | 76  | 5.05  | 4             | 2       | 1.8                |
| M2.5x0.45 |              | 0.45      |               | <b>06019L052-I0.45ISO</b> | 6                | 1.95 | 76  | 5.65  | 4             | 2       | 2.05               |
| M3x0.5    | M3.5~M16x0.5 | 0.5       |               | <b>06024L062-I0.5ISO</b>  | 6                | 2.40 | 76  | 6.75  | 4             | 2       | 2.55               |
| M3.5x0.6  |              | 0.6       |               | <b>06027L073-I0.6ISO</b>  | 6                | 2.75 | 76  | 7.90  | 4             | 2       | 2.95               |
| M4x0.7    |              | 0.7       |               | <b>06031L083-I0.7ISO</b>  | 6                | 3.15 | 76  | 9.05  | 4             | 2       | 3.35               |
| M5x0.8    |              | 0.8       |               | <b>06040L104-I0.8ISO</b>  | 6                | 4.05 | 76  | 11.20 | 4             | 2       | 4.3                |
| M6x1.0    | M8~M40x1.0   | 1.0       |               | <b>06048L125-I1.0ISO</b>  | 6                | 4.80 | 76  | 13.50 | 4             | 2       | 5.1                |
| M8x1.25   |              | 1.25      |               | <b>08065L166-I1.25ISO</b> | 8                | 6.50 | 80  | 17.85 | 4             | 2       | 6.8                |
| M10x1.5   | M12~M48x1.50 | 1.5       |               | <b>08079L208-I1.50ISO</b> | 8                | 7.90 | 80  | 22.30 | 4             | 2       | 8.6                |
| M12x1.75  |              | 1.75      |               | <b>10099L250-I1.75ISO</b> | 10               | 9.90 | 101 | 26.75 | 4             | 2       | 10.4               |

( $\ell_2 \leq 3 \times \text{Diámetro Roscado}$ )

| Rosca     |              | Paso (mm) | Codigo        | PC9070M                   | Dimensiones (mm) |      |    |       | No.de Flautas | Dientes | *Diam Preforacioni |
|-----------|--------------|-----------|---------------|---------------------------|------------------|------|----|-------|---------------|---------|--------------------|
| M Grueso  | M Fino       |           |               |                           | Interno          | Ød   | D  | L     |               |         |                    |
| M2x0.4    |              | 0.4       | <b>STMD2L</b> | <b>06015L062-I0.4ISO</b>  | 6                | 1.55 | 76 | 6.60  | 4             | 2       | 1.6                |
| M2.2x0.45 |              | 0.45      |               | <b>06019L077-I0.45ISO</b> | 6                | 1.95 | 76 | 8.15  | 4             | 2       | 2.05               |
| M3x0.5    | M3.5~M16x0.5 | 0.5       |               | <b>06024L092-I0.5ISO</b>  | 6                | 2.40 | 76 | 9.75  | 4             | 2       | 2.55               |
| M4x0.7    |              | 0.7       |               | <b>06031L123-I0.7ISO</b>  | 6                | 3.15 | 76 | 13.05 | 4             | 2       | 3.35               |
| M5x0.8    |              | 0.8       |               | <b>06040L154-I0.8ISO</b>  | 6                | 4.05 | 76 | 16.20 | 4             | 2       | 4.3                |
| M6x1.0    | M8~M40x1.0   | 1.0       |               | <b>06048L185-I1.0ISO</b>  | 6                | 4.80 | 76 | 19.50 | 4             | 2       | 5.1                |
| M8x1.25   |              | 1.25      |               | <b>08065L246-I1.25ISO</b> | 8                | 6.50 | 80 | 25.85 | 4             | 2       | 6.8                |

\* El diámetro de la perforación se aplica a metros de rosca pequeños

Maxima longitud de Roscado =  $\ell_2 - \frac{\text{Paso}}{4}$

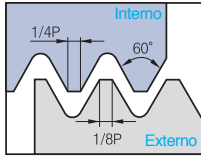
●: En Almacen

# D Fresas Integrales de Roscado por Fresado

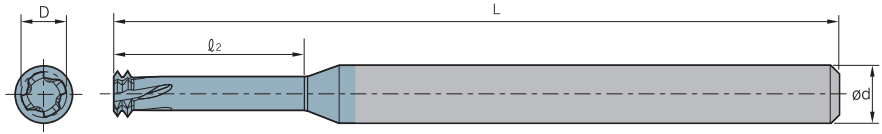
## American UN

## Roscado Profundo para Material Endurecido (~HRC62)

### Interno



Definido para : ANSI B1.1.74  
Tolerancia Clase : 2B



( $l_2 \leq 2 \times \text{Diametro Roscado}$ )

| Rosca             |          | Paso (tpi) | Codigo        |                        | PC9070M | Dimensiones (mm) |      |     |                | No.de Flautas z | Dientes zt | *Diam Preforacioni mm |
|-------------------|----------|------------|---------------|------------------------|---------|------------------|------|-----|----------------|-----------------|------------|-----------------------|
| UNC               | UNF      |            | Interno       |                        |         | Ød               | D    | L   | l <sub>2</sub> |                 |            |                       |
| No.2~56           | No.3~56  | 56         | <b>STMD2L</b> | <b>06016L050-I56UN</b> |         | 6                | 1.65 | 76  | 5.45           | 4               | 2          | 1.80                  |
| No.3~48           | No.4~48  | 48         |               | <b>06019L060-I48UN</b> |         | 6                | 1.90 | 76  | 6.53           | 4               | 2          | 2.10                  |
| No.4~40 ; No.5~40 | No.6~40  | 40         |               | <b>06021L060-I40UN</b> |         | 6                | 2.10 | 76  | 6.64           | 4               | 2          | 2.35                  |
| No.5~40           | No.6~40  | 40         |               | <b>06024L072-I40UN</b> |         | 6                | 2.45 | 76  | 7.84           | 4               | 2          | 2.65                  |
|                   | No.8~36  | 36         |               | <b>06033L087-I36UN</b> |         | 6                | 3.30 | 76  | 9.41           | 4               | 2          | 3.55                  |
| No.6~32 ; No.8~32 | No.10~32 | 32         |               | <b>06025L074-I32UN</b> |         | 6                | 2.55 | 76  | 8.20           | 4               | 2          | 2.85                  |
| No.8~32           | No.10~32 | 32         |               | <b>06032L100-I32UN</b> |         | 6                | 3.20 | 76  | 10.79          | 4               | 2          | 3.50                  |
|                   | 1/4"×28  | 28         |               | <b>06052L132-I28UN</b> |         | 6                | 5.25 | 76  | 14.11          | 4               | 2          | 5.55                  |
| No.10~24          | 5/16"×24 | 24         |               | <b>06035L102-I24UN</b> |         | 6                | 3.58 | 76  | 11.26          | 4               | 2          | 3.90                  |
|                   | 5/16"×24 | 24         |               | <b>08066L165-I24UN</b> |         | 8                | 6.68 | 76  | 17.56          | 4               | 2          | 7.00                  |
| 1/4"×20           | 7/16"×20 | 20         |               | <b>06048L134-I20UN</b> |         | 6                | 4.88 | 76  | 14.67          | 4               | 2          | 5.20                  |
|                   | 7/16"×20 | 20         |               | <b>10095L230-I20UN</b> |         | 10               | 9.55 | 101 | 24.27          | 4               | 2          | 9.90                  |
| 3/8"×16           |          | 16         |               | <b>08076L197-I16UN</b> |         | 8                | 7.65 | 80  | 21.29          | 4               | 2          | 8.00                  |
| 7/16"×14          |          | 14         |               | <b>10090L233-I14UN</b> |         | 10               | 9.00 | 101 | 25.11          | 4               | 2          | 9.50                  |
| 1/2"×13           |          | 13         |               | <b>10099L256-I13UN</b> |         | 10               | 9.90 | 101 | 27.55          | 4               | 2          | 10.90                 |

( $l_2 \leq 3 \times \text{Diametro Roscado}$ )

| Rosca            |          | Paso (tpi) | Codigo        |                        | PC9070M | Dimensiones (mm) |      |     |                | No.de Flautas z | Dientes zt | *Diam Preforacioni mm |
|------------------|----------|------------|---------------|------------------------|---------|------------------|------|-----|----------------|-----------------|------------|-----------------------|
| UNC              | UNF      |            | Interno       |                        |         | Ød               | D    | L   | l <sub>2</sub> |                 |            |                       |
| No.4~40, No.5~40 | No.6~40  | 40         | <b>STMD2L</b> | <b>06021L090-I40UN</b> |         | 6                | 2.10 | 76  | 9.64           | 4               | 2          | 2.35                  |
| No.5~40          | No.6~40  | 40         |               | <b>06024L100-I40UN</b> |         | 6                | 2.45 | 76  | 10.64          | 4               | 2          | 2.65                  |
| No.6~32, No.8~32 | No.10~32 | 32         |               | <b>06025L110-I32UN</b> |         | 6                | 2.55 | 76  | 11.79          | 4               | 2          | 2.85                  |
| No.8~32          | No.10~32 | 32         |               | <b>06032L130-I32UN</b> |         | 6                | 3.20 | 76  | 13.79          | 4               | 2          | 3.50                  |
|                  | 1/4"×28  | 28         |               | <b>06052L196-I28UN</b> |         | 6                | 5.25 | 76  | 20.51          | 4               | 2          | 5.55                  |
|                  | 5/16"×24 | 24         |               | <b>08066L245-I24UN</b> |         | 8                | 6.68 | 80  | 25.56          | 4               | 2          | 7.00                  |
| 1/4"~20          | 7/16"×20 | 20         |               | <b>06048L198-I20UN</b> |         | 6                | 4.88 | 76  | 21.07          | 4               | 2          | 5.20                  |
| 7/16"×14         |          | 14         |               | <b>10090L335-I14UN</b> |         | 10               | 9.00 | 101 | 35.31          | 4               | 2          | 9.50                  |

\* Bore Diameter applies to smallest Rosca Dia

Máxima longitud de rosca =  $l_2 - \frac{\text{Pitch}}{4}$

● En Almacen



D

Roscado

Machos de metal duro y HSS de alto rendimiento

# MACHOS

- Machos de metal duro y HSS de gran rendimiento
- Una amplia gama de machos, machos con entrada corregida (GUN), machos helicoidales, machos rectos, machos de laminación, para cubrir un completo rango de aplicaciones, disponibles en norma DIN y JIS
- Se pueden fabricar bajo pedido machos de HSS sinterizado o medidas menores a M3

## Características

- Machos metal duro y machos HSS
  - Machos metal duro: Sustrato muy tenaz
  - HSS: Sustrato con alto contenido en vanadio
- Aplicables a distintos requerimientos de la pieza
  - Una completa gama de machos de entrada corregida (GUN), helicoidales, rectos y de laminación
- Roscas métricas estándar
  - JIS, DIN estándar y especiales
- Amplia gama de machos por tipo y medida
  - Amplia selección con varios tipos y tamaños



## Sistema de codificación



**Norma de rosca medida y paso**

**Geometría**

**Profundidad máx.de rosca**

**Macho laminación**

**Longitud total**

- ST: Macho recto  
 PT: Entrada corregida (GUN)  
 SP: Macho helicoidal  
 RT: Macho laminación  
 SR: Macho laminación helicoidal  
 STD: Macho recto (DIN)  
 PTD: Macho entrada corregida (GUN) (DIN)  
 SPD: Macho helicoidal (DIN)  
 RTD: Macho laminación (DIN)

S: Simple  
 M: Multiple

Tipo especial





## Calidades

| Macho metal duro |                             | Macho HSS |                       |
|------------------|-----------------------------|-----------|-----------------------|
| FN30T            | Metal duro, no recubierto   | HN30T     | HSS, no recubierto    |
| PC20T            | Metal duro, recubierto TiN  | HC20T     | HSS, recubierto TiN   |
| PC10T            | Metal duro, recubierto TiCN | HC10T     | HSS, recubierto TiCN  |
| -                | -                           | HH30T     | HSS, Vaporizado URDIN |



# D Información Técnica Sobre Machos

## ➤ Macho metal duro

| Tipo de macho |                                | Imagen  | Características  | Grado | Tamaño |
|---------------|--------------------------------|---|--|-------|--------|
| ST            | Macho recto                    |  | <ul style="list-style-type: none"> <li>• Para agujeros pasantes y producción en serie.</li> <li>• Para fundición, acero al carbono medio y metal no ferroso</li> </ul> | FN30T | M3~M12 |
|               |                                |   |  | PC10T | M3~M12 |
|               |                                |   |  | PC20T | M3~M12 |
| SP            | Macho helicoidal               |  | <ul style="list-style-type: none"> <li>• Para agujeros ciegos.</li> <li>• Mejor evacuación de viruta a través del espaciado de las estrías</li> </ul>                  | FN30T | M3~M12 |
|               |                                |   |  | PC10T | M3~M12 |
| RT            | Macho de laminación            |  | <ul style="list-style-type: none"> <li>• Para metales no ferrosos.</li> <li>• Para agujeros pasantes y agujeros ciegos.</li> </ul>                                     | FN30T | M3~M12 |
|               |                                |   |  | PC10T | M3~M12 |
| SR            | Macho de laminación helicoidal |  | <ul style="list-style-type: none"> <li>• Para metales no ferrosos, aluminio y magnesio.</li> </ul>   | FN30T | M3~M6  |
|               |                                |   |  | PC10T | M3~M6  |

## ➤ Machos de HSS

| Tipo de macho |                                | Imagen  | Características  | Grado | Tamaño |
|---------------|--------------------------------|---|--|-------|--------|
| ST            | Macho recto                    |  | <ul style="list-style-type: none"> <li>• Para agujeros pasantes y producción en serie.</li> <li>• Para fundición, acero al carbono medio y metal no ferroso</li> </ul>                           | HN30T | M3~M20 |
|               |                                |   |  | HC20T | M3~M20 |
|               |                                |   |  | HC10T | M3~M20 |
|               |                                |   |  | HH30T | M3~M20 |
| PT            | Macho entrada corregida        |  | <ul style="list-style-type: none"> <li>• Para agujeros pasantes y producción en masa.</li> <li>• Forma similar al tipo recto pero Especializado en la evacuación de viruta más fácil.</li> </ul> | HN30T | M3~M20 |
|               |                                |   |  | HC20T | M3~M20 |
|               |                                |   |  | HC10T | M3~M20 |
|               |                                |   |  | HH30T | M3~M20 |
| SP            | Macho helicoidal               |  | <ul style="list-style-type: none"> <li>• Para agujeros ciegos.</li> <li>• Mejor evacuación de viruta a través del espaciado de las estrías</li> </ul>  | HN30T | M3~M20 |
|               |                                |   |  | HC20T | M3~M20 |
|               |                                |   |  | HC10T | M3~M20 |
|               |                                |   |  | HH30T | M3~M24 |
| RT            | Macho de laminación            |  | <ul style="list-style-type: none"> <li>• Para metales no ferrosos.</li> <li>• Para agujeros pasantes y agujeros ciegos.</li> </ul>   | HN30T | M3~M12 |
|               |                                |   |  | HC20T | M3~M12 |
|               |                                |   |  | HC10T | M3~M12 |
| SR            | Macho de laminación helicoidal |  | <ul style="list-style-type: none"> <li>• Para metales no ferrosos, aluminio y magnesio.</li> </ul>   | HN30T | M3~M6  |
|               |                                |   |  | HC20T | M3~M6  |
|               |                                |   |  | HC10T | M3~M6  |



### Condiciones de corte recomendadas y lubricación

- Para el mecanizado de acero forjado en frío/caliente y aleaciones ferrosas sinterizadas a altos avances, alta profundidad de corte y condiciones altamente interrumpidas
- Excelente resistencia al astillado, fractura y grietas térmicas.
- Mejora el acabado de la superficie debido a los bordes de corte optimizados

| ISO | Pieza de Trabajo                              |                    | Velocidad de Corte, vc (m/min) |                  |                         |                  |                     | Fluido y emulsión de corte |                 |          |      |
|-----|---|--------------------|--------------------------------|------------------|-------------------------|------------------|---------------------|----------------------------|-----------------|----------|------|
|     |   |                    | Macho recto                    | Macho helicoidal | Macho entrada corregida | Macho metal duro | Macho de laminación | Insoluble                  | Soluble en agua | Semiseco | Seco |
| P   | Acero con bajo carbono                        | ≤ 0.25 %C          | 8~13                           | 8~13             | 15~25                   | -                | 8~13                | ☉                          | ○               | △        | △    |
|     | Acero medio contenido carbono                 | 0.25~0.45 %C       | 7~12                           | 7~12             | 10~15                   | -                | 7~10                | ☉                          | ○               | △        | △    |
|     | Acero alto contenido carbono                  | ≥ 0.45 %C          | 6~9                            | 6~9              | 8~13                    | -                | 5~8                 | ☉                          | ○               | △        | △    |
|     | Acero aleado                                  | SCM                | 7~12                           | 7~12             | 10~15                   | -                | 5~8                 | ☉                          | △               | △        | △    |
|     | Acero templado                                | 25~45HRC           | 3~5                            | 3~5              | 4~6                     | -                | -                   | ☉                          | △               | -        | -    |
|     | Acero para herramientas                       | SKD                | 6~9                            | 6~9              | 7~10                    | -                | -                   | ☉                          | -               | -        | -    |
|     | Acero fundido                                 | SCM                | 6~11                           | 6~11             | 10~15                   | -                | -                   | ☉                          | ○               | -        | -    |
| M   | Acero inoxidable                              | SUS                | 4~7                            | 5~8              | 8~13                    | -                | 5~10                | ☉                          | ○               | -        | -    |
|     | Acero inoxidable endurecido por precipitación | SUS630<br>SUS631   | 3~5                            | 3~5              | 4~6                     | -                | -                   | ☉                          | -               | -        | -    |
| K   | Fundición                                     | GC                 | 10~15                          | -                | -                       | 10~20            | -                   | ☉                          | ○               | ○        | ○    |
|     | Fundición dúctil                              | GCD                | 7~12                           | 7~12             | 10~20                   | 10~20            | -                   | ☉                          | ○               | ○        | -    |
| N   | Cobre   | Cu                 | 6~9                            | 6~11             | 7~12                    | 10~20            | 7~12                | ○                          | ○               | -        | -    |
|     | Latón, fundición de Latón                     | Bs Bsc             | 10~15                          | 10~20            | 15~25                   | 15~25            | 7~12                | ○                          | ○               | ○        | ○    |
|     | Bronce, Fundición de bronce                   | PB PBC             | 6~11                           | 6~11             | 10~20                   | 10~20            | 7~12                | ○                          | ○               | -        | -    |
|     | Aluminio en tubo (enrollado)                  | Al                 | 10~20                          | 10~20            | 15~25                   | -                | 10~20               | ☉                          | ○               | △        | -    |
|     | Aluminio, fundido y aleado                    | AC ACD             | 10~15                          | 10~15            | 15~20                   | 10~20            | 10~25               | ☉                          | ○               | △        | -    |
|     | Magnesio, fundido y aleado                    | MC                 | 7~12                           | 7~12             | 10~15                   | 10~20            | -                   | ☉                          | ○               | ○        | -    |
|     | Zinc, fundido y aleado                        | ZDC                | 1~12                           | 7~12             | 10~15                   | 10~20            | 7~12                | ☉                          | ○               | △        | -    |
|     | Plástico termoestable                         | Resina baquilitica | 10~20                          | -                | -                       | 15~25            | -                   | -                          | ○               | ○        | ○    |
|     | Termoplásticos                                | Vinilos de nailon  | 10~20                          | 10~15            | 10~20                   | 10~20            | -                   | -                          | ○               | ○        | ○    |

☉ Recomendado ○ Aplicable △ Se puede usar - No usar

## Diámetros de brocas recomendados

### [ Macho recto & Macho helicoidal ]

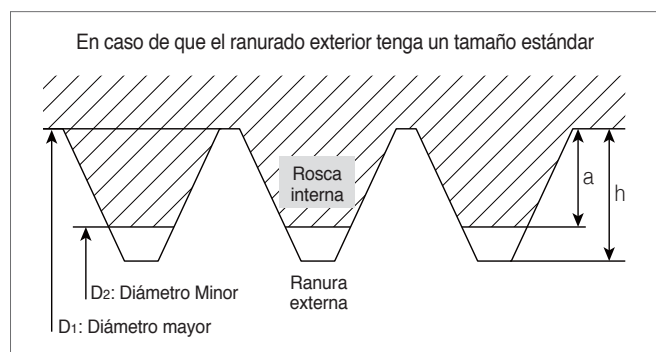
| Dimensiones macho | Diámetro broca |             |        |
|-------------------|----------------|-------------|--------|
|                   | Min            | Recomendado | Max    |
| M3X0.5            | 2.459          | 2.5         | 2.599  |
| M4X0.7            | 3.242          | 3.3         | 3.422  |
| M5X0.8            | 4.134          | 4.2         | 4.334  |
| M6X1.0            | 4.917          | 5.0         | 5.153  |
| M8X1.25           | 6.647          | 6.8         | 6.912  |
| M10X1.25          | 8.647          | 8.8         | 8.912  |
| M10X1.5           | 8.376          | 8.5         | 8.676  |
| M12X1.0           | 10.917         | 11.0        | 11.153 |
| M12X1.25          | 10.647         | 10.8        | 10.912 |
| M12X1.5           | 10.376         | 10.5        | 10.676 |

| Dimensiones macho | Diámetro broca |             |        |
|-------------------|----------------|-------------|--------|
|                   | Min            | Recomendado | Max    |
| M12X1.75          | 10.106         | 10.3        | 10.441 |
| M14X1.5           | 12.376         | 12.5        | 12.676 |
| M14X2.0           | 11.835         | 12.0        | 12.21  |
| M16X1.5           | 14.376         | 14.5        | 14.676 |
| M16X2.0           | 13.835         | 14.0        | 14.21  |
| M18X1.5           | 16.376         | 16.5        | 16.676 |
| M18X2.5           | 15.294         | 15.5        | 15.744 |
| M20X1.5           | 18.376         | 18.5        | 18.676 |
| M20X2.5           | 17.294         | 17.5        | 17.744 |
| -                 | -              | -           | -      |

### [ Macho de laminación ]

| Dimensiones macho | Diámetro broca |             |      |
|-------------------|----------------|-------------|------|
|                   | Min            | Recomendado | Max  |
| M3X0.5            | 2.76           | 2.8         | 2.81 |
| M4X0.7            | 3.65           | 3.7         | 3.7  |
| M5X0.8            | 4.59           | 4.6         | 4.66 |
| M6X1.0            | 5.48           | 5.5         | 5.57 |
| M8X1.25           | 7.34           | 7.4         | 7.41 |
| M10X1.25          | 9.34           | 9.4         | 9.41 |

| Dimensiones macho | Diámetro broca |             |       |
|-------------------|----------------|-------------|-------|
|                   | Min            | Recomendado | Max   |
| M10X1.5           | 9.18           | 9.2         | 9.28  |
| M12X1.0           | 11.48          | 11.5        | 11.57 |
| M12X1.25          | 11.34          | 11.4        | 11.41 |
| M12X1.5           | 11.18          | 11.2        | 11.28 |
| M12X1.75          | 11.05          | 11.1        | 11.15 |
| -                 | -              | -           | -     |



- Diámetro del pre-taladrado = D<sub>1</sub>: Diámetro mayor  
D<sub>2</sub>: Diámetro Menor
- $a = 1/2 \times (D_1 - D_2)$
- $h =$  Altura del triángulo fundamental
- Índice de acoplaje de la rosca =  $a/h \times 100$  (%)

$$\text{Índice de acoplaje de altura de rosca} = \frac{\text{Diámetro mayor} - \text{Diámetro del pre-taladrado}}{2 \times (\text{Altura del triángulo fundamental})}$$

$$\text{Índice de acoplaje de la rosca} = \frac{\text{Diámetro del pre-taladrado} = d - 2 \times H \times \text{Índice de acoplaje de la rosca}}{100}$$

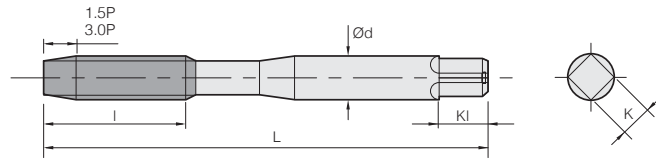
- d: Diámetro mayor
- H (Índice de acoplaje de altura de rosca): 0.541266P
- P: Paso (mm)
- \* Los diámetros de orificio inferior recomendados siguen el estándar JIS2 para perno de retención. (Se excluyen fuera del estándar JIS)

$$\text{Diámetro broca} = D - 0.0068 \times P \times 65$$

- D: Diámetro nominal
- P: Paso (mm)
- 65 = 65% de la altura de la rosca
- \* Los diámetros de orificio inferior fuera del estándar JIS2 son sólo para referencia



# ST Macho recto



(mm)

| Flautas       | Codigo        |               | Dimensiones macho | L  | l   | d   | K   | Kl  | Lmts |
|---------------|---------------|---------------|-------------------|----|-----|-----|-----|-----|------|
|               | 1.5P          | 3P            |                   |    |     |     |     |     |      |
| 3             | M3X0.5-ST15   | M3X0.5-ST30   | M3X0.5            | 46 | 11  | 4.0 | 3.2 | 6   | KH3  |
|               | M4X0.7-ST15   | M4X0.7-ST30   | M4X0.7            | 52 | 13  | 5.0 | 4.0 | 7   | KH3  |
|               | M5X0.8-ST15   | M5X0.8-ST30   | M5X0.8            | 60 | 16  | 5.5 | 4.5 | 7   | KH3  |
|               | M6X1.0-ST15   | M6X1.0-ST30   | M6X1.0            | 62 | 19  | 6.0 | 4.5 | 7   | KH3  |
| 4             | M8X1.0-ST15   | M8X1.0-ST30   | M8X1.0            | 70 | 22  | 6.2 | 5.0 | 8   | KH3  |
|               | M8X1.25-ST15  | M8X1.25-ST30  | M8X1.25           | 70 | 22  | 6.2 | 5.0 | 8   | KH4  |
|               | M10X1.0-ST15  | M10X1.0-ST30  | M10X1.0           | 75 | 24  | 7.0 | 5.5 | 8   | KH3  |
|               | M10X1.25-ST15 | M10X1.25-ST30 | M10X1.25          | 75 | 24  | 7.0 | 5.5 | 8   | KH4  |
|               | M10X1.5-ST15  | M10X1.5-ST30  | M10X1.5           | 75 | 24  | 7.0 | 5.5 | 8   | KH4  |
|               | M12X1.0-ST15  | M12X1.0-ST30  | M12X1.0           | 82 | 29  | 8.5 | 6.5 | 9   | KH3  |
|               | M12X1.25-ST15 | M12X1.25-ST30 | M12X1.25          | 82 | 29  | 8.5 | 6.5 | 9   | KH4  |
|               | M12X1.5-ST15  | M12X1.5-ST30  | M12X1.5           | 82 | 29  | 8.5 | 6.5 | 9   | KH4  |
| M12X1.75-ST15 | M12X1.75-ST30 | M12X1.75      | 82                | 29 | 8.5 | 6.5 | 9   | KH5 |      |

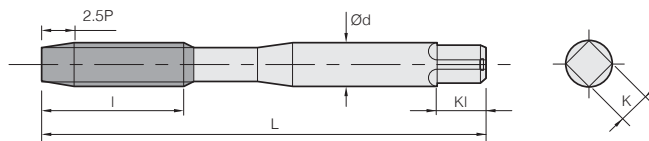
\* Ideal para operaciones de roscado en masa de fundición general, fundición dúctil, fundición de latón, plásticos termoestables, etc.  
 \* Resistencia al desgaste altamente mejorada por el uso de TiCN, recubrimiento de TiN para operaciones de alto rendimiento

## Aplicación según material

| Grado | Acero al carbón |               |          | Acero aleado | Acero templado |           |           | Inoxidable | Acero para herramientas | Acero fundido | Fundición hierro | Fundición dúctil | Cobre | Latón | Fundición de latón | Bronce | Aluminio laminado | Aluminio fundido, aleado | Magnesio, fundido, aleado | Zinc, fundido, aleado | Aleación de titanio |    | Plástico termoestable | Termoplástico |
|-------|-----------------|---------------|----------|--------------|----------------|-----------|-----------|------------|-------------------------|---------------|------------------|------------------|-------|-------|--------------------|--------|-------------------|--------------------------|---------------------------|-----------------------|---------------------|----|-----------------------|---------------|
|       | C ~0.25%        | C0.25% ~0.45% | C 0.45%~ | SCM          | 25-45 Hrc      | 45-55 Hrc | 50-60 Hrc | SUS        | SKD                     | SC            | GC               | GCD              | Cu    | Bs    | BsC                | PB     | Al                | AC ADC                   | MC                        | ZDC                   | Ti                  | Ni | -                     | -             |
| FN30T |                 |               |          |              |                |           |           |            |                         |               | ⊙                | ○                |       | ○     | ○                  | ⊙      |                   | ○                        | ○                         | ○                     |                     |    | ⊙                     |               |
| PC10T |                 |               |          |              |                |           |           |            |                         |               | ⊙                | ○                |       | ○     | ○                  | ⊙      |                   | ○                        | ○                         | ○                     |                     |    | ⊙                     |               |
| PC20T |                 |               |          |              |                |           |           |            |                         |               | ⊙                | ○                |       | ○     | ○                  | ⊙      |                   | ○                        | ○                         | ○                     |                     |    | ⊙                     |               |

# D Macho metal duro

## SP Macho helicoidal



(mm)

| Flautas       | Codigo        | Dimensiones macho | L  | I   | d   | K   | Kl  | Lmts |
|---------------|---------------|-------------------|----|-----|-----|-----|-----|------|
|               | 2.5P          |                   |    |     |     |     |     |      |
| 3             | M3X0.5-SP25   | M3X0.5            | 46 | 11  | 4.0 | 3.2 | 6   | KH3  |
|               | M4X0.7-SP25   | M4X0.7            | 52 | 13  | 5.0 | 4.0 | 7   | KH3  |
|               | M5X0.8-SP25   | M5X0.8            | 60 | 16  | 5.5 | 4.5 | 7   | KH3  |
|               | M6X1.0-SP25   | M6X1.0            | 62 | 19  | 6.0 | 4.5 | 7   | KH3  |
|               | M8X1.0-SP25   | M8X1.0            | 70 | 22  | 6.2 | 5.0 | 8   | KH3  |
|               | M8X1.25-SP25  | M8X1.25           | 70 | 22  | 6.2 | 5.0 | 8   | KH4  |
|               | M10X1.0-SP25  | M10X1.0           | 75 | 24  | 7.0 | 5.5 | 8   | KH3  |
|               | M10X1.25-SP25 | M10X1.25          | 75 | 24  | 7.0 | 5.5 | 8   | KH4  |
|               | M10X1.5-SP25  | M10X1.5           | 75 | 24  | 7.0 | 5.5 | 8   | KH4  |
|               | M12X1.0-SP25  | M12X1.0           | 82 | 29  | 8.5 | 6.5 | 9   | KH3  |
|               | M12X1.25-SP25 | M12X1.25          | 82 | 29  | 8.5 | 6.5 | 9   | KH4  |
|               | M12X1.5-SP25  | M12X1.5           | 82 | 29  | 8.5 | 6.5 | 9   | KH4  |
| M12X1.75-SP25 | M12X1.75      | 82                | 29 | 8.5 | 6.5 | 9   | KH5 |      |

\* Ideal para hacer agujeros ciegos en cantidad en fundición general, fundición dúctil, fundición de latón, plásticos termoestables, etc.

\* Resistance Resistencia al desgaste altamente mejorada por el uso del recubrimiento de TiCN para operaciones de roscado de alta eficiencia

### Aplicación según material

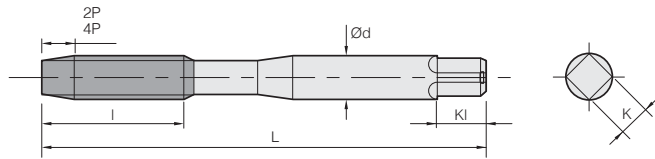
| Grado | Acero al carbón |                  |             | Acero aleado | Acero templado |              |              | Inoxidable | Acero para herramientas | Acero fundido | Fundición hierro | Fundición dúctil | Cobre | Latón | Fundición de latón | Bronce | Aluminio laminado | Aluminio fundido, aleado | Magnesio fundido, aleado | Zinc fundido, aleado | Aleación de titanio |    | Plástico termoestable | Termoplástico |
|-------|-----------------|------------------|-------------|--------------|----------------|--------------|--------------|------------|-------------------------|---------------|------------------|------------------|-------|-------|--------------------|--------|-------------------|--------------------------|--------------------------|----------------------|---------------------|----|-----------------------|---------------|
|       | C<br>~0.25%     | C0.25%<br>~0.45% | C<br>0.45%~ | SCM          | 25~45<br>HrC   | 45~55<br>HrC | 50~60<br>HrC | SUS        | SKD                     | SC            | GC               | GCD              | Cu    | Bs    | BsC                | PB     | Al                | AC<br>ADC                | MC                       | ZDC                  | Ti                  | Ni | -                     | -             |
| FN30T |                 |                  |             |              |                |              |              |            |                         |               | ○                | ◎                | ◎     | ◎     | ◎                  | ○      | ○                 | ○                        | ○                        | ○                    |                     |    |                       | ◎             |
| PC10T |                 |                  |             |              |                |              |              |            |                         |               | ○                | ◎                | ◎     | ◎     | ◎                  | ○      | ○                 | ◎                        | ◎                        | ◎                    |                     |    | ○                     | ◎             |



D

Roscado

# RT Macho de laminación



Carburo Sin recubrir FN30T TICN PC10T

(mm)

| Flautas | Codigo           |                  | Dimensiones macho | L  | l  | d   | K   | Kl | Lmts |
|---------|------------------|------------------|-------------------|----|----|-----|-----|----|------|
|         | 2P               | 4P               |                   |    |    |     |     |    |      |
| 1       | M3X0.5-RT20(S)   | -                | M3X0.5            | 46 | 11 | 4.0 | 3.2 | 6  | GH5  |
| 4       | M3X0.5-RT20(M)   | M3X0.5-RT40(M)   | M3X0.5            | 46 | 11 | 4.0 | 3.2 | 6  | GH5  |
| 1       | M4X0.7-RT20(S)   | -                | M4X0.7            | 52 | 13 | 5.0 | 4.0 | 7  | GH6  |
| 4       | M4X0.7-RT20(M)   | M4X0.7-RT40(M)   | M4X0.7            | 52 | 13 | 5.0 | 4.0 | 7  | GH6  |
| 1       | M5X0.8-RT20(S)   | -                | M5X0.8            | 60 | 16 | 5.5 | 4.5 | 7  | GH6  |
| 4       | M5X0.8-RT20(M)   | M5X0.8-RT40(M)   | M5X0.8            | 60 | 16 | 5.5 | 4.5 | 7  | GH6  |
| 1       | M6X1.0-RT20(S)   | -                | M6X1.0            | 62 | 19 | 6.0 | 4.5 | 7  | GH7  |
| 4       | M6X1.0-RT20(M)   | M6X1.0-RT40(M)   | M6X1.0            | 62 | 19 | 6.0 | 4.5 | 7  | GH7  |
| 1       | M8X1.25-RT20(S)  | -                | M8X1.25           | 70 | 22 | 6.2 | 5.0 | 8  | GH7  |
| 4       | M8X1.25-RT20(M)  | M8X1.25-RT40(M)  | M8X1.25           | 70 | 22 | 6.2 | 5.0 | 8  | GH7  |
| 1       | M10X1.25-RT20(S) | -                | M10X1.25          | 75 | 24 | 7.0 | 5.5 | 8  | GH7  |
| 4       | M10X1.25-RT20(M) | M10X1.25-RT40(M) | M10X1.25          | 75 | 24 | 7.0 | 5.5 | 8  | GH7  |
| 1       | M12X1.0-RT20(S)  | -                | M12X1.0           | 82 | 29 | 8.5 | 6.5 | 9  | GH7  |
| 4       | M12X1.0-RT20(M)  | M12X1.0-RT40(M)  | M12X1.0           | 82 | 29 | 8.5 | 6.5 | 9  | GH7  |
| 1       | M12X1.25-RT20(S) | -                | M12X1.25          | 82 | 29 | 8.5 | 6.5 | 9  | GH7  |
| 4       | M12X1.25-RT20(M) | M12X1.25-RT40(M) | M12X1.25          | 82 | 29 | 8.5 | 6.5 | 9  | GH7  |
| 1       | M12X1.5-RT20(S)  | -                | M12X1.5           | 82 | 29 | 8.5 | 6.5 | 9  | GH7  |
| 4       | M12X1.5-RT20(M)  | M12X1.5-RT40(M)  | M12X1.5           | 82 | 29 | 8.5 | 6.5 | 9  | GH7  |
| 1       | M12X1.75-RT20(S) | -                | M12X1.75          | 82 | 29 | 8.5 | 6.5 | 9  | GH8  |
| 4       | M12X1.75-RT20(M) | M12X1.75-RT40(M) | M12X1.75          | 82 | 29 | 8.5 | 6.5 | 9  | GH8  |

\* Para uso general en aceros y metales no ferrosos.

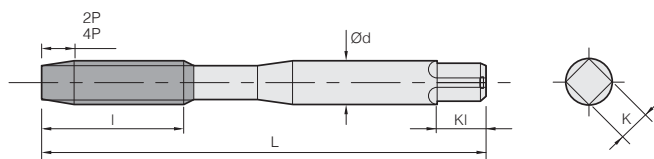
\* Resistencia al desgaste altamente mejorada por el uso del recubrimiento de TICN para operaciones de roscado de alta eficiencia

\* Ideal para hacer agujeros pasantes y agujeros ciegos en metales no ferrosos

## Aplicación según material

| Grado | Acero al carbón |               |          | Acero aleado | Acero templado |           |           | Inoxidable | Acero para herramientas | Acero fundido | Fundición hierro | Fundición dúctil | Cobre | Latón | Fundición de latón | Bronce | Aluminio laminado | Aluminio fundido, aleado | Magnezio fundido, aleado | Zinc fundido, aleado | Aleación de titanio |    | Plástico termoestable | Temoplástico |
|-------|-----------------|---------------|----------|--------------|----------------|-----------|-----------|------------|-------------------------|---------------|------------------|------------------|-------|-------|--------------------|--------|-------------------|--------------------------|--------------------------|----------------------|---------------------|----|-----------------------|--------------|
|       | C ~0.25%        | C0.25% ~0.43% | C 0.45%~ |              | SCM            | 25~45 HRC | 45~55 HRC |            |                         |               |                  |                  |       |       |                    |        |                   |                          |                          |                      | 50~60 HRC           | Ti |                       |              |
| FN30T |                 |               |          |              |                |           |           |            |                         |               |                  |                  | ⊙     | ⊙     | ⊙                  |        | ⊙                 | ⊙                        |                          | ⊙                    |                     |    |                       |              |
| PC10T | ⊙               | ⊙             | ○        | ○            |                |           |           | ⊙          |                         |               |                  |                  | ⊙     | ⊙     | ⊙                  |        | ⊙                 | ⊙                        |                          | ⊙                    |                     |    |                       |              |

## SR Macho de laminación helicoidal



(mm)

| Codigo        |               | Dimensiones macho | L  | l  | d   | K   | KI | Lmts |
|---------------|---------------|-------------------|----|----|-----|-----|----|------|
| 2P            | 4P            |                   |    |    |     |     |    |      |
| M3X0.5-SR20   | M3X0.5-SR40   | M3X0.5            | 46 | 18 | 4.0 | 3.2 | 6  | GH6  |
| M3.5X0.6-SR20 | M3.5X0.6-SR40 | M3.5X0.6          | 46 | 18 | 4.0 | 3.2 | 6  | GH6  |
| M4X0.7-SR20   | M4X0.7-SR40   | M4X0.7            | 52 | 20 | 5.0 | 4.0 | 7  | GH7  |
| M5X0.8-SR20   | M5X0.8-SR40   | M5X0.8            | 60 | 22 | 5.5 | 4.5 | 7  | GH7  |
| M6X1.0-SR20   | M6X1.0-SR40   | M6X1.0            | 62 | 24 | 6.0 | 4.5 | 7  | GH7  |

\* Para uso general para la extracción de aluminio, magnesio y zinc, así como metales no ferrosos.

\* Ideal para roscado de acero, materiales no ferrosos y acero inoxidable.

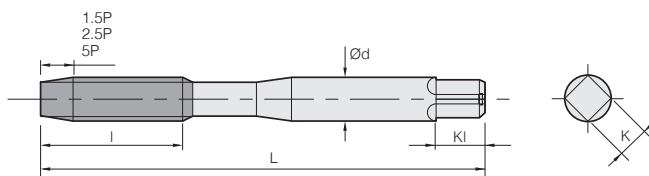
\* Resistance Resistencia al desgaste altamente mejorada por el uso del recubrimiento de TiCN para operaciones de roscado de alta eficiencia

### Aplicación según material

| Grado | Acero al carbón |               |          | Acero aleado | Acero templado |           |           | Inoxidable | Acero para herramientas | Acero fundido | Fundición hierro | Fundición dúctil | Cobre | Latón | Fundición de latón | Bronce | Aluminio laminado | Aluminio fundido, aleado | Magnesio fundido, aleado | Zinc fundido, aleado | Aleación de titanio |    | Plástico termoestable | Termoplástico |
|-------|-----------------|---------------|----------|--------------|----------------|-----------|-----------|------------|-------------------------|---------------|------------------|------------------|-------|-------|--------------------|--------|-------------------|--------------------------|--------------------------|----------------------|---------------------|----|-----------------------|---------------|
|       | C ~0.25%        | C0.25% ~0.45% | C 0.45%~ | SCM          | 25~45 Hrc      | 45~55 Hrc | 50~60 Hrc | SUS        | SKD                     | SC            | GC               | GCD              | Cu    | Bs    | BsC                | PB     | Al                | AC ADC                   | MC                       | ZDC                  | Ti                  | Ni | -                     | -             |
| FN30T |                 |               |          |              |                |           |           |            |                         |               |                  |                  | ⊙     | ⊙     | ⊙                  |        | ⊙                 | ⊙                        |                          | ⊙                    |                     |    |                       |               |
| PC10T | ⊙               | ⊙             | ○        | ○            |                |           |           | ⊙          |                         |               |                  |                  | ⊙     | ⊙     | ⊙                  |        | ⊙                 | ⊙                        |                          | ⊙                    |                     |    |                       |               |



# ST Macho recto



(mm)

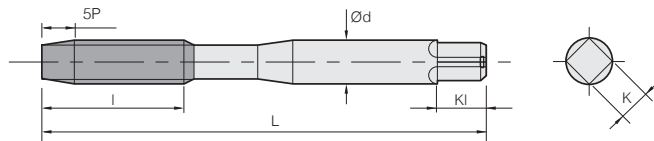
| Flautas | Codigo        |               |               | Dimensiones macho | L   | l  | d    | K    | KI | Lmts |
|---------|---------------|---------------|---------------|-------------------|-----|----|------|------|----|------|
|         | 1.5P          | 2.5P          | 5P            |                   |     |    |      |      |    |      |
| 3       | M3X0.5-ST15   | M3X0.5-ST25   | M3X0.5-ST50   | M3X0.5            | 46  | 11 | 4.0  | 3.2  | 6  | KH2  |
|         | M4X0.7-ST15   | M4X0.7-ST25   | M4X0.7-ST50   | M4X0.7            | 52  | 13 | 5.0  | 4.0  | 7  | KH2  |
|         | M5X0.8-ST15   | M5X0.8-ST25   | M5X0.8-ST50   | M5X0.8            | 60  | 16 | 5.5  | 4.5  | 7  | KH2  |
|         | M6X1.0-ST15   | M6X1.0-ST25   | M6X1.0-ST50   | M6X1.0            | 62  | 19 | 6.0  | 4.5  | 7  | KH2  |
| 4       | M8X1.25-ST15  | M8X1.25-ST25  | M8X1.25-ST50  | M8X1.25           | 70  | 22 | 6.2  | 5.0  | 8  | KH2  |
|         | M10X1.25-ST15 | M10X1.25-ST25 | M10X1.25-ST50 | M10X1.25          | 75  | 24 | 7.0  | 5.5  | 8  | KH2  |
|         | M10X1.5-ST15  | M10X1.5-ST25  | M10X1.5-ST50  | M10X1.5           | 75  | 24 | 7.0  | 5.5  | 8  | KH3  |
|         | M12X1.0-ST15  | M12X1.0-ST25  | M12X1.0-ST50  | M12X1.0           | 82  | 29 | 8.5  | 6.5  | 9  | KH2  |
|         | M12X1.25-ST15 | M12X1.25-ST25 | M12X1.25-ST50 | M12X1.25          | 82  | 29 | 8.5  | 6.5  | 9  | KH2  |
|         | M12X1.5-ST15  | M12X1.5-ST25  | M12X1.5-ST50  | M12X1.5           | 82  | 29 | 8.5  | 6.5  | 9  | KH3  |
|         | M12X1.75-ST15 | M12X1.75-ST25 | M12X1.75-ST50 | M12X1.75          | 82  | 29 | 8.5  | 6.5  | 9  | KH3  |
|         | M14X1.5-ST15  | M14X1.5-ST25  | M14X1.5-ST50  | M14X1.5           | 88  | 30 | 10.5 | 8.0  | 11 | KH3  |
|         | M14X2.0-ST15  | M14X2.0-ST25  | M14X2.0-ST50  | M14X2.0           | 88  | 30 | 10.5 | 8.0  | 11 | KH3  |
|         | M16X1.5-ST15  | M16X1.5-ST25  | M16X1.5-ST50  | M16X1.5           | 95  | 32 | 12.5 | 10.0 | 13 | KH3  |
|         | M16X2.0-ST15  | M16X2.0-ST25  | M16X2.0-ST50  | M16X2.0           | 95  | 32 | 12.5 | 10.0 | 13 | KH3  |
|         | M18X1.5-ST15  | M18X1.5-ST25  | M18X1.5-ST50  | M18X1.5           | 100 | 37 | 14.0 | 11.0 | 14 | KH3  |
|         | M18X2.5-ST15  | M18X2.5-ST25  | M18X2.5-ST50  | M18X2.5           | 100 | 37 | 14.0 | 11.0 | 14 | KH3  |
|         | M20X1.5-ST15  | M20X1.5-ST25  | M20X1.5-ST50  | M20X1.5           | 105 | 37 | 15.0 | 12.0 | 15 | KH3  |
|         | M20X2.5-ST15  | M20X2.5-ST25  | M20X2.5-ST50  | M20X2.5           | 105 | 37 | 15.0 | 12.0 | 15 | KH3  |

- \* Ideal para hacer agujeros pasantes y agujeros ciegos en acero al carbono, acero aleado y metales no ferrosos
- \* Resistance Resistencia al desgaste altamente mejorada por el uso de TiN, TiCN, recubrimiento de óxido de vapor para operaciones de roscado de alta eficiencia
- \* Edges Los bordes acumulados se evitan gracias a un reducido coeficiente de fricción obtenido al utilizar un fluido de corte poroso de Fe<sup>3</sup>O<sup>4</sup>
- \* Ideal para roscado de acero inoxidable, acero fundido, acero al carbono para estructuras de máquinas, etc.

## Aplicación según material

| Grado | Acero al carbón |                |          | Acero aleado | Acero templado |                        |                        | Inoxidable | Acero para herramientas | Acero fundido | Fundición hierro | Fundición dúctil | Cobre | Latón | Fundición de latón | Bronce | Aluminio laminado | Aluminio fundido, aleado | Magnesio, fundido, aleado | Zinc, fundido, aleado | Aleación de titanio    |     | Plástico termoestable | Termoplástico |
|-------|-----------------|----------------|----------|--------------|----------------|------------------------|------------------------|------------|-------------------------|---------------|------------------|------------------|-------|-------|--------------------|--------|-------------------|--------------------------|---------------------------|-----------------------|------------------------|-----|-----------------------|---------------|
|       | C ~0.25%        | C 0.25% ~0.45% | C 0.45%~ |              | SCM            | 25-45 H <sub>R</sub> C | 45-55 H <sub>R</sub> C |            |                         |               |                  |                  |       |       |                    |        |                   |                          |                           |                       | 50-60 H <sub>R</sub> C | SUS |                       |               |
| HN30T |                 | ○              |          |              |                |                        |                        |            |                         |               |                  | ○                |       | ○     | ○                  | ○      | ○                 | ○                        | ○                         | ○                     |                        |     |                       |               |
| HC20T | ○               | ○              | ○        | ○            | ○              |                        |                        |            |                         |               |                  |                  |       | ○     | ○                  | ○      | ○                 | ○                        | ○                         | ○                     |                        |     |                       |               |
| HC10T | ○               | ○              | ○        | ○            | ○              |                        |                        |            |                         |               |                  |                  |       | ○     | ○                  | ○      | ○                 | ○                        | ○                         | ○                     |                        |     |                       |               |
| HH30T | ◎               | ◎              | ◎        | ◎            | ◎              | ◎                      | ◎                      | ○          | ○                       | ○             | ○                | ○                |       |       |                    |        |                   |                          |                           |                       |                        |     |                       |               |

## PT Macho entrada corregida



(mm)

| Flautas      | Codigo        | Dimensiones macho | L   | l    | d    | K    | KI  | Lmts |
|--------------|---------------|-------------------|-----|------|------|------|-----|------|
|              | 5P            |                   |     |      |      |      |     |      |
| 3            | M3X0.5-PT50   | M3X0.5            | 46  | 11   | 4.0  | 3.2  | 6   | KH2  |
|              | M4X0.7-PT50   | M4X0.7            | 52  | 13   | 5.0  | 4.0  | 7   | KH2  |
|              | M5X0.8-PT50   | M5X0.8            | 60  | 16   | 5.5  | 4.5  | 7   | KH2  |
|              | M6X1.0-PT50   | M6X1.0            | 62  | 19   | 6.0  | 4.5  | 7   | KH2  |
|              | M8X1.25-PT50  | M8X1.25           | 70  | 22   | 6.2  | 5.0  | 8   | KH3  |
|              | M10X1.25-PT50 | M10X1.25          | 75  | 24   | 7.0  | 5.5  | 8   | KH3  |
|              | M10X1.5-PT50  | M10X1.5           | 75  | 24   | 7.0  | 5.5  | 8   | KH3  |
|              | M12X1.0-PT50  | M12X1.0           | 82  | 29   | 8.5  | 6.5  | 9   | KH3  |
|              | M12X1.25-PT50 | M12X1.25          | 82  | 29   | 8.5  | 6.5  | 9   | KH3  |
|              | M12X1.5-PT50  | M12X1.5           | 82  | 29   | 8.5  | 6.5  | 9   | KH3  |
|              | M12X1.75-PT50 | M12X1.75          | 82  | 29   | 8.5  | 6.5  | 9   | KH4  |
|              | M14X1.5-PT50  | M14X1.5           | 88  | 30   | 10.5 | 8.0  | 11  | KH3  |
|              | M14X2.0-PT50  | M14X2.0           | 88  | 30   | 10.5 | 8.0  | 11  | KH4  |
|              | M16X1.5-PT50  | M16X1.5           | 95  | 32   | 12.5 | 10.0 | 13  | KH3  |
|              | M16X2.0-PT50  | M16X2.0           | 95  | 32   | 12.5 | 10.0 | 13  | KH4  |
|              | M18X1.5-PT50  | M18X1.5           | 100 | 37   | 14.0 | 11.0 | 14  | KH4  |
|              | M18X2.5-PT50  | M18X2.5           | 100 | 37   | 14.0 | 11.0 | 14  | KH4  |
| M20X1.5-PT50 | M20X1.5       | 105               | 37  | 15.0 | 12.0 | 15   | KH4 |      |
| M20X2.5-PT50 | M20X2.5       | 105               | 37  | 15.0 | 12.0 | 15   | KH4 |      |

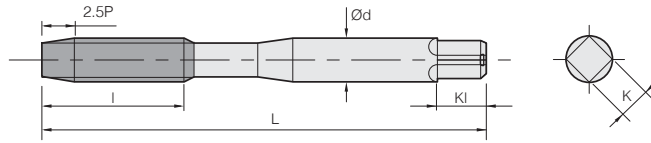
- \* Ideal para hacer agujeros pasantes en acero al carbono, acero de aleación y metales no ferrosos
- \* Resistencia al desgaste altamente mejorada por el uso de TiN, TiCN, recubrimiento de óxido de vapor para operaciones de extracción de alta eficiencia
- \* Los bordes acumulados se evitan gracias a un reducido coeficiente de fricción obtenido al utilizar un fluido de corte poroso de Fe<sup>3</sup>O<sup>4</sup>
- \* Ideal para roscado de acero inoxidable, acero fundido, acero al carbono para estructuras de máquinas, etc.

### Aplicación según material

| Grado | Acero al carbón |               |          | Acero aleado | Acero templado |           |           | Inoxidable | Acero para herramientas | Acero fundido | Fundición hierro | Fundición dúctil | Cobre | Latón | Fundición de latón | Bronce | Aluminio laminado | Aluminio fundido, aleado | Magnesio fundido, aleado | Zinc fundido, aleado | Aleación de titanio |    | Plástico termoestable | Temoplástico |
|-------|-----------------|---------------|----------|--------------|----------------|-----------|-----------|------------|-------------------------|---------------|------------------|------------------|-------|-------|--------------------|--------|-------------------|--------------------------|--------------------------|----------------------|---------------------|----|-----------------------|--------------|
|       | C ~0.25%        | C0.25% ~0.45% | C 0.45%~ | SCM          | 25-45 Hrc      | 45-55 Hrc | 50-60 Hrc | SUS        | SKD                     | SC            | GC               | GCD              | Cu    | Bs    | BsC                | PB     | Al                | AC ADC                   | MC                       | ZDC                  | Ti                  | Ni | -                     | -            |
| HN30T |                 | ○             | ○        | ◎            |                |           |           |            |                         |               | ○                | ○                | ○     | ○     | ○                  | ○      | ◎                 | ○                        | ○                        | ○                    |                     |    |                       | ○            |
| HC20T | ○               | ○             | ○        | ○            |                |           |           | ◎          | ○                       | ○             | ○                | ○                | ○     | ○     | ○                  | ○      | ○                 | ○                        | ○                        | ○                    | ○                   | ○  |                       | ○            |
| HC10T | ◎               | ◎             | ◎        | ○            |                |           |           | ○          | ○                       | ○             | ○                | ○                | ○     | ○     | ○                  | ○      | ○                 | ○                        | ○                        | ○                    | ○                   | ○  |                       | ○            |
| HH30T | ◎               | ◎             | ◎        | ◎            | ◎              | ◎         | ◎         | ○          | ○                       | ○             | ○                | ○                |       |       |                    |        |                   |                          |                          |                      |                     |    |                       |              |



# SP Macho helicoidal



(mm)

| Flautas | Codigo        | Dimensiones macho | L   | l  | d    | K    | KI | Lmts |
|---------|---------------|-------------------|-----|----|------|------|----|------|
|         | 2.5P          |                   |     |    |      |      |    |      |
| 3       | M3X0.5-SP25   | M3X0.5            | 46  | 11 | 4.0  | 3.2  | 6  | KH2  |
|         | M4X0.7-SP25   | M4X0.7            | 52  | 13 | 5.0  | 4.0  | 7  | KH2  |
|         | M5X0.8-SP25   | M5X0.8            | 60  | 16 | 5.5  | 4.5  | 7  | KH2  |
|         | M6X1.0-SP25   | M6X1.0            | 62  | 19 | 6.0  | 4.5  | 7  | KH2  |
|         | M8X1.25-SP25  | M8X1.25           | 70  | 22 | 6.2  | 5.0  | 8  | KH2  |
|         | M10X1.25-SP25 | M10X1.25          | 75  | 24 | 7.0  | 5.5  | 8  | KH2  |
|         | M10X1.5-SP25  | M10X1.5           | 75  | 24 | 7.0  | 5.5  | 8  | KH2  |
|         | M12X1.0-SP25  | M12X1.0           | 82  | 29 | 8.5  | 6.5  | 9  | KH2  |
|         | M12X1.25-SP25 | M12X1.25          | 82  | 29 | 8.5  | 6.5  | 9  | KH2  |
|         | M12X1.5-SP25  | M12X1.5           | 82  | 29 | 8.5  | 6.5  | 9  | KH2  |
|         | M12X1.75-SP25 | M12X1.75          | 82  | 29 | 8.5  | 6.5  | 9  | KH2  |
|         | M14X1.5-SP25  | M14X1.5           | 88  | 30 | 10.5 | 8.0  | 11 | KH2  |
|         | M14X2.0-SP25  | M14X2.0           | 88  | 30 | 10.5 | 8.0  | 11 | KH2  |
| 4       | M16X1.5-SP25  | M16X1.5           | 95  | 32 | 12.5 | 10.0 | 13 | KH2  |
|         | M16X2.0-SP25  | M16X2.0           | 95  | 32 | 12.5 | 10.0 | 13 | KH2  |
|         | M18X1.5-SP25  | M18X1.5           | 100 | 37 | 14.0 | 11.0 | 14 | KH2  |
|         | M18X2.5-SP25  | M18X2.5           | 100 | 37 | 14.0 | 11.0 | 14 | KH3  |
|         | M20X1.5-SP25  | M20X1.5           | 105 | 37 | 15.0 | 12.0 | 15 | KH3  |
|         | M20X2.5-SP25  | M20X2.5           | 105 | 37 | 15.0 | 12.0 | 15 | KH3  |

\* Ideal para hacer agujeros ciegos. Sus flautas proporcionan una excelente evacuación de viruta en acero al carbono, acero aleado y materiales no ferrosos

\* Resistencia al desgaste altamente mejorada por el uso de TiN, TiCN, recubrimiento de óxido de vapor para operaciones de extracción de alta eficiencia

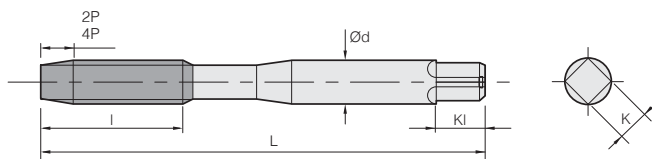
\* Los bordes acumulados se evitan gracias a un reducido coeficiente de fricción obtenido al utilizar un fluido de corte poroso de Fe<sup>3</sup>O<sup>4</sup>

\* Ideal para roscado de acero inoxidable, acero fundido, acero al carbono para estructuras de máquinas, etc.

## Aplicación según material

| Grado | Acero al carbón |                |          | Acero aleado | Acero templado |           |           | Inoxidable | Acero para herramientas | Acero fundido | Fundición hierro | Fundición dúctil | Cobre | Latón | Fundición de latón | Bronce | Aluminio laminado | Aluminio fundido, aleado | Magnesio fundido, aleado | Zinc fundido, aleado | Aleación de titanio |     | Plástico termoestable | Termoplástico |     |
|-------|-----------------|----------------|----------|--------------|----------------|-----------|-----------|------------|-------------------------|---------------|------------------|------------------|-------|-------|--------------------|--------|-------------------|--------------------------|--------------------------|----------------------|---------------------|-----|-----------------------|---------------|-----|
|       | C ~0.25%        | C 0.25% ~0.45% | C 0.45%~ |              | SCM            | 25-45 HRC | 45-55 HRC |            |                         |               |                  |                  |       |       |                    |        |                   |                          |                          |                      | 50-60 HRC           | SUS |                       |               | SKD |
| HN30T |                 | ○              |          | ◎            |                |           |           |            |                         |               |                  |                  | ○     | ○     | ○                  | ○      | ○                 | ○                        | ○                        | ○                    | ○                   |     |                       |               | ○   |
| HC20T | ○               | ○              | ○        | ○            |                |           |           | ○          | ○                       | ○             |                  |                  | ○     | ○     | ○                  | ○      | ○                 | ○                        | ○                        | ○                    | ○                   | ○   |                       |               | ○   |
| HC10T | ○               | ◎              | ◎        | ○            |                |           |           | ○          | ○                       | ○             |                  |                  | ○     | ○     | ○                  | ○      | ◎                 | ○                        | ○                        | ○                    | ○                   | ○   |                       |               | ○   |
| HH30T | ◎               | ◎              | ◎        | ◎            | ◎              | ◎         | ◎         | ○          | ○                       | ○             | ○                | ○                |       |       |                    |        |                   |                          |                          |                      |                     |     |                       |               |     |

## RT Macho de laminación



(mm)

| Flautas | Codigo           |                  | Dimensiones macho | L  | l  | d   | K   | KI | Lmts |
|---------|------------------|------------------|-------------------|----|----|-----|-----|----|------|
|         | 2P               | 4P               |                   |    |    |     |     |    |      |
| 1       | M3X0.5-RT20(S)   | -                | M3X0.5            | 46 | 11 | 4.0 | 3.2 | 6  | GH5  |
| 4       | M3X0.5-RT20(M)   | M3X0.5-RT40(M)   | M3X0.5            | 46 | 11 | 4.0 | 3.2 | 6  | GH5  |
| 1       | M4X0.7-RT20(S)   | -                | M4X0.7            | 52 | 13 | 5.0 | 4.0 | 7  | GH6  |
| 4       | M4X0.7-RT20(M)   | M4X0.7-RT40(M)   | M4X0.7            | 52 | 13 | 5.0 | 4.0 | 7  | GH6  |
| 1       | M5X0.8-RT20(S)   | -                | M5X0.8            | 60 | 16 | 5.5 | 4.5 | 7  | GH6  |
| 4       | M5X0.8-RT20(M)   | M5X0.8-RT40(M)   | M5X0.8            | 60 | 16 | 5.5 | 4.5 | 7  | GH6  |
| 1       | M6X1.0-RT20(S)   | -                | M6X1.0            | 62 | 19 | 6.0 | 4.5 | 7  | GH7  |
| 4       | M6X1.0-RT20(M)   | M6X1.0-RT40(M)   | M6X1.0            | 62 | 19 | 6.0 | 4.5 | 7  | GH7  |
| 1       | M8X1.25-RT20(S)  | -                | M8X1.25           | 70 | 22 | 6.2 | 5.0 | 8  | GH7  |
| 4       | M8X1.25-RT20(M)  | M8X1.25-RT40(M)  | M8X1.25           | 70 | 22 | 6.2 | 5.0 | 8  | GH7  |
| 1       | M10X1.25-RT20(S) | -                | M10X1.25          | 75 | 24 | 7.0 | 5.5 | 8  | GH7  |
| 4       | M10X1.25-RT20(M) | M10X1.25-RT40(M) | M10X1.25          | 75 | 24 | 7.0 | 5.5 | 8  | GH7  |
| 1       | M10X1.5-RT20(S)  | -                | M10X1.5           | 75 | 24 | 7.0 | 5.5 | 8  | GH7  |
| 4       | M10X1.5-RT20(M)  | M10X1.5-RT40(M)  | M10X1.5           | 75 | 24 | 7.0 | 5.5 | 8  | GH7  |
| 1       | M12X1.0-RT20(S)  | -                | M12X1.0           | 82 | 29 | 8.5 | 6.5 | 9  | GH7  |
| 4       | M12X1.0-RT20(M)  | M12X1.0-RT40(M)  | M12X1.0           | 82 | 29 | 8.5 | 6.5 | 9  | GH7  |
| 1       | M12X1.25-RT20(S) | -                | M12X1.25          | 82 | 29 | 8.5 | 6.5 | 9  | GH7  |
| 4       | M12X1.25-RT20(M) | M12X1.25-RT40(M) | M12X1.25          | 82 | 29 | 8.5 | 6.5 | 9  | GH7  |
| 1       | M12X1.5-RT20(S)  | -                | M12X1.5           | 82 | 29 | 8.5 | 6.5 | 9  | GH7  |
| 4       | M12X1.5-RT20(M)  | M12X1.5-RT40(M)  | M12X1.5           | 82 | 29 | 8.5 | 6.5 | 9  | GH7  |
| 1       | M12X1.75-RT20(S) | -                | M12X1.75          | 82 | 29 | 8.5 | 6.5 | 9  | GH8  |
| 4       | M12X1.75-RT20(M) | M12X1.75-RT40(M) | M12X1.75          | 82 | 29 | 8.5 | 6.5 | 9  | GH8  |

\* Para uso general tanto para aceros como para metales no ferrosos

\* Resistencia al desgaste altamente mejorada por el uso de TiN, recubrimiento de TiCN para operaciones de extracción de alta eficiencia

\* Ideal para aprovechar aleaciones no ferrosas como aluminio, zinc, cobre, etc.

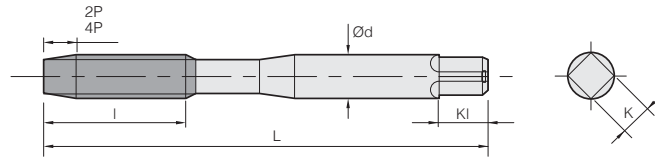
### Aplicación según material

| Grado | Acero al carbón |               |          | Acero aleado | Acero templado |           |           | Inoxidable | Acero para herramientas | Acero fundido | Fundición hierro | Fundición dúctil | Cobre | Latón | Fundición de latón | Bronce | Aluminio laminado | Aluminio fundido, aleado | Magnesio fundido, aleado | Zinc fundido, aleado | Aleación de titanio |    | Plástico termoestable | Termoplástico |  |
|-------|-----------------|---------------|----------|--------------|----------------|-----------|-----------|------------|-------------------------|---------------|------------------|------------------|-------|-------|--------------------|--------|-------------------|--------------------------|--------------------------|----------------------|---------------------|----|-----------------------|---------------|--|
|       | C ~0.25%        | C0.25% ~0.45% | C 0.45%~ | SCM          | 25-45 HRC      | 45-55 HRC | 50-60 HRC | SUS        | SKD                     | SC            | GC               | GCD              | Cu    | Bs    | BsC                | PB     | Al                | AC ADC                   | MC                       | ZDC                  | Ti                  | Ni | -                     | -             |  |
| HN30T |                 |               |          |              |                |           |           |            |                         |               |                  |                  | ○     | ○     | ○                  | ○      | ○                 | ○                        |                          | ◎                    |                     |    |                       |               |  |
| HC20T | ○               | ○             | ○        | ○            |                |           |           | ◎          | ○                       | ○             |                  | ○                | ○     | ○     |                    |        |                   |                          |                          |                      |                     |    |                       |               |  |
| HC10T | ◎               | ◎             | ○        | ○            |                |           |           | ◎          |                         |               |                  |                  | ◎     | ◎     | ◎                  |        | ◎                 | ◎                        |                          | ◎                    |                     |    |                       |               |  |





# SR Macho de laminación helicoidal



(mm)

| Codigo        |               | Dimensiones macho | L  | l  | d   | K   | KI | Lmts |
|---------------|---------------|-------------------|----|----|-----|-----|----|------|
| 2P            | 4P            |                   |    |    |     |     |    |      |
| M3X0.5-SR20   | M3X0.5-SR40   | M3X0.5            | 46 | 18 | 4.0 | 3.2 | 6  | GH6  |
| M3.5X0.6-SR20 | M3.5X0.6-SR40 | M3.5X0.6          | 48 | 18 | 4.0 | 3.2 | 6  | GH6  |
| M4X0.7-SR20   | M4X0.7-SR40   | M4X0.7            | 52 | 20 | 5.0 | 4.0 | 7  | GH7  |
| M5X0.8-SR20   | M5X0.8-SR40   | M5X0.8            | 60 | 22 | 5.5 | 4.5 | 7  | GH7  |
| M6X1.0-SR20   | M6X1.0-SR40   | M6X1.0            | 62 | 24 | 6.0 | 4.5 | 7  | GH7  |

- \* Para uso general para la extracción de aluminio, magnesio y zinc, así como metales no ferrosos.
- \* Resistencia al desgaste altamente mejorada por el uso de TiN, revestimiento de TiCN para operaciones de roscado de alta eficiencia
- \* Ideal para la extracción de acero, materiales no ferrosos y acero inoxidable.

## Aplicación según material

| Grado | Acero al carbón |               |          | Acero aleado | Acero templado |           |           | Inoxidable | Acero para herramientas | Acero fundido | Fundición hierro | Fundición dúctil | Cobre | Latón | Fundición de latón | Bronce | Aluminio laminado | Aluminio fundido, aleado | Magnesio fundido, aleado | Zinc fundido, aleado | Aleación de titanio |    | Plástico termoestable | Termoplástico |
|-------|-----------------|---------------|----------|--------------|----------------|-----------|-----------|------------|-------------------------|---------------|------------------|------------------|-------|-------|--------------------|--------|-------------------|--------------------------|--------------------------|----------------------|---------------------|----|-----------------------|---------------|
|       | C ~0.25%        | C0.25% ~0.45% | C 0.45%~ | SCM          | 25-45 HRC      | 45-55 HRC | 50-60 HRC | SUS        | SKD                     | SC            | GC               | GCD              | Cu    | Bs    | BsC                | PB     | Al                | AC ADC                   | MC                       | ZDC                  | Ti                  | Ni | -                     | -             |
| HN30T |                 |               |          |              |                |           |           |            |                         |               |                  |                  | ○     | ○     | ○                  | ○      | ○                 | ○                        |                          | ◎                    |                     |    |                       |               |
| HC20T | ○               | ○             | ○        | ○            |                |           |           | ◎          | ○                       | ○             |                  | ○                | ○     | ○     | ○                  |        |                   |                          |                          |                      |                     |    |                       |               |
| HC10T | ◎               | ◎             | ○        | ○            |                |           |           | ◎          |                         |               |                  |                  | ◎     | ◎     | ◎                  |        | ◎                 | ◎                        |                          | ◎                    |                     |    |                       |               |

## Insertos de fresado

- E02 Insertos de fresado: Codificación ISO
- E04 Listado insertos de fresado
- E32 Fresas/platos KORLOY
- E38 Fresas mango KORLOY
- E42 Adaptador modular KORLOY

## Fresado en careado

- E44 Mill-max/Mill-max Plus (E43, E49)
- E54 Información técnica Mill-max heavy
- E55 Mill-max Heavy
- E56 Turbo Mill
- E59 Double Mill
- E61 Información técnica Power buster
- E65 Power Buster
- E68 Información técnica Rich mill
- E89 Rich Mill
- E132 Información técnica Aero mill/  
Aero Mill-Plus/Aero Mill-Mini
- E136 Aero Mill
- E137 Aero Mill-Plus
- E139 Aero Mill-Mini
- E141 Cortador careado PCD

## Fresado de moldes

- E142 Información técnica Alpha Mill-X
- E145 Alpha Mill-X
- E147 Información técnica Alpha Mill/Alpha Mill Nick
- E154 Alpha Mill
- E183 Información técnica sistema adaptador BT y HSK
- E184 Adaptadores BT (un solo filo de corte)
- E189 Adaptadores HSK (un solo filo de corte)
- E194 Adaptadores BT (filo de corte múltiple)
- E200 Adaptadores HSK (filo de corte múltiple)
- E205 Adaptadores BT (modular)
- E206 Adaptadores HSK (modular)
- E207 Información técnica Future Mill/FMR P-Positive
- E222 Future Mill
- E248 FMR P-Positive
- E260 Información técnica HFMD
- E264 HFMD
- E268 Información técnica HFM
- E273 HFM
- E276 Información técnica HRMDouble
- E281 HRMDouble
- E292 HRM
- E299 Tank Mill



## Fresado de moldes

- E300 Información técnica TP2P
- E303 TP2P
- E309 Información técnica Laser Mill/GBE/BRE
- E318 Laser Mill
- E323 BFE
- E324 GBE
- E327 BRE
- E329 Información técnica HAVE
- E331 HAVE (filo único, múltiples fillos)
- E333 O-ring Cutter
- E335 Cortador de chaflán (Multifuncional y sólido)
- E343 T-Cortador (TFE)

## Fresado de aluminio

- E344 Información técnica Pro-A Mill/Pro-X Mill/  
Pro-L Mill/Pro-XL Mill/Pro-V Mill
- E354 Pro-A Mill
- E357 Pro-X Mill
- E363 Pro-L Mill
- E367 Pro-XL Mill
- E368 Pro-V Mill
- E371 Adaptador modular (MAT)

## Fresas de disco (corte lateral)

- E373 Información técnica fresas de disco
- E375 Fresa de disco para corte lateral
- E379 Disco para corte lateral
- E382 Wind Mill

## Fresado de alto avance de fundición

- E386 Fresado de alto avance de fundición
- E388 Información técnica Cube Mill
- E389 Información técnica Couple Mill
- E391 Información técnica Storm Mill
- E392 Información técnica Shave Mill
- E394 Información técnica Shave Mill-Ultra
- E395 High Avance Cutter
- E397 Shave Mill
- E398 Shave Mill-Ultra

## Información detallada de platos de fresado y adaptadores

- E400 Designaciones de platos de fresado y adaptadores

## Herramientas para engranajes

- E403 Información técnica herramientas para engranajes
- E404 Tabla informativa herramientas para engranajes
- E405 Herramientas para engranajes
- E413 Modelo orden especial de herramientas para engranajes
- E414 HOB indexable
- E415 Modelo orden especial de HOB indexable
- E416 Modelo orden especial de herramientas especiales de mandrinado

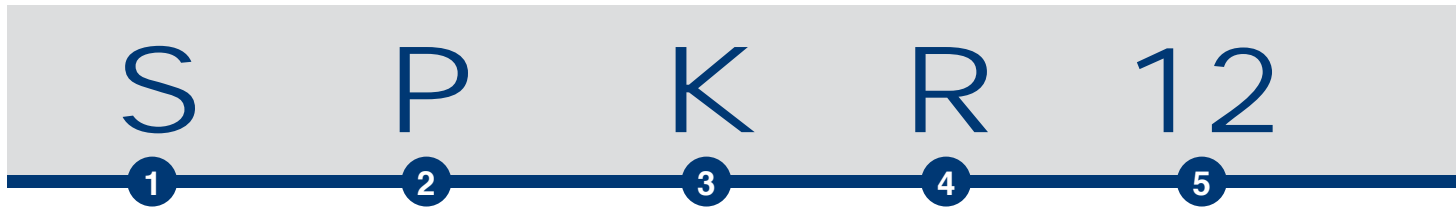
# FRESADO

Herramientas de fresado que proporcionan la mejor calidad y mejoran la productividad para cada necesidad del cliente



# E

# E Insertos de fresado: Codificación ISO



Forma del Inserto

Angulo de Incidencia

Tolerancia

Tipo Sección Transversal

Filo corte Length, Diametro of Inscribed circle

### 1 Forma del Inserto

S P K R 12 03 08 ED S R - MX

A C D H L O  
R S T V W

### 2 Angulo de Incidencia

S P K R 12 03 08 ED S R - MX

A B C D E  
F G N P

### 3 Tolerancia

S P K R 12 03 08 ED S R - MX

d: Circulo Inscrito  
t: Grosor  
m: Ref. a la figura

■ Tolerancia en clase C,E,H,M,O,P,R,S,T,W (Caso Excepcional)

| Class | d           | m           | t      | Tolerancia en d                            |                 | Tolerancia en m |       |
|-------|-------------|-------------|--------|--|-----------------|-----------------|-------|
|       |             |             |        | J,K,L,M,N                                  | U               | M,N             | U     |
| A     | ±0.025      | ±0.005      | ±0.025 | 6.35                                       | ±0.05 ±0.08     | ±0.08           | ±0.13 |
| C     | ±0.025      | ±0.013      | ±0.025 | 9.525                                      | ±0.05 ±0.08     | ±0.08           | ±0.13 |
| H     | ±0.013      | ±0.013      | ±0.025 | 12.7                                       | ±0.08 ±0.13     | ±0.13           | ±0.20 |
| E     | ±0.025      | ±0.025      | ±0.025 | 15.875                                     | ±0.10 ±0.18     | ±0.15           | ±0.27 |
| G     | ±0.025      | ±0.025      | ±0.13  | 19.05                                      | ±0.10 ±0.18     | ±0.15           | ±0.27 |
| J     | ±0.05~±0.15 | ±0.005      | ±0.025 | 25.4                                       | ±0.13 ±0.25     | ±0.18           | ±0.38 |
| K     | ±0.05~±0.15 | ±0.013      | ±0.025 | ■ Tolerancia en clase D (Caso Excepcional) |                 |                 |       |
| L     | ±0.05~±0.15 | ±0.025      | ±0.025 | d  | Tolerancia en d | Tolerancia en m |       |
| M     | ±0.05~±0.15 | ±0.08~±0.20 | ±0.13  | 6.35                                       | ±0.05           | ±0.11           |       |
| U     | ±0.08~±0.25 | ±0.13~±0.38 | ±0.13  | 9.525                                      | ±0.05           | ±0.11           |       |
|       |             |             |        | 12.7                                       | ±0.08           | ±0.15           |       |
|       |             |             |        | 15.875                                     | ±0.10           | ±0.18           |       |
|       |             |             |        | 19.05                                      | ±0.10           | ±0.18           |       |

### 4 Tipo Sección Transversal

S P K R 12 03 08 ED S R - MX

A B C F  
G H J M  
N Q R T  
U W X

C'Sink 70°~90°  
C'Sink 40°~60°  
Tipo Especial

### 5 Longitud Filo Corte Diametro Circulo Inscrito

S P K R 12 03 08 ED S R - MX

■ Sistema Metrico \* Constante de decimal entero

■ Sistema de Pulgadas

· Utilize unidad de 1/32 para insertos con C.I. menor a 1/4  
· Utilize unidad de 1/8 para insertos con C.I. menor a 1/4

\* En caso de Insertos rectangulares y rómbicos, se indica el largo en lugar de l'circulo inscrito

■ Tabla comparativa Sistemas: Metrico & Pulgadas

|                  | 06    | 09    | 11    | 16   | 22   | 27   | 33   | 44 |
|------------------|-------|-------|-------|------|------|------|------|----|
| 03               | 05    | 06    | 09    | 12   | 15   | 19   | 25   |    |
| 04               | 06    | 07    | 11    | 15   | 19   | 23   | 31   |    |
| 03               | 05    | 06    | 09    | 12   | 16   | 19   | 25   |    |
| Circulo Inscrito | 5/32" | 7/32" | 1/4"  | 3/8" | 1/2" | 5/8" | 3/4" | 1" |
| Sist. Pulgadas   | 5     | 7     | 2 (8) | 3    | 4    | 5    | 6    | 8  |



03

ED  
08

S

R - MX

6

7

8

9

10

Espesor del inserto

Radio Punta (Nose R)

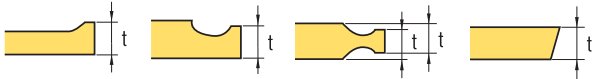
Acabado del Filo

Mano Herramienta

Rompeviruta Fresado

**6** Espesor del inserto

S P K R 12 03 ED 08 S R - MX

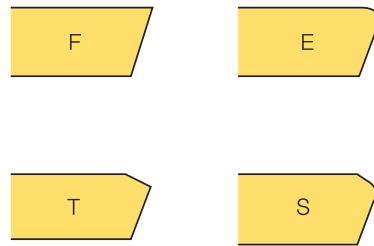


| Símbolo |         | Altura Filo Corte |       |
|---------|---------|-------------------|-------|
| Métrico | Inch    | mm                | Inch  |
| 01      | 1 (2)   | 1.59              | 1/16  |
| T0      | 1.125   | 1.79              | 9/128 |
| T1      | 1.2     | 1.98              | 5/64  |
| 02      | 1.5 (3) | 2.38              | 3/32  |
| T2      | 1.75    | 2.78              | 7/64  |
| 03      | 2       | 3.18              | 1/8   |
| T3      | 2.5     | 3.97              | 5/32  |
| 04      | 3       | 4.76              | 3/16  |
| 05      | 3.5     | 5.56              | 7/32  |
| 06      | 4       | 6.35              | 1/4   |
| 07      | 5       | 7.94              | 5/16  |
| 09      | 6       | 9.52              | 3/8   |
| 11      | 7       | 11.11             | 7/16  |
| 12      | 8 (16)  | 12.70             | 1/2   |

( ) Símbolo para inserto de tamaño pequeño

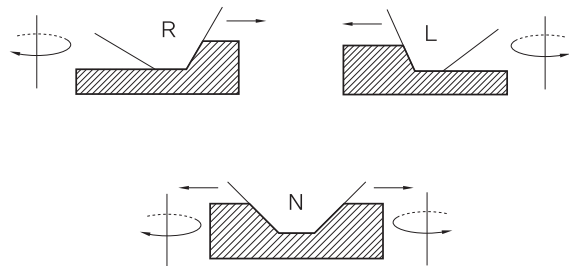
**8** Acabado del Filo

S P K R 12 03 ED 08 S R - MX



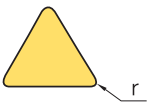
**9** Mano Herramienta

S P K R 12 03 ED 08 S R - MX

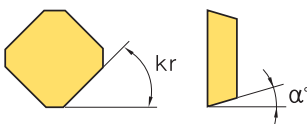


**7** Radio Punta (Nose R)

S P K R 12 03 ED 08 S R - MX



| r  |      | Símbolo |       | r  |      | Símbolo |      |
|----|------|---------|-------|----|------|---------|------|
| mm | Inch | mm      | Inch  | mm | Inch | mm      | Inch |
| 00 | 0    | 0.0     |       | 12 | 3    | 1.2     | 3/64 |
| 02 | 0.5  | 0.2     | 0.008 | 15 |      | 1.5     |      |
| 04 | 1    | 0.4     | 1/64  | 16 | 4    | 1.6     | 4/64 |
| 05 |      | 0.5     |       | 24 | 6    | 2.4     | 6/64 |
| 08 | 2    | 0.8     | 2/64  | 32 | 8    | 3.2     | 8/64 |
| 10 |      | 1.0     |       | 40 |      | 4.0     |      |



| Angulo Paralelo |  | Angulo Incidencia |         |
|-----------------|--|-------------------|---------|
| kr              |  | α°                |         |
| A - 45°         |  | A - 3°            | F - 25° |
| D - 60°         |  | B - 5°            | G - 30° |
| E - 75°         |  | C - 7°            | N - 0°  |
| F - 85°         |  | D - 15°           | P - 11° |
| P - 90°         |  | E - 20°           |         |
| Z - especial    |  |                   |         |

**10** Rompeviruta Fresado

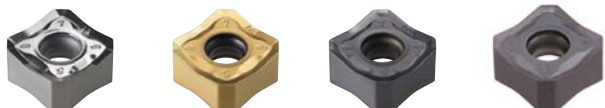
S P K R 12 03 ED 08 S R - MX



MA MF MM MX



MF MM MR MA



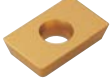
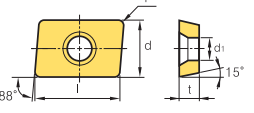

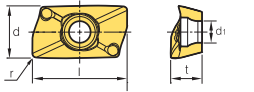

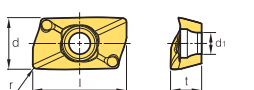

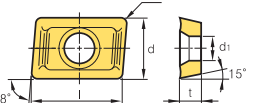

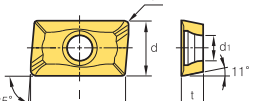

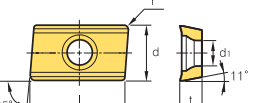

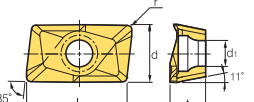

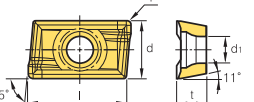

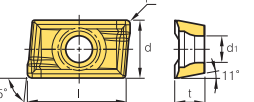

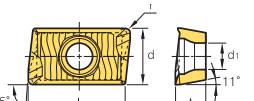
MA MF MM ML

# E Listado insertos de fresado

| Pieza Trabajo    | Acero                                   | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|                  | Acero Inoxidable                        | M |   | ● | ● |   |   |   |   |   |   |   |   |   | ● | ● | ● | ● |
|                  | Fundición                               | K |   |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|                  | Metales No-Ferrosos                     | N |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ● | ● |
|                  | Aleaciones Resist. al Calor, de Titanio | S |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ● | ● |
| Acero Endurecido | H                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ● | ● |   |

## Tipos de Maquinado

- Corte Continuo
- Corte en General
- Corte Interrumpido

| Insertos  | Codigo        | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Dimensiones (mm) |     |        |        |       | Geometrias | Herramienta Disponible |   |                      |
|---|---------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------------------|-----|--------|--------|-------|------------|------------------------|---|----------------------|
|   |               | CN2000 | CN30 | NCM325     | NCM335 | NC5330 | NCM535 | NCM545 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400           | H01 | H05    | l      | d     |            |                        | t   | r                    |
| <br>ADKA       | 150308R       |        |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     | 15.0   | 9.525  | 3.18  | 0.8        | 4.5                    |    | -                    |
|   | 150308SR      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     | 15.0   | 9.525  | 3.18  | 0.8        | 4.5                    |   |                      |
|   | 150308TR      | ●      |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     | 15.0   | 9.525  | 3.18  | 0.8        | 4.5                    |   |                      |
| <br>ADKT-ML    | 170608PESR-ML |        |      |            |        | ●      |        |        |        |        | ●      | ●      |        |          |        |                  |     | 19.650 | 10.843 | 6.529 | 0.8        | 4.5                    |    | E145~<br>E146        |
| <br>ADKT-MM    | 170604PESR-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     | 19.650 | 10.843 | 6.529 | 0.4        | 4.5                    |    | E145~<br>E146        |
|   | 170608PESR-MM |        |      |            |        | ●      |        |        |        | ●      | ●      |        |        |          |        |                  |     | 19.650 | 10.843 | 6.529 | 0.8        | 4.5                    |   |                      |
|   | 170616PESR-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     | 19.650 | 10.843 | 6.529 | 1.6        | 4.5                    |   |                      |
|   | 170620PESR-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     | 19.650 | 10.843 | 6.529 | 2.0        | 4.5                    |   |                      |
| <br>ADLT      | 150308R       |        |      | ●          |        |        |        |        |        |        |        |        |        |          |        |                  |     | 15.0   | 9.525  | 3.18  | 0.8        | 4.5                    |   | E299                 |
|   | 150308SR      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     | 15.0   | 9.525  | 3.18  | 0.8        | 4.5                    |   |                      |
|   | 150308TR      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     | 15.0   | 9.525  | 3.18  | 0.8        | 4.5                    |   |                      |
| <br>APKT     | 1604PDSR      |        |      | ●          |        |        |        |        |        |        | ●      | ●      |        |          |        |                  |     | 16.4   | 9.525  | 4.76  | 0.8        | 4.4                    |  | E158<br>E170         |
| <br>APKT-MA  | 1604PDFR-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●                |     | 16.4   | 9.525  | 4.76  | 0.2        | 4.4                    |  | E158<br>E170         |
|   | 160416FR-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      |                  |     | 16.4   | 9.525  | 4.76  | 1.6        | 4.4                    |   |                      |
| <br>APKT-MA2 | 1604PDFR-MA2  |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      |                  |     | 16.5   | 9.56   | 5.76  | 0.8        | 4.5                    |  | E158<br>E170         |
|   | 160416FR-MA2  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     | 16.5   | 9.56   | 5.76  | 1.6        | 4.5                    |   |                      |
|   | 160432FR-MA2  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     |        | 16.5   | 9.56  | 5.76       | 3.2                    |   |                      |
| <br>APKT-MA3 | 1604PDFR-MA3  |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●                |     | 16.4   | 9.525  | 5.0   | 0.8        | 4.4                    |  | E158<br>E170         |
|   | 160420FR-MA3  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     | 16.0   | 9.525  | 5.0   | 2.0        | 4.4                    |   |                      |
| <br>APKT-MF  | 1604PDSR-MF   |        |      | ●          |        |        |        |        |        |        |        |        |        |          |        |                  |     | 16.4   | 9.525  | 5.0   | 0.8        | 4.4                    |  | E158<br>E170<br>E179 |
| <br>APKT-MM  | 1604PDSR-MM   |        |      | ●          | ●      |        |        |        |        |        | ●      | ●      |        |          |        |                  |     | 16.4   | 9.525  | 5.2   | 0.8        | 4.4                    |  | E158<br>E170<br>E179 |


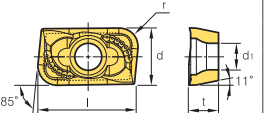

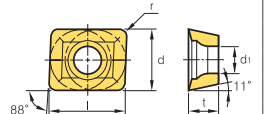

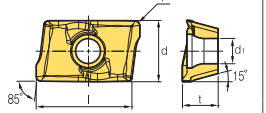
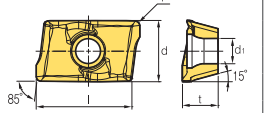
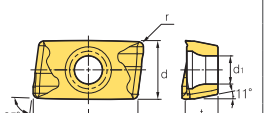

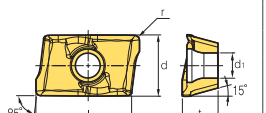
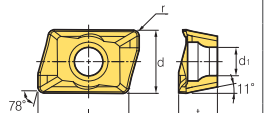

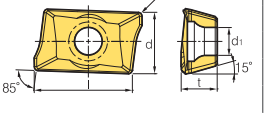
● : En Almacen



| Pieza Trabajo    | Acero                                   | <b>P</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|------------------|---|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|                  | Acero Inoxidable                        | <b>M</b> |   |   |   |   |   |   |   | ● |   |   | ● | ● | ● | ● | ● | ● | ● | ● |
|                  | Fundición                               | <b>K</b> |   |   | ● | ● | ● | ● | ● |   |   |   |   |   |   |   |   |   |   | ● |
|                  | Metales No-Ferrosos                     | <b>N</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                  | Aleaciones Resist. al Calor, de Titanio | <b>S</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Acero Endurecido | <b>H</b>                                |          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

**Tipos de Maquinado**

● Corte Continuo  
 ● Corte en General  
 ✳ Corte Intermitente

| Insertos   | Codigo        | Cermet |      | Recubierta |        |        |        |        |        |        | Sin Rec. |        | Dimensiones (mm) |        |       |       |       | Geometrias | Herramienta Disponible |   |   |              |
|--|---------------|--------|------|------------|--------|--------|--------|--------|--------|--------|----------|--------|------------------|--------|-------|-------|-------|------------|------------------------|---|---|--------------|
|  |               | CN2000 | CN30 | NC5330     | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510   | PC9530 | PC5300           | PC5400 | G10   | H01   | l     |            |                        | d   | t   | r            |
| APKT-MM1<br>  | 160432R-MM1   |        |      |            |        |        |        |        |        |        |          |        |                  |        |       | 16.4  | 9.525 | 4.76       | 3.2                    | 4.4   |  | E158<br>E170 |
| APLT<br>      | 070304R       |        |      |            |        |        |        |        |        |        |          | ●      |                  |        |       | 7.5   | 6.35  | 3.18       | 0.4                    | 2.8   |  | E299         |
| APMT-MA<br>   | 0602PDRF-MA   |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 6     | 4.24  | 2.6   | 0.4        | 2.0                    |    | E154-157  |              |
|  | 060208PDRF-MA |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 6     | 4.24  | 2.6   | 0.8        | 2.0                    |   | E159  |              |
|  | 0903PDRF-MA   |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 9.4   | 6.21  | 3.6   | 0.4        | 2.8                    |   | E162-169  |              |
|  | 090308PDRF-MA |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 9.4   | 6.21  | 3.6   | 0.8        | 2.8                    |   | E171-172  |              |
|  | 11T3PDRF-MA   |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 11.2  | 6.467 | 3.6   | 0.5        | 2.9                    |   | E175-182  |              |
|  | 11T308PDRF-MA |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 11.2  | 6.467 | 3.6   | 0.8        | 2.9                    |   | E184-198  |              |
|  | 160404PDRF-MA |        |      |            |        |        |        |        |        |        |          |        |                  |        | 16.4  | 9.41  | 5.76  | 0.4        | 4.5                    |   | E200-204  |              |
|  | 1604PDRF-MA   |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 16.4  | 9.41  | 5.76  | 0.8        | 4.5                    |   |   |              |
|  | 180604PDRF-MA |        |      |            |        |        |        |        |        |        |          |        |                  |        | 17.4  | 10.98 | 6.35  | 0.4        | 4.5                    |   |  |              |
|  | 1806PDRF-MA   |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 17.4  | 10.98 | 6.35  | 0.8        | 4.5                    |   |   |              |
|  | 180612PDRF-MA |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 17.4  | 10.98 | 6.35  | 1.2        | 4.5                    |   |   |              |
|  | 180616PDRF-MA |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 17.4  | 10.98 | 6.35  | 1.6        | 4.5                    |   |   |              |
| 180620PDRF-MA  |               |        |      |            |        |        |        |        |        |        |          |        | ●                | 17.4   | 10.98 | 6.35  | 2.0   | 4.5        |                        |   |   |              |
| 180624PDRF-MA  |               |        |      |            |        |        |        |        |        |        |          |        | ●                | 17.4   | 10.98 | 6.35  | 2.4   | 4.5        |                        |   |   |              |
| 180630R-MA   |               |        |      |            |        |        |        |        |        |        |          |        | ●                | 17.4   | 10.98 | 6.35  | 3.0   | 4.5        |                        |   |   |              |
| 11T3PDSR-MF  |               |        |      | ●          |        |        |        |        | ●      | ●      | ●        |        |                  | ●      | 11.2  | 6.467 | 3.6   | 0.5        | 2.9                    |  |   |              |
| 1604PDSR-MF  |               |        |      | ●          |        |        |        |        | ●      | ●      | ●        |        |                  | ●      | 16.4  | 9.41  | 5.76  | 0.8        | 4.5                    |   |   |              |
| 1806PDSR-MF  |               |        |      | ●          |        |        |        |        | ●      | ●      | ●        |        |                  | ●      | 17.4  | 10.98 | 6.35  | 0.8        | 4.5                    |   |   |              |
| 180612PDSR-MF  |               |        |      |            |        |        |        |        | ●      | ●      | ●        |        |                  | ●      | 17.4  | 10.98 | 6.35  | 1.2        | 4.5                    |   |   |              |
|  |               |        |      |            |        |        |        |        |        |        |          |        |                  |        |       |       |       |            |                        |   |   |              |
| APMT-ML<br> | 0903PDER-ML   |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 9.4   | 6.21  | 3.6   | 0.4        | 2.8                    |  | E155-157  |              |
|  | 090308PDER-ML |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 9.4   | 6.21  | 3.6   | 0.8        | 2.8                    |   | E159  |              |
|  | 11T3PDER-ML   |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 11.2  | 6.467 | 3.6   | 0.5        | 2.9                    |   | E162-164  |              |
|  | 11T308PDER-ML |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 11.2  | 6.467 | 3.6   | 0.8        | 2.9                    |   | E166-169  |              |
|  | 160404PDER-ML |        |      |            |        |        |        |        |        |        |          |        |                  |        | 16.4  | 9.41  | 5.76  | 0.4        | 4.5                    |   | E171-172  |              |
|  | 1604PDER-ML   |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 16.4  | 9.41  | 5.76  | 0.8        | 4.5                    |   |   |              |
|  | 180604PDER-ML |        |      |            |        |        |        |        |        |        |          |        |                  |        | 17.4  | 10.98 | 6.35  | 0.4        | 4.5                    |   | E175-179  |              |
|  | 1806PDER-ML   |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 17.4  | 10.98 | 6.35  | 0.8        | 4.5                    |   |   |              |
|  | 180612PDER-ML |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 17.4  | 10.98 | 6.35  | 1.2        | 4.5                    |   |   |              |
|  | 180616PDER-ML |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 17.4  | 10.98 | 6.35  | 1.6        | 4.5                    |   |   |              |
|  | 180620PDER-ML |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 17.4  | 10.98 | 6.35  | 2.0        | 4.5                    |   |   |              |
|  | 180624PDER-ML |        |      |            |        |        |        |        |        |        |          |        |                  | ●      | 17.4  | 10.98 | 6.35  | 2.4        | 4.5                    |   |   |              |
| 180630R-ML   |               |        |      |            |        |        |        |        |        |        |          |        | ●                | 17.4   | 10.98 | 6.35  | 3.0   | 4.5        |                        |   |   |              |
| 060202PDSR-MM  |               |        |      | ●          |        |        |        |        |        |        |          |        |                  | ●      | 6     | 4.24  | 2.6   | 0.2        | 2.0                    |  |   |              |
| 0602PDSR-MM  |               |        | ●    | ●          | ●      |        |        | ●      | ●      | ●      |          |        | ●                | 6      | 4.24  | 2.6   | 0.4   | 2.0        |                        |   |   |              |
| 060208PDSR-MM  |               |        |      | ●          |        |        |        |        | ●      | ●      |          |        | ●                | 6      | 4.24  | 2.6   | 0.8   | 2.0        |                        |   |   |              |
| 060212R-MM   |               |        |      | ●          |        |        |        |        | ●      | ●      |          |        | ●                | 6      | 4.24  | 2.6   | 1.2   | 2.0        |                        |   |   |              |
| 060216R-MM *   |               |        |      |            |        |        |        |        | ●      | ●      |          |        | ●                | 6      | 4.24  | 2.6   | 1.6   | 2.0        |                        |   |   |              |
| APMT-MM<br> | 0903PDSR-MM   |        |      | ●          | ●      | ●      |        |        | ●      | ●      | ●        |        |                  | ●      | 9.4   | 6.21  | 3.6   | 0.4        | 2.8                    |  |   |              |
|  | 090308PDSR-MM |        |      | ●          |        |        |        |        | ●      | ●      | ●        |        |                  | ●      | 9.4   | 6.21  | 3.6   | 0.8        | 2.8                    |   |   |              |
|  | 090312R-MM    |        |      |            |        |        |        |        | ●      | ●      | ●        |        |                  | ●      | 9.4   | 6.21  | 3.6   | 1.2        | 2.8                    |   |   |              |
|  | 090316R-MM    |        |      | ●          |        |        |        |        | ●      | ●      | ●        |        |                  | ●      | 9.4   | 6.21  | 3.6   | 1.6        | 2.8                    |   |   |              |
|  | 090320R-MM    |        |      |            |        |        |        |        | ●      | ●      | ●        |        |                  | ●      | 9.2   | 6.21  | 3.6   | 2.0        | 2.8                    |   |   |              |
|  | 090331R-MM *  |        |      |            |        |        |        |        | ●      | ●      | ●        |        |                  | ●      | 9.2   | 6.21  | 3.6   | 3.1        | 2.8                    |   |   |              |
|  | 090332R-MM *  |        |      |            |        |        |        |        | ●      | ●      | ●        |        |                  | ●      | 9.2   | 6.21  | 3.6   | 3.2        | 2.8                    |   |   |              |

● : En Almacen

Insertos marcados con un asterisco (\*) requieren una orden especial para fabricar un porta herramientas a medida



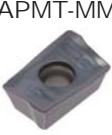
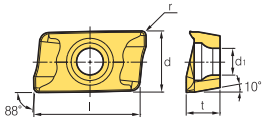
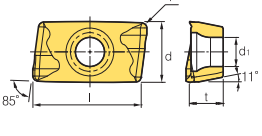
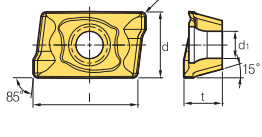

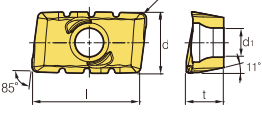

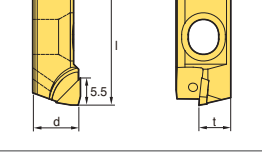
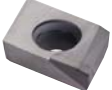
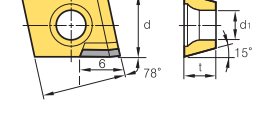
# E Listado insertos de fresado

| Pieza Trabajo | Acero                                   | P |  |  |  |  |  |  |  |  |  |  |  |  | Tipos de Maquinado |  |  |
|---------------|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--------------------|--|--|
|               | Acero Inoxidable                        | M |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |
|               | Fundición                               | K |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |
|               | Metales No-Ferrosos                     | N |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |
|               | Aleaciones Resist. al Calor, de Titanio | S |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |
|               | Acero Endurecido                        | H |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |  |

● Corte Continuo

⦿ Corte en General

⚙ Corte Intermitente

| Insertos   | Codigo        | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | PCD    |        | Dimensiones (mm) |       |       |       |       | Geometrias | Herramienta Disponible   |   |  |                |
|--|---------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------|-------|-------|-------|-------|------------|--|---|--|----------------|
|  |               | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | PC2505 | PC2510 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400           | DP150 | DP200 | l     | d     |            |  | t   | r  | d <sub>1</sub> |
| <br>APMT-MM     | 11T3PDSR-MM   |        |      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 11.2  | 6.467 | 3.6   | 0.5        | 2.85   | <br>10°    | E154~<br>E182<br>E184~<br>E204   |                |
|  | 11T308PDSR-MM |        |      |            | ●      |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 11.2  | 6.467 | 3.6   | 0.8        | 2.85   |   |  |                |
|  | 11T312PDSR-MM |        |      |            | ●      |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 11.2  | 6.467 | 3.6   | 1.2        | 2.85   |   |  |                |
|  | 11T316R-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 11.0  | 6.467 | 3.6   | 1.6        | 2.85   |   |  |                |
|  | 11T318R-MM    |        |      |            |        |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 11.0  | 6.467 | 3.6   | 1.8        | 2.85   |   |  |                |
|  | 11T324R-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 11.0  | 6.467 | 3.6   | 2.4        | 2.85   |   |  |                |
|  | 1604PDSR-MM   |        |      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | ●     | 16.4  | 9.41  | 5.76       | 0.8  | 4.5   | <br>11° |                |
|  | 160410PDSR-MM |        |      |            |        |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 16.4  | 9.41  | 5.76  | 1.0        | 4.5  |   |  |                |
|  | 160416PDSR-MM |        |      |            | ●      |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 16.4  | 9.41  | 5.76  | 1.6        | 4.5  |   |  |                |
|  | 160424R-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 16    | 9.41  | 5.76  | 2.4        | 4.5  |   |  |                |
|  | 160430R-MM    |        |      |            |        |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 16    | 9.41  | 5.76  | 3.0        | 4.5  |   |  |                |
|  | 160432R-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 16    | 9.41  | 5.76  | 3.2        | 4.5  |   |  |                |
|  | 160450R-MM *  |        |      |            |        |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 16    | 9.41  | 5.76  | 5.0        | 4.5  |   |  |                |
|  | 160464R-MM *  |        |      |            |        |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 16    | 9.41  | 5.76  | 6.4        | 4.5  |   |  |                |
| 1806PDSR-MM  |               |        |      | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | ●     | 17.4  | 10.98 | 6.35  | 0.8        | 4.5  | <br>15°   |  |                |
| 180612PDSR-MM  |               |        |      | ●          |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | 17.4  | 10.98 | 6.35  | 1.2   | 4.5        |  |   |  |                |
| 180616PDSR-MM  |               |        |      | ●          |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | 17.4  | 10.98 | 6.35  | 1.6   | 4.5        |  |   |  |                |
| 180620PDSR-MM  |               |        |      |            |        |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●                | 17.4  | 10.98 | 6.35  | 2.0   | 4.5        |  |   |  |                |
| 180624PDSR-MM  |               |        |      | ●          |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | 17.4  | 10.98 | 6.35  | 2.4   | 4.5        |  |   |  |                |
| 180630R-MM   |               |        |      |            |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | 16.7  | 10.98 | 6.35  | 3.0   | 4.5        |  |   |  |                |
| 180632R-MM   |               |        |      | ●          |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | 16.7  | 10.98 | 6.35  | 3.2   | 4.5        |  |   |  |                |
| 180640R-MM *   |               |        |      |            |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | 16.7  | 10.98 | 6.35  | 4.0   | 4.5        |  |   |  |                |
| 180648R-MM *   |               |        |      |            |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | 16.7  | 10.98 | 6.35  | 4.8   | 4.5        |  |   |  |                |
| 180650R-MM *   |               |        |      |            |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | 16.7  | 10.98 | 6.35  | 5.0   | 4.5        |  |   |  |                |
| 180660R-MM *   |               |        |      |            |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | 16.7  | 10.98 | 6.35  | 6.0   | 4.5        |  |   |  |                |
| 180664R-MM *   |               |        |      |            |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●                | 16.7  | 10.98 | 6.35  | 6.4   | 4.5        |  |   |  |                |
| <br>APMT-MN   | 11T3PDSR-MN2  |        |      |            |        |        |        |        |        |        |        |        |        |        |        |                  | 11.2  | 6.467 | 3.6   | 0.5   | 2.85       | <br>11° | E156~<br>E182<br>E186~<br>E204  |  |                |
|  | 11T3PDSR-MN3  |        |      |            |        |        |        |        |        |        |        |        |        |        |        |                  |       | 11.2  | 6.467 | 3.6   | 0.5        |  |   | 2.85   |                |
|  | 1604PDSR-MN3  |        |      |            |        |        |        |        |        |        |        |        |        |        |        |                  |       | 16.4  | 9.41  | 5.76  | 0.8        |  |   | 4.5  |                |
|  | 1604PDSR-MN4  |        |      |            |        |        |        |        |        |        |        |        |        |        |        |                  |       | 16.4  | 9.41  | 5.76  | 0.8        |  |   | 4.5  |                |
|  | 1806PDSR-MN3  |        |      |            |        |        |        |        |        |        |        |        |        |        |        |                  |       | 17.4  | 10.98 | 6.35  | 0.8        |  |   | 4.5  |                |
| 1806PDSR-MN4   |               |        |      |            |        |        |        |        |        |        |        |        |        |        |        |                  | 17.4  | 10.98 | 6.35  | 0.8   | 4.5        |  |   |  |                |
| <br>BAMPR-XAF | BAMPR-XAF     |        |      |            |        |        |        |        |        |        |        |        |        |        |        |                  | ●     | 25.5  | 10.5  | 7     | -          | -  | <br>5.5° | E137~<br>E138  |                |
|  | BAMPR-XAW     |        |      |            |        |        |        |        |        |        |        |        |        |        |        |                  |       | ●     | 25.5  | 10    | 7          | -  |   |  | -              |
|  | BAMPR-XAWR    |        |      |            |        |        |        |        |        |        |        |        |        |        |        |                  |       |       | 25.5  | 10    | 7          | -  |   |  | -              |
| <br>CDEW-NAF  | 1204R-NAF     |        |      |            |        |        |        |        |        |        |        |        |        |        |        |                  | ●     | 12.7  | 9.525 | 4.76  | -          | 4.4  | <br>15°  | E136   |                |
|  | 1204L-NAF     |        |      |            |        |        |        |        |        |        |        |        |        |        |        |                  |       |       | 12.7  | 9.525 | 4.76       | -  |   |  | 4.4            |

Insertos marcados con un asterisco (\*) requieren una orden especial para fabricar un porta herramientas a medida

● : En Almacen





| Pieza Trabajo | Acero                                   | P |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------|---|---|--|--|--|--|--|--|--|--|--|--|--|--|
|               | Acero Inoxidable                        | M |  |  |  |  |  |  |  |  |  |  |  |  |
|               | Fundición                               | K |  |  |  |  |  |  |  |  |  |  |  |  |
|               | Metales No-Ferrosos                     | N |  |  |  |  |  |  |  |  |  |  |  |  |
|               | Aleaciones Resist. al Calor, de Titanio | S |  |  |  |  |  |  |  |  |  |  |  |  |
|               | Acero Endurecido                        | H |  |  |  |  |  |  |  |  |  |  |  |  |

| Tipos de Maquinado |                    |
|--------------------|--------------------|
| ●                  | Corte Continuo     |
| ⦿                  | Corte en General   |
| ✱                  | Corte Intermitente |

| Insertos                            | Codigo    | Cermet |      | Recubierto |        |        |        |        |        |        |        | Super | PCD    |        | Dimensiones (mm) |        |     |       |        | Geometrias | Herramienta Disponible |      |   |              |
|-------------------------------------|-----------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|------------------|--------|-----|-------|--------|------------|------------------------|------|---|--------------|
|                                     |           | CN2000 | CN30 | NC5330     | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 |       | PC9530 | PC9540 | PC5300           | PC5400 | H01 | DP150 | DP200  |            |                        | l    | d | t            |
| Filo fortalecido Inserto de wiper   | 1204R-NAW | ●      |      |            |        |        |        |        |        |        |        |       |        |        | ●                |        |     | 12.7  | 9.525  | 4.76       | -                      | 4.4  |   | E136         |
|                                     | 1204L-NAW |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 12.7  | 9.525  | 4.76       | -                      | 4.4  |   |              |
| Filo de corte afilado Inserto wiper | 1204R-XAW |        |      |            |        |        |        |        |        |        |        |       |        |        | ●                |        |     | 12.7  | 9.525  | 4.76       | -                      | 4.4  |   | E136         |
|                                     | 1204L-XAW |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 12.7  | 9.525  | 4.76       | -                      | 4.4  |   |              |
| Filo de corte afilado               | 1204R-XAF |        |      |            |        |        |        |        |        |        |        |       |        |        | ●                |        |     | 12.7  | 9.525  | 4.76       | -                      | 4.4  |   | E136         |
|                                     | 1204L-XAF |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 12.7  | 9.525  | 4.76       | -                      | 4.4  |   |              |
| Filo de corte afilado               | 1204R-XCF |        |      |            |        |        |        |        |        |        |        |       |        |        | ●                |        |     | 12.7  | 9.525  | 4.76       | -                      | 4.4  |   | E136         |
|                                     | 1204L-XCF |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 12.7  | 9.525  | 4.76       | -                      | 4.4  |   |              |
|                                     | 1005-C0.5 |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 10    | 10     | 5.4        | -                      | 4.7  |   | E375<br>E376 |
|                                     | 1305-C0.5 |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 12.7  | 10     | 5.4        | -                      | 4.7  |   |              |
|                                     | 1606-C0.5 |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 16    | 12     | 6.4        | -                      | 5.9  |   |              |
|                                     | 120408-MM |        |      |            |        |        |        |        |        | ●      |        |       |        |        |                  |        |     | 12.9  | 12.7   | 4.76       | 0.8                    | 5.5  |   | E343         |
|                                     | 060204-MM |        |      |            |        |        |        |        |        |        | ●      |       |        |        |                  |        |     | 6.4   | 6.35   | 2.38       | 0.4                    | 2.75 |   | E343         |
|                                     | 080308-MM |        |      |            |        |        |        |        |        |        | ●      |       |        |        |                  |        |     | 8.1   | 7.938  | 3.40       | 0.8                    | 3.18 |   |              |
|                                     | 09T308-MM |        |      |            |        |        |        |        |        |        | ●      |       |        |        |                  |        |     | 9.7   | 9.525  | 3.97       | 0.8                    | 4.4  |   |              |
|                                     | 090408FN  |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 9.0   | 15.875 | 4.76       | 0.8                    | -    |   | E387         |
|                                     | 090408SN  |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 9.0   | 15.875 | 4.76       | 0.8                    | -    |   |              |
|                                     | 090408TN  |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 9.0   | 15.875 | 4.76       | 0.8                    | -    |   |              |
|                                     | 110412FN  |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 11.0  | 19.05  | 4.76       | 1.2                    | -    |   |              |
|                                     | 110412TN  |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 11.0  | 19.05  | 4.76       | 1.2                    | -    |   |              |
|                                     | 090408FN  |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 9.0   | 15.875 | 4.76       | 0.8                    | -    |   | E387         |
|                                     | 090408SN  |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 9.0   | 15.875 | 4.76       | 0.8                    | -    |   |              |
|                                     | 090408EN  |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 9.0   | 15.875 | 4.76       | 0.8                    | -    |   |              |
|                                     | 110412FN  |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 11.0  | 19.05  | 4.76       | 1.2                    | -    |   |              |
|                                     | 090408-WC |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 9.0   | 15.875 | 4.76       | 0.8                    | -    |   | E387         |
|                                     | 110412-WC |        |      |            |        |        |        |        |        |        |        |       |        |        |                  |        |     | 11.0  | 19.05  | 4.76       | 1.2                    | -    |   |              |

● : En Almacen



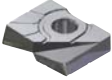
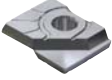
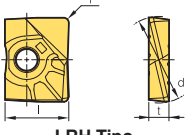
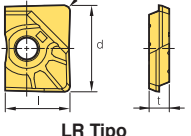

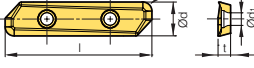

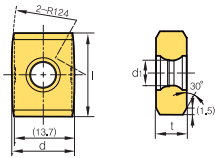
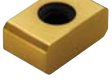
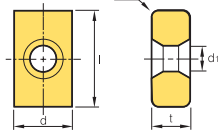

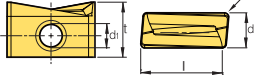

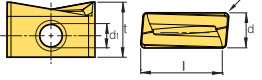




# E Listado insertos de fresado

| Pieza Trabajo | Acero                                   | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |  |
|---------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
|               | Acero Inoxidable                        | M |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|               | Fundición                               | K |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|               | Metales No-Ferrosos                     | N |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|               | Aleaciones Resist. al Calor, de Titanio | S |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|               | Acero Endurecido                        | H |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |

### Tipos de Maquinado

- Corte Continuo
- Corte en General
- Corte Interumpido

| Insertos   | Codigo        | Cermet |      | Recubierto |        |        |        |        |        |        |        | Sin Rec. |        | Dimensiones (mm) |        |        |       |       | Geometrias | Herramienta Disponible |     |      |   |               |
|--|---------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------------------|--------|--------|-------|-------|------------|------------------------|-----|------|---|---------------|
|  |               | CN2000 | CN30 | NC5330     | NCM535 | NCM545 | PC2505 | PC2010 | PC210F | PC3600 | PC3700 | PC6510   | PC9530 | PC9540           | PC5300 | PC5400 | ST30A | H01   |            |                        | l   | d    | t   | r             |
| <br>LRH<br><br><br>LR<br>(Tipo especial) | 320-R30       |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 23.5  | 32         | 7.0                    | 3.0 | -    | <br>LRH Tipo<br><br><br>LR Tipo |               |
|  | 330-R05       |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 24.0  | 33         | 7.0                    | 0.5 | -    |   |               |
|  | 330-R10       |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 24.0  | 33         | 7.0                    | 1.0 | -    |   |               |
|  | 330-R20       |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 24.0  | 33         | 7.0                    | 2.0 | -    |   |               |
|  | 330-R30       |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 24.0  | 33         | 7.0                    | 3.0 | -    |   |               |
| <br>LDET-MA <span style="color:red">new</span>  | 650540PPFR-MA |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 65    | 15         | 5.625                  | 4.0 | 5.56 |    | E367          |
|  | 650550PPFR-MA |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 65    | 15         | 5.625                  | 5.0 | 5.56 |   |               |
| <br>LNCS  | 1907-C1.5-WC  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 19.05 | 14.3       | 7                      | -   | 5.8  |   | E398<br>E399  |
|  | 1907-R3.0-WC  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 19.05 | 14.3       | 7                      | -   | 5.8  |   |               |
| <br>LNE   | 324-R0.8      |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 15.9  | 9.525      | 6.35                   | 0.8 | 4.4  |    | E405~<br>E409 |
|  | 324-C1.0      |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 15.9  | 9.525      | 6.35                   | 1.0 | 4.4  |   |               |
| <br>LNKT-MA <span style="color:red">new</span>  | 080404PNR-MA  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 8.0   | 4.2        | 6.6                    | 0.4 | 2.8  |    | E303~<br>E308 |
|  | 080408PNR-MA  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 8.0   | 4.2        | 6.6                    | 0.8 | 2.8  |   |               |
|  | 140608PNR-MA  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 12.7  | 6.65       | 10.0                   | 0.8 | 4.0  |   |               |
|  | 170704PNR-MA  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 0.4 | 4.5  |   |               |
|  | 170708PNR-MA  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 0.8 | 4.5  |   |               |
|  | 170712PNR-MA  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 1.2 | 4.5  |   |               |
|  | 170716PNR-MA  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 1.6 | 4.5  |   |               |
|  | 170720PNR-MA  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 2.0 | 4.5  |   |               |
| <br>LNKT-ML <span style="color:red">new</span>  | 080404PNR-ML  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 8.0   | 4.2        | 6.6                    | 0.4 | 2.8  |    |               |
|  | 080408PNR-ML  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 8.0   | 4.2        | 6.6                    | 0.8 | 2.8  |   |               |
|  | 140608PNR-ML  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 12.7  | 6.65       | 10.0                   | 0.8 | 4.0  |   |               |
|  | 170704PNR-ML  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 0.4 | 4.5  |   |               |
|  | 170708PNR-ML  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 0.8 | 4.5  |   |               |
|  | 170712PNR-ML  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 1.2 | 4.5  |   |               |
|  | 170716PNR-ML  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 1.6 | 4.5  |   |               |
|  | 170720PNR-ML  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 2.0 | 4.5  |   |               |
| <br>LNKT-MM <span style="color:red">new</span>  | 080404PNR-MM  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 8.0   | 4.2        | 6.6                    | 0.4 | 2.8  |    |               |
|  | 080408PNR-MM  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 8.0   | 4.2        | 6.6                    | 0.8 | 2.8  |   |               |
|  | 140608PNR-MM  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 12.7  | 6.65       | 10.0                   | 0.8 | 4.0  |   |               |
|  | 170704PNR-MM  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 0.4 | 4.5  |   |               |
|  | 170708PNR-MM  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 0.8 | 4.5  |   |               |
|  | 170712PNR-MM  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 1.2 | 4.5  |   |               |
|  | 170716PNR-MM  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 1.6 | 4.5  |   |               |
|  | 170720PNR-MM  |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | 16.5  | 7.0        | 11.0                   | 2.0 | 4.5  |   |               |


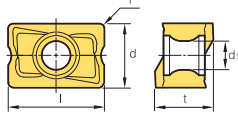

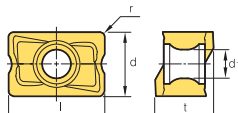

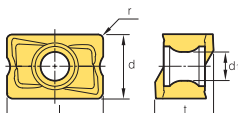

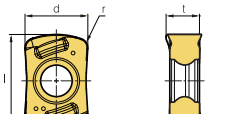

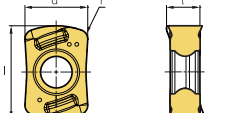

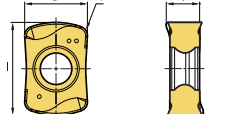

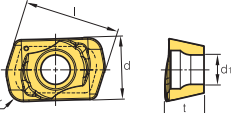
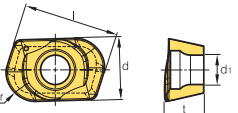
● : En Almacen



| Pieza Trabajo    | Acero                                   | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|                  | Acero Inoxidable                        | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                  | Fundición                               | K |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                  | Metales No-Ferrosos                     | N |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                  | Aleaciones Resist. al Calor, de Titanio | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Acero Endurecido | H                                       |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |   |                    |  |  |
|--|---|--------------------|--|--|
|  | ● | Corte Continuo     |  |  |
|  | ● | Corte en General   |  |  |
|  | ● | Corte Interrumpido |  |  |

| Insertos  | Codigo            | Cermet |      | Recubierto |        |        |        |        |        |        |        | Sin Rec. |        | Dimensiones (mm) |        |        |       |      | Geometrias | Herramienta Disponible |   |   |   |               |
|---|-------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------------------|--------|--------|-------|------|------------|------------------------|---|---|---|---------------|
|   |                   | CN2000 | CN30 | NC5330     | NCM535 | NCM545 | PC2505 | PC2510 | PC2010 | PC3600 | PC3700 | PC6510   | PC9530 | PC9540           | PC5300 | PC5400 | ST30A | H01  |            |                        | l   | d   | t   | r             |
|    | 100605PNR-MA      |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        | ●     | 10.0 | 6.5        | 6.5                    | 0.5   | 3.5   |  | E95~96        |
|   | 151004PNR-MA      |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        | ●     | 15.0 | 10.0       | 10.0                   | 0.4   | 4.5   |   | E99~100       |
|   | 151008PNR-MA      |        |      |            |        |        |        |        |        |        |        |          |        |                  |        |        |       | ●    | 15.0       | 10.0                   | 10.0  | 0.8   |   | 4.5           |
|    | LNMX 100605PNR-MF |        |      |            |        |        |        |        |        | ●      | ●      |          |        |                  |        |        | ●     | 10.0 | 6.5        | 6.5                    | 0.5   | 3.5   |  | E95           |
|   | 100608PNR-MF      |        |      |            |        |        |        |        |        | ●      | ●      |          |        |                  |        |        | ●     | 10.0 | 6.5        | 6.5                    | 0.8   | 3.5   |   | E96           |
|   | 151004PNR-MF      |        |      |            |        |        |        |        |        | ●      | ●      | ●        |        |                  |        |        | ●     | 15.0 | 10.0       | 10.0                   | 0.4   | 4.5   |   | E99           |
|   | 151008PNR-MF      |        |      | ●          |        |        |        |        |        | ●      | ●      | ●        |        |                  |        |        | ●     | 15.0 | 10.0       | 10.0                   | 0.8   | 4.5   |   | E100          |
|   | 151016PNR-MF      |        |      |            |        |        |        |        |        | ●      | ●      |          |        |                  |        |        | ●     | 15.0 | 10.0       | 10.0                   | 1.6   | 4.5   |   | E103~<br>E107 |
|   | LNEX 100605PNR-MF |        |      |            |        |        |        |        |        |        | ●      |          |        |                  |        |        | ●     | 10.0 | 6.5        | 6.5                    | 0.5   | 3.5   |   | E95           |
|   | 100608PNR-MF      |        |      |            |        |        |        |        |        |        | ●      | ●        |        |                  |        |        | ●     | 10.0 | 6.5        | 6.5                    | 0.8   | 3.5   |   | E96           |
|  | LNMX 100605PNR-MM |        |      |            |        |        |        |        |        | ●      | ●      | ●        |        |                  |        | ●      | 10.0  | 6.5  | 6.5        | 0.5                    | 3.5   |  | E95~  |               |
|   | 100608PNR-MM      |        |      |            |        |        |        |        |        | ●      | ●      |          |        |                  |        | ●      | 10.0  | 6.5  | 6.5        | 0.8                    | 3.5   |   | E109  |               |
|   | 100605PNL-MM      |        |      |            |        |        |        |        |        | ●      | ●      | ●        |        |                  |        | ●      | 10.0  | 6.5  | 6.5        | 0.5                    | 3.5   |   |   |               |
|   | 151004PNR-MM      |        |      |            |        |        |        |        |        | ●      | ●      |          |        |                  |        | ●      | 15.0  | 10.0 | 10.0       | 0.4                    | 4.5   |   |   |               |
|   | 151008PNR-MM      |        |      | ●          |        |        |        |        |        | ●      | ●      | ●        |        |                  |        | ●      | 15.0  | 10.0 | 10.0       | 0.8                    | 4.5   |   |   |               |
|   | 151016PNR-MM      |        |      |            |        |        |        |        |        | ●      | ●      |          |        |                  |        | ●      | 15.0  | 10.0 | 10.0       | 1.6                    | 4.5   |   |   |               |
|   | 151008PNL-MM      |        |      |            |        |        |        |        |        | ●      |        |          |        |                  |        | ●      | 15.0  | 10.0 | 10.0       | 0.8                    | 4.5   |   |   |               |
|   | LNEX 100605PNR-MM |        |      |            |        |        |        |        |        |        | ●      | ●        |        |                  |        |        | ●     | 10.0 | 6.5        | 6.5                    | 0.5   |   | 3.5   | E95~          |
|   | 100608PNR-MM      |        |      |            |        |        |        |        |        |        | ●      |          |        |                  |        |        | ●     | 10.0 | 6.5        | 6.5                    | 0.8   |   | 3.5   | E109          |
|   | 100605PNL-MM      |        |      |            |        |        |        |        |        |        | ●      | ●        |        |                  |        |        | ●     | 10.0 | 6.5        | 6.5                    | 0.5   |   | 3.5   |               |
|  | 060310R-MF        |        |      |            |        |        |        |        |        | ●      |        | ●        |        |                  |        | ●      | 10.0  | 6.8  | 3.6        | 1.0                    | -   |  | E264~<br>E267   |               |
|  | 060310R-ML        |        |      |            |        |        |        |        |        |        |        |          |        |                  |        | ●      | 10.0  | 6.8  | 3.6        | 1.0                    | -   |  | E264~<br>E267   |               |
|  | 060310R-MM        |        |      |            |        |        |        |        |        | ●      |        | ●        |        |                  |        | ●      | 10.0  | 6.8  | 3.6        | 1.0                    | -   |  | E264~<br>E267   |               |
|  | 040210R           |        |      |            |        |        |        |        |        | ●      | ●      |          |        |                  | ●      | 6.4    | 4.2   | 2.6  | 1.0        | 2.0                    |  | E273~<br>E275   |   |               |
|   | 040220R           |        |      |            |        |        |        |        |        | ●      | ●      |          |        |                  | ●      | 6.4    | 4.2   | 2.6  | 2.0        | 2.0                    |  | E273~<br>E275   |   |               |


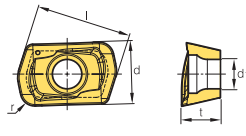

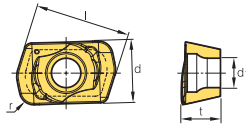

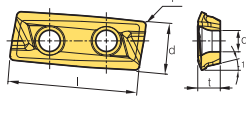

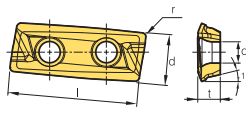
● : En Almacen

# E Listado insertos de fresado

|                  |   |          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------------------|---|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pieza Trabajo    | Acero                                   | <b>P</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|                  | Acero Inoxidable                        | <b>M</b> |   |   |   |   | ● |   |   |   |   |   |   |   |   |   |   |   |   |   | ● |
|                  | Fundición                               | <b>K</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|                  | Metales No-Ferrosos                     | <b>N</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ● |
|                  | Aleaciones Resist. al Calor, de Titanio | <b>S</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ● |
| Acero Endurecido | <b>H</b>                                |          |   |   |   | ● | ● | ● |   |   |   |   |   |   |   |   |   |   |   |   | ● |

### Tipos de Maquinado


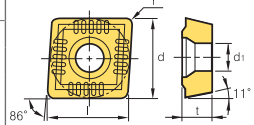

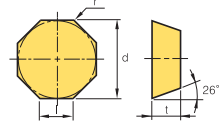

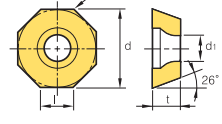

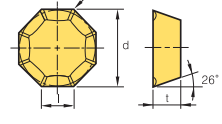

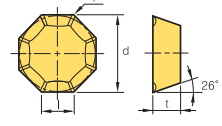

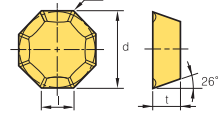

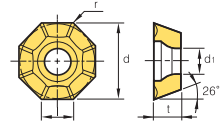

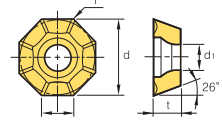
- Corte Continuo
- Corte en General
- \* Corte Intermitente

| Insertos   | Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        | Sin Rec. |        | Dimensiones (mm) |        |        |       |        | Geometrias | Herramienta Disponible |      |      |   |               |
|--|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|----------|--------|------------------|--------|--------|-------|--------|------------|------------------------|------|------|---|---------------|
|  |                  | CN2000 | CN30 | NC5330     | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510   | PC9530 | PC9540           | PC5300 | PC5400 | ST30A | H01    |            |                        | l    | d    | t   | r             |
| LPMT-MF<br>   | LPMT_040210R-MF  |        |      |            |        |        | ●      |        | ●      |        |          |        |                  |        |        |       | 6.4    | 4.2        | 2.6                    | 1.0  | 2.0  |    | E273~<br>E275 |
|  | LPMT_040220R-MF  |        |      |            |        |        | ●      |        | ●      |        |          |        |                  | ●      | ●      |       | 6.4    | 4.2        | 2.6                    | 2.0  | 2.0  |   |               |
| LPMW<br>     | LPMW_040210R     |        |      |            |        |        | ●      | ●      |        |        |          |        |                  |        | ●      |       | 6.4    | 4.2        | 2.6                    | 1.0  | 2.0  |   | E273~<br>E275 |
|  | LPMW_040220R     |        |      |            |        |        | ●      | ●      |        |        |          |        |                  |        | ●      |       | 6.4    | 4.2        | 2.6                    | 2.0  | 2.0  |   |               |
| LXET-MA<br> | 250404PEFR-32-MA |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.775     | 4.76                   | 0.4  | 4.5  |  | E363~<br>E366 |
|  | 2504PEFR-32-MA   |        |      |            |        |        |        |        |        |        |          |        |                  |        | ●      |       | 25     | 10.775     | 4.76                   | 0.8  | 4.5  |   |               |
|  | 250412PEFR-32-MA |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.775     | 4.76                   | 1.2  | 4.5  |   |               |
|  | 250416PEFR-32-MA |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.775     | 4.76                   | 1.6  | 4.5  |   |               |
|  | 250404PEFR-40-MA |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.618     | 4.76                   | 0.4  | 4.5  |   |               |
|  | 2504PEFR-40-MA   |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.618     | 4.76                   | 0.8  | 4.5  |   |               |
|  | 250412PEFR-40-MA |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.618     | 4.76                   | 1.2  | 4.5  |   |               |
|  | 250416PEFR-40-MA |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.618     | 4.76                   | 1.6  | 4.5  |   |               |
|  | 340504PEFR-50-MA |        |      |            |        |        |        |        |        |        |          |        |                  |        | ●      |       | 34     | 13.765     | 5.56                   | 0.4  | 5.56 |   |               |
|  | 3405PEFR-50-MA   |        |      |            |        |        |        |        |        |        |          |        |                  |        | ●      |       | 34     | 13.765     | 5.56                   | 0.8  | 5.56 |   |               |
|  | 340512PEFR-50-MA |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 34     | 13.765     | 5.56                   | 1.2  | 5.56 |   |               |
|  | 340516PEFR-50-MA |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 34     | 13.765     | 5.56                   | 1.6  | 5.56 |   |               |
|  | 340504PEFR-63-MA |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 34     | 13.803     | 5.56                   | 0.4  | 5.56 |   |               |
| 3405PEFR-63-MA   |                  |        |      |            |        |        |        |        |        |        |          |        |                  | ●      |        | 34    | 13.803 | 5.56       | 0.8                    | 5.56 |      |   |               |
| 340512PEFR-63-MA   |                  |        |      |            |        |        |        |        |        |        |          |        |                  |        |        | 34    | 13.803 | 5.56       | 1.2                    | 5.56 |      |   |               |
| 340516PEFR-63-MA   |                  |        |      |            |        |        |        |        |        |        |          |        |                  |        |        | 34    | 13.803 | 5.56       | 1.6                    | 5.56 |      |   |               |
| LXET-ML<br> | 250404PEER-32-ML |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.775     | 4.76                   | 0.4  | 4.5  |  | E363~<br>E366 |
|  | 2504PEER-32-ML   |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.775     | 4.76                   | 0.8  | 4.5  |   |               |
|  | 250412PEER-32-ML |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.775     | 4.76                   | 1.2  | 4.5  |   |               |
|  | 250416PEER-32-ML |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.775     | 4.76                   | 1.6  | 4.5  |   |               |
|  | 250404PEER-40-ML |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.618     | 4.76                   | 0.4  | 4.5  |   |               |
|  | 2504PEER-40-ML   |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.618     | 4.76                   | 0.8  | 4.5  |   |               |
|  | 250412PEER-40-ML |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.618     | 4.76                   | 1.2  | 4.5  |   |               |
|  | 250416PEER-40-ML |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 25     | 10.618     | 4.76                   | 1.6  | 4.5  |   |               |
|  | 340504PEER-50-ML |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 34     | 13.765     | 5.56                   | 0.4  | 5.56 |   |               |
|  | 3405PEER-50-ML   |        |      |            |        |        |        |        |        |        |          |        |                  |        | ●      |       | 34     | 13.765     | 5.56                   | 0.8  | 5.56 |   |               |
|  | 340512PEER-50-ML |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 34     | 13.765     | 5.56                   | 1.2  | 5.56 |   |               |
|  | 340516PEER-50-ML |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 34     | 13.765     | 5.56                   | 1.6  | 5.56 |   |               |
|  | 340504PEER-63-ML |        |      |            |        |        |        |        |        |        |          |        |                  |        |        |       | 34     | 13.803     | 5.56                   | 0.4  | 5.56 |   |               |
| 3405PEER-63-ML   |                  |        |      |            |        |        |        |        |        |        |          |        |                  |        |        | 34    | 13.803 | 5.56       | 0.8                    | 5.56 |      |   |               |
| 340512PEER-63-ML   |                  |        |      |            |        |        |        |        |        |        |          |        |                  |        |        | 34    | 13.803 | 5.56       | 1.2                    | 5.56 |      |   |               |
| 340516PEER-63-ML   |                  |        |      |            |        |        |        |        |        |        |          |        |                  |        |        | 34    | 13.803 | 5.56       | 1.6                    | 5.56 |      |   |               |

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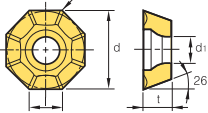

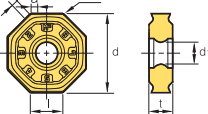

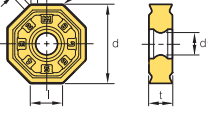

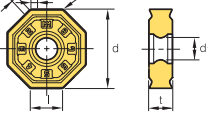

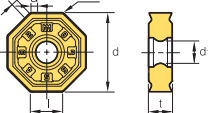

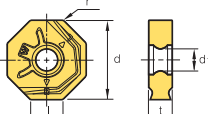

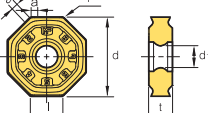
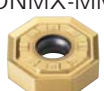
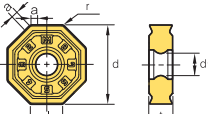

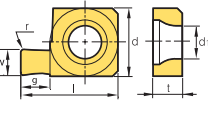
| Pieza Trabajo                           | Tipos de Maquinado |   |   |   |   |   |   |   |   |   |   |   |   |
|---|--------------------|---|---|---|---|---|---|---|---|---|---|---|---|
|   | P                  | M | K | N | S | H |   |   |   |   |   |   |   |
| Acero                                   | ●                  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Acero Inoxidable                        | ●                  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Fundición                               | ●                  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Metales No-Ferrosos                     | ●                  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Aleaciones Resist. al Calor, de Titanio | ●                  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Acero Endurecido                        | ●                  | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

| Insertos  | Codigo      | Cemet  |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. | Dimensiones (mm) |        |        |       |       | Geometrias | Herramienta Disponible |     |   |            |
|---|-------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------------------|--------|--------|-------|-------|------------|------------------------|-----|---|------------|
|   |             | CN2000 | CN30 | NCM325     | NCM335 | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3700 | PC6510 | PC9530 |          | PC9540           | PC5300 | PC5400 | ST30A | H01   |            |                        | l   | d   | t          |
|    | 090308      | ●      | ●    | ●          | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●                | ●      | ●      | 9.5   | 9.525 | 3.18       | 0.8                    | 4.5 |    |            |
|   | 120408      |        |      |            |        |        |        |        |        | ●      |        |        |        |          |                  |        |        | 12.7  | 12.7  | 4.76       | 0.8                    | 5.5 |   |            |
|    | 0704SN      |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 7.4   | 18    | 4.86       | 0.5                    | -   |    | E60        |
|   | 0704FN      |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 7.4   | 18    | 4.86       | 0.5                    | -   |   |            |
|   | 070408SN    |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 7.4   | 18    | 4.86       | 0.8                    | -   |   |            |
|   | 070408FN    |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 7.4   | 18    | 4.86       | 0.8                    | -   |   |            |
|   | 070408TN    |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 7.4   | 18    | 4.86       | 0.8                    | -   |   |            |
|   | 05T3SN      |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 5.2   | 12.7  | 3.85       | 0.5                    | 4.4 |   | E59        |
|   | 05T3FN      |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 5.2   | 12.7  | 3.85       | 0.5                    | 4.4 |   |            |
|   | 05T308FN    |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 5.2   | 12.7  | 3.85       | 0.8                    | 4.4 |   |            |
|  | 0704FN-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 7.4   | 18    | 4.76       | 0.5                    | -   |  | E60        |
|   | 0704EN-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 7.4   | 18    | 4.76       | 0.5                    | -   |   |            |
|  | 0704SN-MF   |        |      | ●          | ●      |        |        |        |        |        |        |        |        |          |                  |        |        | 7.4   | 18    | 4.76       | 0.5                    | -   |  | E60        |
|   | 070408SN-MF |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 7.4   | 18    | 4.76       | 0.8                    | -   |   |            |
|  | 0704SN-MM   |        |      | ●          | ●      |        |        |        |        |        | ●      | ●      | ●      |          | ●                |        |        | 7.4   | 18    | 4.76       | 0.5                    | -   |  | E60        |
|   | 070408SN-MM |        |      | ●          |        |        |        |        |        |        |        |        |        |          |                  |        |        | 7.4   | 18    | 4.76       | 0.8                    | -   |   |            |
|  | 05T3FN-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 5.2   | 12.7  | 3.97       | 0.5                    | 4.4 |  | E59<br>E60 |
|   | 05T3EN-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 5.2   | 12.7  | 3.97       | 0.5                    | 4.4 |   |            |
|   | 0704FN-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 7.4   | 18    | 4.76       | 0.5                    | 5.8 |   |            |
|   | 0704EN-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 7.4   | 18    | 4.76       | 0.5                    | 5.8 |   |            |
|  | 05T3SN-MF   |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 5.2   | 12.7  | 3.97       | 0.5                    | 4.4 |  | E59        |
|   | 05T308SN-MF |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | 5.2   | 12.7  | 3.97       | 0.8                    | 5.8 |   |            |

● : En Almacen

# E Listado insertos de fresado

| Pieza Trabajo | Acero                                   | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tipos de Maquinado<br>● Corte Continuo<br>● Corte en General<br>✳ Corte Interrumpido |  |
|---------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|
|               | Acero Inoxidable                        | M |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|               | Fundición                               | K |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|               | Metales No-Ferrosos                     | N |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|               | Aleaciones Resist. al Calor, de Titanio | S |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|               | Acero Endurecido                        | H |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |

| Insertos   | Codigo      | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec.<br>ST30A<br>H01 | Dimensiones (mm) |        |        |   |   |   |   |                | Geometrias | Herramienta Disponible |   |   |   |              |  |
|--|-------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------------------|------------------|--------|--------|---|---|---|---|----------------|------------|------------------------|---|---|---|--------------|--|
|  |             | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 |                          | PC9540           | PC5300 | PC5400 | l | d | t | r | d <sub>1</sub> |            |                        | a | W | g   |              |  |
| OFKT-MM<br>   | 05T3SN-MM   |        |      | ●          |        |        |        |        |        |        |        |        |        |                          |                  |        |        |   |   |   |   |                |            |                        |   |   |    | E59<br>E60   |  |
|  | 05T308SN-MM |        |      |            |        |        |        |        |        |        |        |        |        |                          |                  |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
|  | 0704SN-MM   |        |      |            |        |        |        |        |        |        |        |        |        |                          |                  |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
| ONHX-MF<br>   | 060608-MF   |        |      |            |        |        |        |        |        |        |        | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |    | E130<br>E131 |  |
|  | 080608-MF   |        |      |            |        |        |        |        |        |        |        | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
|  | 0606ANN-MF  |        |      |            |        |        |        |        |        |        |        | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
|  | 0806ANN-MF  |        |      |            |        |        |        |        |        |        |        | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
| ONHX-ML<br>   | 060608-ML   |        |      |            |        |        |        |        |        |        |        |        |        |                          |                  | ●      | ●      |   |   |   |   |                |            |                        |   |   |    | E130<br>E131 |  |
|  | 080608-ML   |        |      |            |        |        |        |        |        |        |        |        |        |                          |                  | ●      | ●      |   |   |   |   |                |            |                        |   |   |   |              |  |
| ONHX-MM<br>  | 060608-MM   |        |      |            |        |        |        |        |        |        |        | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   | E130<br>E131 |  |
|  | 080608-MM   |        |      |            |        |        |        |        |        |        |        | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
|  | 0606ANN-MM  |        |      |            |        |        |        |        |        |        |        | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
|  | 0806ANN-MM  |        |      |            |        |        |        |        |        |        |        | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
| ONHX-MA<br> | 060608-MA   |        |      |            |        |        |        |        |        |        |        |        |        |                          |                  | ●      | ●      |   |   |   |   |                |            |                        |   |   |  | E130<br>E131 |  |
|  | 080608-MA   |        |      |            |        |        |        |        |        |        |        |        |        |                          |                  | ●      | ●      |   |   |   |   |                |            |                        |   |   |   |              |  |
| ONHX-W<br>  | 060608-W    |        |      |            |        |        |        |        |        |        |        | ●      | ●      | ●                        |                  |        |        |   |   |   |   |                |            |                        |   |   |  | E130<br>E131 |  |
|  | 080608-W    |        |      |            |        |        |        |        |        |        |        | ●      | ●      | ●                        |                  |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
| ONMX-MF<br> | 060608-MF   |        |      |            | ●      |        |        |        |        |        | ●      | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |  | E130<br>E131 |  |
|  | 080608-MF   |        |      |            | ●      |        |        |        |        |        | ●      | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
|  | 0606ANN-MF  |        |      |            | ●      |        |        |        |        |        | ●      | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
|  | 0806ANN-MF  |        |      |            | ●      |        |        |        |        |        | ●      | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
| ONMX-MM<br> | 060608-MM   |        |      |            | ●      |        |        |        |        |        | ●      | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |  | E130<br>E131 |  |
|  | 080608-MM   |        |      |            | ●      |        |        |        |        |        | ●      | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
|  | 0606ANN-MM  |        |      |            | ●      |        |        |        |        |        | ●      | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
|  | 0806ANN-MM  |        |      |            | ●      |        |        |        |        |        | ●      | ●      |        | ●                        | ●                |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
| ORG<br>     | 265         |        |      |            |        |        |        |        |        |        |        |        |        |                          |                  |        |        |   |   |   |   |                |            |                        |   |   |  | E334         |  |
|  | 325         |        |      |            |        |        |        |        |        |        |        | ●      |        |                          |                  |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
|  | 405         |        |      |            |        |        |        |        |        |        |        |        |        |                          |                  |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |
|  | 470         |        |      |            |        |        |        |        |        |        |        |        |        |                          |                  |        |        |   |   |   |   |                |            |                        |   |   |   |              |  |

● : En Almacen


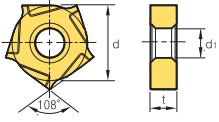
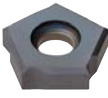
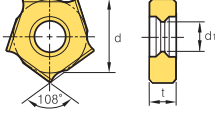

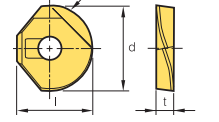

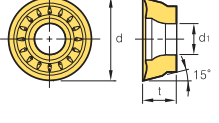

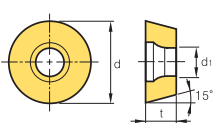

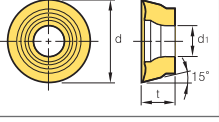




| Pieza Trabajo    | Acero                                   | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |  |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
|                  | Acero Inoxidable                        | M |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                  | Fundición                               | K |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                  | Metales No-Ferrosos                     | N |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                  | Aleaciones Resist. al Calor, de Titanio | S |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Acero Endurecido | H                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |

### Tipos de Maquinado

- Corte Continuo
- Corte en General
- ✳ Corte Interrumpido

| Insertos  | Codigo    | Cermet |      | Recubierto |        |        |        |        |        |        |        |        | Sin Rec. | Dimensiones (mm) |        |        |        |       |      | Geometrias | Herramienta Disponible |      |   |   |                                      |
|---|-----------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------------------|--------|--------|--------|-------|------|------------|------------------------|------|---|---|--------------------------------------|
|   |           | CN2000 | CN30 | NC5330     | NCM535 | NCM545 | PC2505 | PC2010 | PC210F | PC3600 | PC3700 | PC6510 |          | PC9530           | PC9540 | PC5300 | PC5400 | ST30A | H01  |            |                        | l    | d   | t   | r                                    |
| <b>PNEJ</b><br>      | 1223N     |        |      |            |        |        |        |        |        |        | ●      |        |          |                  |        |        |        | -     | 12.7 | 2.3        | -                      | 5.0  | 4.0   |  | E379<br>E380                         |
|   | 1225N     |        |      |            |        |        |        |        |        |        | ●      |        |          |                  |        |        |        | -     | 12.7 | 2.5        | -                      | 5.0  | 4.5   |   |                                      |
|   | 1230N     |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        |        | -     | 12.7 | 3.0        | -                      | 5.0  | 5.0   |   |                                      |
|   | 1235N     |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        |        | -     | 12.7 | 3.5        | -                      | 5.0  | 6.0   |   |                                      |
|   | 1240N     |        |      |            |        |        |        |        |        |        |        | ●      |          |                  |        |        |        | -     | 12.7 | 4.0        | -                      | 5.0  | 7.0   |   |                                      |
|   | 1245N     |        |      |            |        |        |        |        |        |        |        | ●      |          |                  |        |        |        | -     | 12.7 | 4.5        | -                      | 5.0  | 8.0   |   |                                      |
|   | 1250N     |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        |        | -     | 12.7 | 5.0        | -                      | 5.0  | 9.0   |   |                                      |
|   | 1255N     |        |      |            |        |        |        |        |        |        |        | ●      |          |                  |        |        |        | -     | 12.7 | 5.5        | -                      | 5.0  | 10.0  |   |                                      |
|   | 1260N     |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        |        | -     | 12.7 | 6.0        | -                      | 5.0  | 11.0  |   |                                      |
|   | 1265N     |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | ●      | -     | 12.7 | 6.5        | -                      | 5.0  | 12.0  |   |                                      |
|   | 1270N     |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        |        | -     | 12.7 | 7.0        | -                      | 5.0  | 13.0  |   |                                      |
|   | 1275N     |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        |        | -     | 12.7 | 7.5        | -                      | 5.0  | 14.0  |   |                                      |
|   | 1285N     |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        |        | -     | 12.7 | 8.5        | -                      | 5.0  | 16.0  |   |                                      |
| <b>PNEJ-C</b><br>   | 1223N-C03 |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 12.7  | 2.3  | -          | 5.0                    | 4.0  |    | E379<br>E380  |                                      |
|   | 1230N-C03 |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 12.7  | 3.0  | -          | 5.0                    | 5.0  |   |   |                                      |
|   | 1235N-C03 |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 12.7  | 3.5  | -          | 5.0                    | 6.0  |   |   |                                      |
|   | 1240N-C05 |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 12.7  | 4.0  | -          | 5.0                    | 7.0  |   |   |                                      |
|   | 1245N-C05 |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 12.7  | 4.5  | -          | 5.0                    | 8.0  |   |   |                                      |
|   | 1250N-C05 |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 12.7  | 5.0  | -          | 5.0                    | 9.0  |   |   |                                      |
|   | 1255N-C05 |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 12.7  | 5.5  | -          | 5.0                    | 10.0 |   |   |                                      |
|   | 1260N-C05 |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 12.7  | 6.0  | -          | 5.0                    | 11.0 |   |   |                                      |
|   | 1265N-C05 |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 12.7  | 6.5  | -          | 5.0                    | 12.0 |   |   |                                      |
| 1270N-C05   |           |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | -      | 12.7   | 7.0   | -    | 5.0        | 13.0                   |      |   |   |                                      |
| 1275N-C05   |           |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | -      | 12.7   | 7.5   | -    | 5.0        | 14.0                   |      |   |   |                                      |
| <b>RC</b><br>      | 16        |        |      |            |        |        |        |        |        |        | ●      |        |          |                  |        |        | 15.8   | 16    | 3.5  | 8          | -                      | -    |  | E323  |                                      |
|   | 20        |        |      |            |        |        |        |        |        |        | ●      |        |          |                  |        |        | 17.8   | 20    | 4    | 10         | -                      | -    |   |   |                                      |
|   | 25        |        |      |            |        |        |        |        |        |        | ●      |        |          |                  |        |        | 22.0   | 25    | 5    | 12.5       | -                      | -    |   |   |                                      |
|   | 30        |        |      |            |        |        |        |        |        |        | ●      |        |          |                  |        |        | 26.8   | 30    | 6    | 15         | -                      | -    |   |   |                                      |
|   | 32        |        |      |            |        |        |        |        |        |        | ●      |        |          |                  |        |        | 27.8   | 32    | 6    | 16         | -                      | -    |   |   |                                      |
| <b>RDCT-MA</b><br> | 10T3M0-MA |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | ●      | -      | 10    | 3.97 | -          | 3.85                   | -    |  | E234<br>E235<br>E240<br>E241<br>E246  |                                      |
|   | 1204M0-MA |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | ●      | -      | 12    | 4.76 | -          | 4.5                    | -    |   |   |                                      |
| <b>RDHW</b><br>    | 0501M0F   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 5     | 1.59 | -          | 2.3                    | -    |  | E238<br>E239<br>E244<br>E245  |                                      |
|   | 0501M0E   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | ●      | -      | 5     | 1.59 | -          | 2.3                    | -    |   |   |                                      |
|   | 0501M0S   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 5     | 1.59 | -          | 2.3                    | -    |   |   |                                      |
|   | 06T1M0F   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 6     | 1.98 | -          | 2.5                    | -    |   |   |                                      |
|   | 06T1M0E   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | ●      | -      | 6     | 1.98 | -          | 2.5                    | -    |   |   |                                      |
|   | 06T1M0S   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 6     | 1.98 | -          | 2.5                    | -    |   |   |                                      |
|   | 0702M0F   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 7     | 2.38 | -          | 2.8                    | -    |   |   |                                      |
|   | 0702M0E   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | ●      | -      | 7     | 2.38 | -          | 2.8                    | -    |   |   |                                      |
|   | 0702M0S   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 7     | 2.38 | -          | 2.8                    | -    |   |   |                                      |
|   | 0803M0F   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 8     | 3.18 | -          | 3.4                    | -    |   |   |                                      |
|   | 0803M0E   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | ●      | -      | 8     | 3.18 | -          | 3.4                    | -    |   |   |                                      |
|   | 0803M0S   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 8     | 3.18 | -          | 3.4                    | -    |   |   |                                      |
|   | 1605M0F   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 16    | 5.56 | -          | 5.5                    | -    |   |   | E236<br>E237<br>E242<br>E243<br>E246 |
|   | 1605M0E   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 16    | 5.56 | -          | 5.5                    | -    |   |   |                                      |
|   | 1605M0S   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 16    | 5.56 | -          | 5.5                    | -    |   |   |                                      |
|   | 2006M0F   |        |      |            |        |        |        |        |        |        |        |        |          |                  |        |        | -      | 20    | 6.35 | -          | 5.5                    | -    |   |   |                                      |
| 2006M0E   |           |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | -      | 20     | 6.35  | -    | 5.5        | -                      |      |   |   |                                      |
| 2006M0S   |           |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | -      | 20     | 6.35  | -    | 5.5        | -                      |      |   |   |                                      |
| <b>RDKT-MF</b><br> | 10T3M0-MF |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | ●      | -      | 10    | 3.97 | -          | 3.85                   | -    |  | E234<br>E235<br>E240<br>E241<br>E246  |                                      |
|   | 1204M0-MF |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | ●      | -      | 12    | 4.76 | -          | 4.5                    | -    |   |   |                                      |
|   | 1605M0-MF |        |      |            |        |        |        |        |        |        |        |        |          |                  |        | ●      | -      | 16    | 5.56 | -          | 5.5                    | -    |   |   |                                      |

● : En Almacen



# E Listado insertos de fresado

| Pieza Trabajo                           | Acero            | P |  |  |  |  |  |  |  |  |  |  |  |  | Tipos de Maquinado |  |
|---|------------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--------------------|--|
|   | Acero Inoxidable | M |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |
| Fundición                               | K                |   |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |
| Metales No-Ferrosos                     | N                |   |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |
| Aleaciones Resist. al Calor, de Titanio | S                |   |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |
| Acero Endurecido                        | H                |   |  |  |  |  |  |  |  |  |  |  |  |  |                    |  |

### Tipos de Maquinado

- Corte Continuo
- ⦿ Corte en General
- ✦ Corte Interumpido

| Insertos | Codigo     | Cemet  |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Dimensiones (mm) |     |   |      |      | Geometrias | Herramienta Disponible |   |                      |
|----------|------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------------------|-----|---|------|------|------------|------------------------|---|----------------------|
|          |            | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A            | H01 | l | d    | t    |            |                        | r | d <sub>1</sub>       |
| RDKT-ML  | 1605M0-ML  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     | - | 16   | 5.56 | -          | 5.5                    |   | E236<br>E242<br>E246 |
| RDKT-MM  | 10T3M0-MM  |        |      | ●          |        |        |        |        |        | ●      | ●      | ●      |        |          |        |                  |     | - | 10   | 3.97 | -          | 3.85                   |   | E234~                |
|          | 1204M0-MM  |        |      | ●          |        |        |        |        |        | ●      | ●      | ●      |        |          |        |                  |     | - | 12   | 4.76 | -          | 4.5                    |   | E237                 |
|          | 1605M0-MM  |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        |                  |     | - | 16   | 5.56 | -          | 5.5                    |   | E239~                |
|          | 2006M0-MM  |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        |                  |     | - | 20   | 6.35 | -          | 5.5                    |   | E246                 |
| RDKW     | 0501M0E    |        |      |            |        |        |        |        |        | ●      |        |        |        |          |        |                  |     | - | 5    | 1.59 | -          | 2.3                    |   | E238                 |
|          | 06T1M0E    |        |      |            |        |        |        |        |        | ●      |        |        |        |          |        |                  |     | - | 6    | 1.98 | -          | 2.5                    |   | E239                 |
|          | 0702M0E    |        |      |            |        |        |        |        |        | ●      |        |        |        |          |        |                  |     | - | 7    | 2.38 | -          | 2.8                    |   | E244                 |
|          | 0803M0E    |        |      |            |        |        |        |        |        | ●      |        |        |        |          |        |                  |     | - | 8    | 3.18 | -          | 3.4                    |   | E245                 |
| REKR-MM  | 170400-MM  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |                  |     | - | 17.8 | 4.76 | -          | -                      |   | E60                  |
| RPCT-MA  | 10T3M0-MA  |        |      |            |        |        |        |        |        |        |        |        |        |          |        | ●                |     | - | 10   | 3.97 | -          | 4.0                    |   | E248~                |
|          | 1204M0-MA  |        |      |            |        |        |        |        |        |        |        |        |        |          |        | ●                |     | - | 12   | 4.76 | -          | 4.5                    |   | E259                 |
|          | 1606M0-MA  |        |      |            |        |        |        |        |        |        |        |        |        |          |        | ●                |     | - | 16   | 6.35 | -          | 5.5                    |   |                      |
|          | 2007M0-MA  |        |      |            |        |        |        |        |        |        |        |        |        |          |        | ●                |     | - | 20   | 7.00 | -          | 7.0                    |   |                      |
| RPMT-MF  | 0803M0E-MF |        |      |            |        |        |        |        |        | ●      |        |        |        |          |        | ●                | ●   | - | 8    | 3.18 | -          | 3.4                    |   | E248~                |
|          | 10T3M0E-MF |        |      |            |        |        |        |        |        | ●      |        |        |        |          |        | ●                | ●   | - | 10   | 3.97 | -          | 4.0                    |   | E259                 |
|          | 1204M0E-MF |        |      |            |        |        |        |        |        | ●      |        |        |        |          |        | ●                | ●   | - | 12   | 4.76 | -          | 4.5                    |   |                      |
|          | 1606M0E-MF |        |      |            |        |        |        |        |        | ●      |        |        |        |          |        | ●                | ●   | - | 16   | 6.35 | -          | 5.5                    |   |                      |
|          | 2007M0E-MF |        |      |            |        |        |        |        |        | ●      |        |        |        |          |        | ●                | ●   | - | 20   | 7.00 | -          | 7.0                    |   |                      |
| RPET-ML  | 0803M0E-ML |        |      |            |        |        |        |        |        |        |        |        |        |          |        | ●                | ●   | - | 8    | 3.18 | -          | 3.4                    |   | E248~                |
|          | 10T3M0E-ML |        |      |            |        |        |        |        |        |        |        |        |        |          |        | ●                | ●   | - | 10   | 3.97 | -          | 4.0                    |   | E259                 |
|          | 1204M0E-ML |        |      |            |        |        |        |        |        |        |        |        |        |          |        | ●                | ●   | - | 12   | 4.76 | -          | 4.5                    |   |                      |
|          | 1606M0E-ML |        |      |            |        |        |        |        |        |        |        |        |        |          |        | ●                | ●   | - | 16   | 6.35 | -          | 5.5                    |   |                      |
|          | 2007M0E-ML |        |      |            |        |        |        |        |        |        |        |        |        |          |        | ●                | ●   | - | 20   | 7.00 | -          | 7.0                    |   |                      |
| RPMT-MM  | 0803M0S-MM |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        | ●                | ●   | - | 8    | 3.18 | -          | 3.4                    |   | E248~                |
|          | 10T3M0S-MM |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        | ●                | ●   | - | 10   | 3.97 | -          | 4.0                    |   | E259                 |
|          | 1204M0S-MM |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        | ●                | ●   | - | 12   | 4.76 | -          | 4.5                    |   |                      |
|          | 1606M0S-MM |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        | ●                | ●   | - | 16   | 6.35 | -          | 5.5                    |   |                      |
|          | 2007M0S-MM |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        | ●                | ●   | - | 20   | 7.00 | -          | 7.0                    |   |                      |
| RPMW     | 0803M0E1   |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        | ●                | ●   | - | 8    | 3.18 | -          | 3.4                    |   | E248~                |
|          | 10T3M0E1   |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        | ●                | ●   | - | 10   | 3.97 | -          | 4.0                    |   | E259                 |
|          | 1204M0S1   |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        | ●                | ●   | - | 12   | 4.76 | -          | 4.5                    |   |                      |
|          | 1204M0S2   |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        | ●                | ●   | - | 12   | 4.76 | -          | 4.5                    |   |                      |
|          | 1606M0S1   |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        | ●                | ●   | - | 16   | 6.35 | -          | 5.5                    |   |                      |
|          | 2007M0S1   |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          |        | ●                | ●   | - | 20   | 7.00 | -          | 7.0                    |   |                      |


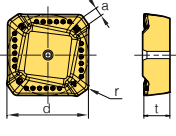

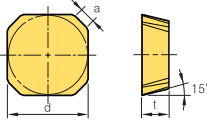

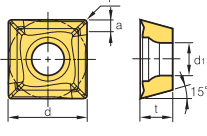

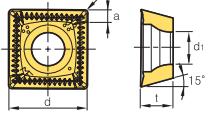

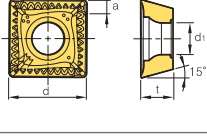

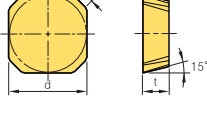
● : En Almacen



| Pieza Trabajo | Acero                                   | <b>P</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |   |   |   |   |   |   |   |   |
|---------------|---|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|               | Acero Inoxidable                        | <b>M</b> |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|               | Fundición                               | <b>K</b> |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|               | Metales No-Ferrosos                     | <b>N</b> |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|               | Aleaciones Resist. al Calor, de Titanio | <b>S</b> |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|               | Acero Endurecido                        | <b>H</b> |   | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

**Tipos de Maquinado**

- Corte Continuo
- Corte en General
- ✱ Corte Intermitente

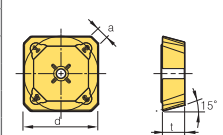
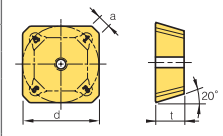
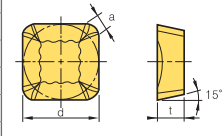
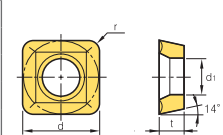
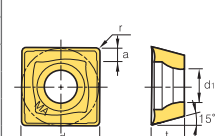
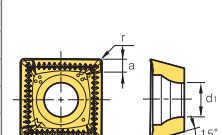
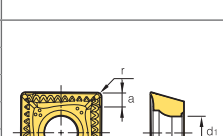
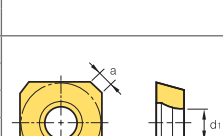
| Insertos   | Codigo        | Cermet |      | Recubierto |        |        |        |        |        |        | Sin Rec. |        |        |        | Dimensiones (mm) |     |     |        |        |       | Geometrias | Herramienta Disponible |      |   |                          |
|--|---------------|--------|------|------------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|------------------|-----|-----|--------|--------|-------|------------|------------------------|------|---|--------------------------|
|  |               | CN2000 | CN30 | NCM325     | NCM335 | NCM535 | NCM545 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PD2000 | PD1010 | ST30A            | G10 | H01 | H05    | l      | d     |            |                        | t    | r   | d1                       |
| SCKN<br>      | 220715DDSR-MM |        |      | ●          |        |        |        | ●      |        |        |          |        |        |        |                  |     |     | -      | 22.0   | 7.0   | 1.5        | -                      | 2.5  |    | E55                      |
|  | 280920DDSR-MM |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 28.0   | 9.0   | 2.0        | -                      | 3.0  |   |                          |
| SDCN<br>     | 42M           |        |      |            |        |        |        |        |        |        |          |        |        | ●      |                  |     |     | -      | 12.7   | 3.18  | -          | -                      | 1.5  | <br><br>● Geometría del filo de corte<br>- G: corte ligero y filo agudo<br>- S20: STS (inoxidable)<br>- RH: filo fortalecido<br><br>● Sub-geometría del filo de corte<br>- M: AEFN<br>- MT: AETN | E44<br>E45<br>E56<br>E57 |
|  | 42M-G         |        |      |            |        |        |        |        |        |        |          |        |        | ●      |                  |     |     | -      | 12.7   | 3.18  | -          | -                      | 1.5  |   |                          |
|  | 42MT          | ●      | ●    |            |        | ●      |        |        |        |        |          |        |        | ●      |                  |     |     | -      | 12.7   | 3.18  | -          | -                      | 1.5  |   |                          |
|  | 42MT-RH       |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 12.7   | 3.18  | -          | -                      | 1.5  |   |                          |
|  | 42MT-S20      |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 12.7   | 3.18  | -          | -                      | 1.5  |   |                          |
|  | 53M           |        |      |            |        |        |        |        |        |        |          |        |        | ●      |                  |     |     | -      | 15.875 | 4.76  | -          | -                      | 1.5  |   |                          |
|  | 53M-G         |        |      |            |        |        |        |        |        |        |          |        |        | ●      |                  |     |     | -      | 15.875 | 4.76  | -          | -                      | 1.5  |   |                          |
|  | 53MT          | ●      | ●    |            |        |        |        |        |        |        |          |        |        | ●      |                  |     |     | -      | 15.875 | 4.76  | -          | -                      | 1.5  |   |                          |
|  | 53MT-RH       |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 15.875 | 4.76  | -          | -                      | 1.5  |   |                          |
|  | 53MT-S20      |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 15.875 | 4.76  | -          | -                      | 1.5  |   |                          |
|  | 1203AEEN      |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 12.7   | 3.18  | -          | -                      | 1.5  |   |                          |
|  | 1203AEEN-RH   |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 12.7   | 3.18  | -          | -                      | 1.43 |   |                          |
|  | 1203AESN      |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 12.7   | 3.18  | -          | -                      | 1.5  |   |                          |
|  | 1203AESN-RH   |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 12.7   | 3.18  | -          | -                      | 1.43 |   |                          |
|  | 1504AEEN      |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 15.875 | 4.76  | -          | -                      | 1.5  |   |                          |
| 1504AEEN-RH  |               |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     | -   | 15.875 | 4.76   | -     | -          | 1.43                   |      |   |                          |
| 1504AESN   |               |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     | -   | 15.875 | 4.76   | -     | -          | 1.5                    |      |   |                          |
| 1504AESN-RH  |               |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     | -   | 15.875 | 4.76   | -     | -          | 1.43                   |      |   |                          |
| SDET-MA<br> | 09M402R-MA    |        |      |            |        |        |        |        |        |        |          |        |        | ●      |                  |     |     | -      | 9.525  | 3.923 | 0.2        | 4.0                    | 1.2  |    | E228~<br>E233            |
|  | 09M404R-MA    |        |      |            |        |        |        |        |        |        |          |        |        | ●      |                  |     |     | -      | 9.525  | 3.923 | 0.4        | 4.0                    | 1.2  |   |                          |
|  | 09M405R-MA    |        |      |            |        |        |        |        |        |        |          |        |        | ●      |                  |     |     | -      | 9.525  | 3.923 | 0.5        | 4.0                    | 1.2  |   |                          |
|  | 130504R-MA    |        |      |            |        |        |        |        |        |        |          |        |        | ●      |                  |     |     | -      | 13.5   | 5.56  | 0.4        | 5.56                   | 2.2  |   |                          |
| SDET-MF<br> | 09M405R-MF    |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 9.525  | 4     | 0.5        | 4                      | 1.2  |    | E228~<br>E233            |
|  | 130508R-MF    |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 13.5   | 5.56  | 0.8        | 5.56                   | 2.2  |   |                          |
| SDET-MM<br> | 09M405R-MM    |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 9.525  | 4     | 0.5        | 4                      | 1.2  |    | E228~<br>E233            |
|  | 130508R-MM    |        |      |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 13.5   | 5.56  | 0.8        | 5.56                   | 2.2  |   |                          |
| SDKN-CM<br> | 42MT-CM       |        | ●    |            |        |        |        |        |        |        |          |        |        |        |                  |     |     | -      | 12.7   | 3.18  | -          | -                      | 1.5  |    | -                        |

● : En Almacen



# E Listado insertos de fresado


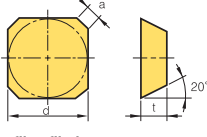

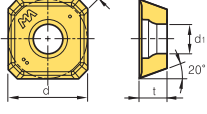

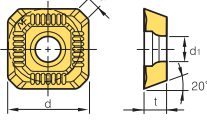

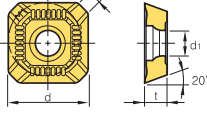
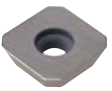
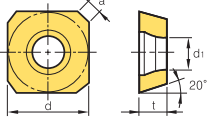
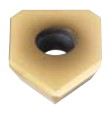
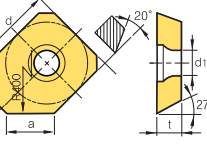
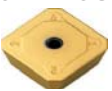
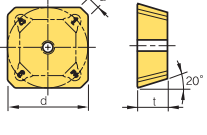
| Pieza Trabajo                           | Acero            | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tipos de Maquinado   |
|---|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
|   | Acero Inoxidable | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |  |
| Fundición                               | K                | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● Corte Continuo<br>● Corte en General<br>✱ Corte Interrumpido |
| Metales No-Ferrosos                     | N                | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |  |
| Aleaciones Resist. al Calor, de Titanio | S                | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |  |
| Acero Endurecido                        | H                | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |  |

| Insertos | Codigo      | Cermet |      | Recubierto |        |        |        |        |        |        |        | Sin Rec. |        |        | Dimensiones (mm) |       |     |     |        |      | Geometrias | Herramienta Disponible |      |   |                          |
|----------|-------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------------------|-------|-----|-----|--------|------|------------|------------------------|------|---|--------------------------|
|          |             | CN2000 | CN30 | NCM325     | NCM335 | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510 | PC9530   | PC9540 | PC5300 | PC5400           | ST30A | H01 | H05 | l      | d    |            |                        | t    | r   | d1                       |
| SDKN-MU  | 1203AESN-MU | ●      |      |            |        |        |        |        |        | ●      |        |          |        |        |                  |       |     | -   | 12.7   | 3.18 | -          | -                      | 2.08 |    | E44<br>E45<br>E50<br>E51 |
|          | 1504AESN-MU | ●      |      |            |        |        |        |        |        | ●      |        |          |        |        |                  |       |     | -   | 15.875 | 4.76 | -          | -                      | 2.10 |   |                          |
| SDKN-SU  | 1203AESN-SU | ●      |      |            |        |        |        |        |        | ●      | ●      |          |        | ●      | ●                |       |     | -   | 12.7   | 3.18 | -          | -                      | 2.08 |    | E44<br>E45<br>E50<br>E51 |
|          | 1504AESN-SU | ●      |      |            |        |        |        |        |        | ●      | ●      |          |        | ●      | ●                |       |     | -   | 15.875 | 4.76 | -          | -                      | 2.10 |   |                          |
| SDKR-MX  | 1203AESN-MX | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 12.7   | 3.18 | -          | -                      | 1.46 |   | E44<br>E45<br>E50<br>E51 |
|          | 1203AETN-MX | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 12.7   | 3.18 | -          | -                      | 1.46 |   |                          |
|          | 1203AEN-MX  | ●      |      | ●          |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 12.7   | 3.18 | -          | -                      | 1.46 |   |                          |
|          | 1504AESN-MX | ●      |      |            | ●      |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 15.875 | 4.76 | -          | -                      | 1.45 |   |                          |
|          | 1504AETN-MX | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 15.875 | 4.76 | -          | -                      | 1.45 |   |                          |
|          | 1504AEN-MX  | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 15.875 | 4.76 | -          | -                      | 1.45 |   |                          |
| SDMT-MM  | 090308-MM   | ●      |      |            |        |        |        |        |        | ●      |        |          |        | ●      |                  |       |     | -   | 9.525  | 3.18 | 0.8        | 4.4                    | -    |  | E299<br>E327             |
| SDXT-MA  | 09M405R-MA  | ●      |      |            |        |        |        |        |        |        |        |          |        |        | ●                | ●     |     | -   | 9.525  | 4.0  | 0.5        | 4.0                    | 1.2  |  | E228~<br>E233            |
|          | 130508R-MA  | ●      |      |            |        |        |        |        |        |        |        |          |        |        | ●                | ●     |     | -   | 13.5   | 5.56 | 0.8        | 5.56                   | 2.2  |   |                          |
| SDXT-MF  | 09M403R-MF  | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 9.525  | 4.0  | 0.3        | 4.0                    | 1.2  |  | E228~<br>E233            |
|          | 09M403L-MF  | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 9.525  | 4.0  | 0.3        | 4.0                    | 1.2  |   |                          |
|          | 09M404R-MF  | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 9.525  | 4.0  | 0.4        | 4.0                    | 1.2  |   |                          |
|          | 09M404L-MF  | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 9.525  | 4.0  | 0.4        | 4.0                    | 1.2  |   |                          |
|          | 09M405R-MF  | ●      |      | ●          |        |        |        |        |        | ●      | ●      | ●        | ●      | ●      | ●                | ●     |     | -   | 9.525  | 4.0  | 0.5        | 4.0                    | 1.2  |   |                          |
|          | 09M405L-MF  | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 9.525  | 4.0  | 0.5        | 4.0                    | 1.2  |   |                          |
|          | 130508R-MF  | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 13.5   | 5.56 | 0.8        | 5.56                   | 2.2  |   |                          |
| SDXT-MM  | 09M405R-MM  | ●      |      | ●          |        |        |        |        |        | ●      | ●      | ●        | ●      | ●      | ●                |       |     | -   | 9.525  | 4.0  | 0.5        | 4.0                    | 1.2  |  | E228~<br>E233            |
|          | 09M405L-MM  | ●      |      |            |        |        |        |        |        | ●      | ●      |          |        |        |                  |       |     | -   | 9.525  | 4.0  | 0.5        | 4.0                    | 1.2  |   |                          |
|          | 130508R-MM  | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 13.5   | 5.56 | 0.8        | 5.56                   | 2.2  |   |                          |
|          | 130508L-MM  | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 13.5   | 5.56 | 0.8        | 5.56                   | 2.2  |   |                          |
|          | 130538-MM   | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 13.5   | 5.56 | 3.8        | 5.56                   | 2.2  |   |                          |
| SECA     | 1204AFSN    | ●      |      | ●          |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 12.7   | 4.76 | -          | 5.56                   | 2.66 |  | -                        |
|          | 1204AFTN    | ●      |      |            |        |        |        |        |        | ●      | ●      |          |        |        |                  |       |     | -   | 12.7   | 4.76 | -          | 5.56                   | 2.66 |   |                          |
|          | 1204AFFN    | ●      |      |            |        |        |        |        |        |        | ●      | ●        |        |        |                  |       |     | -   | 12.7   | 4.76 | -          | 5.56                   | 2.66 |   |                          |
|          | 1204AFEN    | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 12.7   | 4.76 | -          | 5.56                   | 2.66 |   |                          |
|          | 1504AFSN    | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 15.875 | 4.76 | -          | 5.5                    | 2.8  |   |                          |
|          | 1504AFTN    | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 15.875 | 4.76 | -          | 5.5                    | 2.8  |   |                          |
|          | 1504AFFN    | ●      |      |            |        |        |        |        |        |        |        |          |        |        |                  |       |     | -   | 15.875 | 4.76 | -          | 5.5                    | 2.8  |   |                          |

● : En Almacen



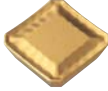
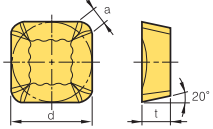

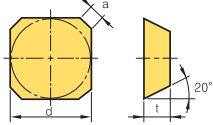

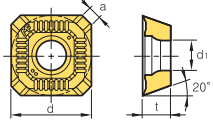

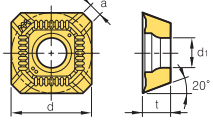

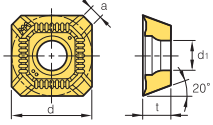

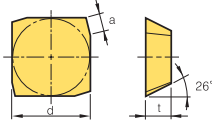

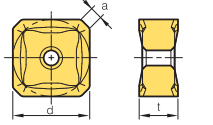

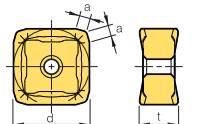
| Pieza Trabajo    | Acero                                   | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tipos de Maquinado     |  |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------------------------|--|
|                  | Acero Inoxidable                        | M |   |   |   |   |   |   |   |   |   |   |   |   | ● Corte Continuo       |  |
|                  | Fundición                               | K |   |   |   |   |   |   |   |   |   |   |   |   | ●● Corte en General    |  |
|                  | Metales No-Ferrosos                     | N |   |   |   |   |   |   |   |   |   |   |   |   | ●●● Corte Interrumpido |  |
|                  | Aleaciones Resist. al Calor, de Titanio | S |   |   |   |   |   |   |   |   |   |   |   |   |                        |  |
| Acero Endurecido | H                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |                        |  |

| Insertos  | Codigo       | Cermet |      | Recubierto |        |        |        |        |        |        |        | Sin Rec. |        |        | Dimensiones (mm) |     |     |     |        |        | Geometrias | Herramienta Disponible |      |   |  |            |
|---|--------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------------------|-----|-----|-----|--------|--------|------------|------------------------|------|---|--|------------|
|   |              | CN2000 | CN30 | NCM325     | NCM335 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | PD2000 | PD1010 | ST30A            | G10 | H01 | H05 | l      | d      |            |                        | t    | r   | d <sub>1</sub>   | a          |
|    | 1203AFFN     |        | ●    |            |        |        |        |        |        |        |        |          |        |        | ●                | ●   |     | -   | 12.7   | 3.18   | -          | -                      | -    | 2.36  |  <p>● filo afilado<br/>- S20: STS<br/>- RH: Filo fortalecido, STS</p> | E46<br>E47 |
|   | 1203AFTN     | ●      | ●    |            |        |        |        |        |        |        |        |          |        |        | ●                |     |     | -   | 12.7   | 3.18   | -          | -                      | -    | 2.36  |  |            |
|   | 1203AFEN     |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     | -   | 12.7   | 3.18   | -          | -                      | -    | 2.36  |  |            |
|   | 1203AFSN     |        |      | ●          | ●      |        |        |        |        |        |        |          |        |        |                  |     |     |     | -      | 12.7   | 3.18       | -                      | -    | -   |  | 2.36       |
|   | 1203AFEN-RH  |        |      |            |        |        |        |        | ●      |        |        |          |        |        |                  |     |     |     | -      | 12.7   | 3.18       | -                      | -    | -   |  | 2.36       |
|   | 1203AFSN-RH  |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     |     | -      | 12.7   | 3.18       | -                      | -    | -   |  | 2.36       |
|   | 1203AFTN-S20 |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     |     | -      | 12.7   | 3.18       | -                      | -    | -   |  | 2.36       |
|   | 1504AFFN     |        |      |            |        |        |        |        |        |        |        |          |        |        |                  | ●   |     |     | -      | 15.875 | 4.76       | -                      | -    | -   |  | 2.4        |
|   | 1504AFTN     |        | ●    |            |        |        |        |        |        |        |        |          |        |        |                  |     |     |     | -      | 15.875 | 4.76       | -                      | -    | -   |  | 2.4        |
|   | 1504AFEN     |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     |     | -      | 15.875 | 4.76       | -                      | -    | -   |  | 2.4        |
|   | 1504AFSN     |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     |     | -      | 15.875 | 4.76       | -                      | -    | -   |  | 2.4        |
|   | 1504AFEN-RH  |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     |     | -      | 15.875 | 4.76       | -                      | -    | -   |  | 2.4        |
|   | 1504AFSN-RH  |        |      |            |        |        |        |        |        | ●      |        |          |        |        |                  |     |     |     | -      | 15.875 | 4.76       | -                      | -    | -   |  | 2.4        |
|   | 1504AFTN-S20 |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     |     | -      | 15.875 | 4.76       | -                      | -    | -   |  | 2.4        |
|  | 0903AGFN-MA  |        |      |            |        |        |        |        |        |        |        |          |        |        | ●                | ●   |     | -   | 9.525  | 3.18   | -          | 3.4                    | 2.11 |  | E222~<br>E227  |            |
|   | 14M4AGFN-MA  |        |      |            |        |        |        |        |        |        |        |          |        |        | ●                | ●   |     | -   | 14.0   | 4.0    | -          | 4.4                    | 2.64 |   |  |            |
|  | 0903AGSN-MF  |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     | -   | 9.525  | 3.18   | -          | 3.4                    | 2.11 |  | E222~<br>E227  |            |
|   | 14M4AGSN-MF  |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     | -   | 14.0   | 4.0    | -          | 4.4                    | 2.64 |   |  |            |
|  | 0903AGSN-MM  |        |      | ●          |        |        |        |        |        |        |        |          |        |        |                  |     |     | -   | 9.525  | 3.18   | -          | 3.4                    | 2.11 |  | E222~<br>E227  |            |
|   | 14M4AGSN-MM  |        |      | ●          |        |        |        |        |        |        |        |          |        |        |                  |     |     | -   | 14.0   | 4.0    | -          | 4.4                    | 2.64 |   |  |            |
|  | 0903AGTN     |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     | -   | 9.525  | 3.18   | -          | 3.4                    | 2.11 |  | E222~<br>E227  |            |
|   | 14M4AGTN     |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     | -   | 14.0   | 4.0    | -          | 4.4                    | 2.64 |   |  |            |
|  | 14M4AGFN-W   |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     | -   | 14.0   | 4.0    | -          | 4.4                    | 8.5  |  | E223<br>E225<br>E227   |            |
|   | 14M4AGSN-W   |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     | -   | 14.0   | 4.0    | -          | 4.4                    | 8.5  |   |  |            |
|   | 14M4AGTN-W   |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     | -   | 14.0   | 4.0    | -          | 4.4                    | 8.5  |   |  |            |
|  | 1203AFSN-SU  |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     | -   | 12.7   | 3.18   | -          | -                      | 1.98 |  | E46<br>E47   |            |
|   | 1504AFSN-SU  |        |      |            |        |        |        |        |        |        |        |          |        |        |                  |     |     | -   | 15.875 | 4.76   | -          | -                      | 2.04 |   |  |            |

● : En Almacen

# E Listado insertos de fresado

| Pieza Trabajo    | Acero                                   | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tipos de Maquinado<br>● Corte Continuo<br>● Corte en General<br>● Corte Interrumpido |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
|                  | Acero Inoxidable                        | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |  |
|                  | Fundición                               | K | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |  |
|                  | Metales No-Ferrosos                     | N |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                  | Aleaciones Resist. al Calor, de Titanio | S |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Acero Endurecido | H                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |

| Insertos  | Codigo          | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. | Dimensiones (mm) |        |        |       |     | Geometrias | Herramienta Disponible |     |      |   |               |
|---|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------------------|--------|--------|-------|-----|------------|------------------------|-----|------|---|---------------|
|   |                 | CN2000 | CN30 | NCM325     | NCM335 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 |          | PC9540           | PC5300 | PC5400 | ST30A | H01 |            |                        | l   | d    | t   | d1            |
| SEKR-MX<br>      | 1203AFSN-MX     |        |      | ●          | ●      |        |        |        |        |        |        |        |        |          |                  |        |        |       | -   | 12.7       | 3.18                   | -   | 2.3  |    | E46<br>E47    |
|   | 1504AFSN-MX     |        |      | ●          |        |        |        |        |        |        |        |        | ●      |          |                  |        |        |       | -   | 15.875     | 4.76                   | -   | 2.4  |   |               |
| SEMN<br>         | 1204AZ          |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        |       | -   | 12.7       | 4.76                   | -   | 2.0  |    | -             |
| SEXT-MF<br>     | 0903AGSN-MF     |        |      |            |        |        |        |        |        |        |        |        | ●      | ●        |                  |        | ●      | ●     | -   | 9.525      | 3.18                   | 3.4 | 2.11 |   | E222~<br>E227 |
|   | 14M4AGSN-MF     |        |      |            |        |        |        |        |        |        |        |        | ●      | ●        |                  |        | ●      | ●     | -   | 14.0       | 4.0                    | 4.4 | 2.64 |   |               |
| SEXT-MM<br>    | 0903AGSN-MM     |        |      |            |        |        |        |        |        |        |        |        | ●      | ●        | ●                |        | ●      | ●     | -   | 9.525      | 3.18                   | 3.4 | 2.11 |  | E222~<br>E227 |
|   | 14M4AGSN-MM     |        |      | ●          |        |        |        |        |        |        |        |        | ●      | ●        | ●                |        | ●      | ●     | -   | 14.0       | 4.0                    | 4.4 | 2.64 |   |               |
| SEXT-MR<br>    | 0903AGSN-MR     |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        | ●      | ●     | -   | 9.525      | 3.18                   | 3.4 | 2.11 |  | E222~<br>E227 |
|   | 14M4AGSN-MR     |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        | ●      | ●     | -   | 14.0       | 4.0                    | 4.4 | 2.64 |   |               |
| SFCN<br>       | 1203EFR         |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        | ●     | -   | 12.7       | 3.18                   | -   | 2.5  |  | E48           |
| SNC(M)F-MF<br> | SNCF 1206ANN-MF |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        |       | -   | 12.7       | 6.6                    | -   | 2.0  |  | E125<br>E126  |
|   | 1507ANN-MF      |        |      |            |        |        |        |        |        |        |        |        | ●      |          |                  |        |        |       | -   | 15.875     | 7.35                   | -   | 2.1  |   |               |
|   | SNMF 1206ANN-MF |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        |       | -   | 12.7       | 6.6                    | -   | 2.0  |   |               |
|   | 1507ANN-MF      |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        |       | -   | 15.875     | 7.35                   | -   | 2.1  |   |               |
| SNC(M)F-MF<br> | SNCF 1206ENN-MF |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        |       | -   | 12.7       | 6.6                    | -   | 1.8  |  | E127<br>E128  |
|   | 1507ENN-MF      |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        |       | -   | 15.875     | 7.35                   | -   | 1.8  |   |               |
|   | SNMF 1206ENN-MF |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        |       | -   | 12.7       | 6.6                    | -   | 1.8  |   |               |
|   | 1507ENN-MF      |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |        |       | -   | 15.875     | 7.35                   | -   | 1.8  |   |               |

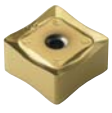
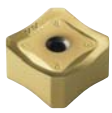
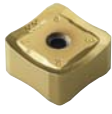
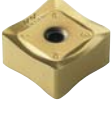




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| Pieza Trabajo | Acero                                   | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|---------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|               | Acero Inoxidable                        | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|               | Fundición                               | K | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|               | Metales No-Ferrosos                     | N | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|               | Aleaciones Resist. al Calor, de Titanio | S | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|               | Acero Endurecido                        | H | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

**Tipos de Maquinado**

- Corte Continuo
- Corte en General
- \* Corte Interrumpido

| Insertos  | Codigo          | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. | Dimensiones (mm) |        |       |     |        |        |      | Geometrias | Herramienta Disponible |     |                |   |              |
|---|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------------------|--------|-------|-----|--------|--------|------|------------|------------------------|-----|----------------|---|--------------|
|   |                 | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300           | PC5400 | ST30A | H01 | l      | d      | t    |            |                        | r   | d <sub>1</sub> | a | b            |
| SNC(M)F-MF<br>   | SNCF 1206QNN-MF |        |      |            |        |        |        |        |        |        |        | ●      |        |          |                  |        |       | -   | 12.7   | 6.6    | 0.8  | -          | 1                      | -   |                |   | E127         |
|   | SNMF 1206QNN-MF |        |      |            |        |        |        |        |        |        |        | ●      |        |          |                  |        |       | -   | 12.7   | 6.6    | 0.8  | -          | 1                      | -   |                |   |              |
| SNC(M)F-MM<br>   | SNCF 1206ANN-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |       | -   | 12.7   | 6.6    | -    | -          | 2                      | -   |                |   | E125<br>E126 |
|   | 1507ANN-MM      |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |       | -   | 15.875 | 7.35   | -    | -          | 2.1                    | -   |                |   |              |
|   | SNMF 1206ANN-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |       | -   | 12.7   | 6.6    | -    | -          | 2                      | -   |                |   |              |
|   | 1507ANN-MM      |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |       | -   | 15.875 | 7.35   | -    | -          | 2.1                    | -   |                |   |              |
| SNC(M)F-MM<br>  | SNCF 1206ENN-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |       | -   | 12.7   | 6.6    | -    | -          | 1.8                    | -   |                |   | E127<br>E128 |
|   | 1507ENN-MM      |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |       | -   | 15.875 | 7.35   | -    | -          | 1.8                    | -   |                |   |              |
|   | SNMF 1206ENN-MM |        |      |            |        |        |        |        |        |        |        | ●      |        |          |                  |        |       | -   | 12.7   | 6.6    | -    | -          | 1.8                    | -   |                |   |              |
|   | 1507ENN-MM      |        |      |            |        |        |        |        |        |        |        | ●      |        |          |                  |        |       | -   | 15.875 | 7.35   | -    | -          | 1.8                    | -   |                |   |              |
| SNC(M)F-MM<br> | SNCF 1206QNN-MM |        |      |            |        |        |        |        |        |        |        | ●      |        |          |                  |        |       | -   | 12.7   | 6.6    | 0.8  | -          | 1                      | -   |                |   | E129         |
|   | SNMF 1206QNN-MM |        |      |            |        |        |        |        |        |        |        | ●      |        |          |                  |        |       | -   | 12.7   | 6.6    | 0.8  | -          | 1                      | -   |                |   |              |
| SNCN<br>       | 1204ENN         |        |      | ●          |        |        |        |        |        |        |        |        |        |          |                  |        | ●     | -   | 12.7   | 4.76   | -    | -          | 1.4                    | 1.0 |                |   | E49          |
|   | 1504ENN         |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |       | ●   | -      | 15.875 | 4.76 | -          | -                      | 1.4 | 1.0            |   |              |
| SNEF<br>       | 435             |        |      |            |        |        |        |        |        |        |        | ●      |        |          |                  |        |       | -   | 12.7   | 4.76   | 2.0  | -          | -                      | -   |                |   | E395         |
|   | 535             |        |      |            |        |        |        |        |        |        |        | ●      |        |          |                  |        |       | -   | 15.875 | 4.76   | 2.0  | -          | -                      | -   |                |   |              |
| SNEU-MF<br>    | 120420-MF       |        |      |            |        |        |        |        |        |        |        | ●      |        |          |                  |        |       | -   | 12.7   | 4.76   | 2.0  | 5.7        | (2.3)                  | -   |                |   | E397         |
|   |                 |        |      |            |        |        |        |        |        |        |        | ●      |        |          |                  |        |       | -   | 12.7   | 4.76   | 2.0  | 5.7        | (2.3)                  | -   |                |   |              |
| SNEU-MF<br>    | 1204ANN-MF      |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |       | -   | 12.7   | 4.76   | -    | 5.7        | (2.0)                  | -   |                |   | E397         |
|   |                 |        |      |            |        |        |        |        |        |        |        |        |        |          |                  |        |       | -   | 12.7   | 4.76   | -    | 5.7        | (2.0)                  | -   |                |   |              |

● : En Almacen

# E Listado insertos de fresado

| Pieza Trabajo    | Acero                                   | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |  |   |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|---|
|                  | Acero Inoxidable                        | M |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |   |
|                  | Fundición                               | K |   | ● | ● | ● | ● | ● | ● |   |   |   |   |   |   |   |   |   |  |   |
|                  | Metales No-Ferrosos                     | N |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  | ● |
|                  | Aleaciones Resist. al Calor, de Titanio | S |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  | ● |
| Acero Endurecido | H                                       |   |   |   |   |   | ● | ● |   |   |   |   |   |   |   |   |   |   |  | ● |

**Tipos de Maquinado**

- Corte Continuo
- Corte en General
- ⚙ Corte Interrumpido

| Insertos | Codigo                                    | Cermet |      | Recubierto |        |        |        |        |        |        |        | PCD<br>DP150<br>DP200 | Dimensiones (mm) |        |        |        |     |       | Geometrias | Herramienta Disponible |       |     |       |    |              |
|----------|---|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|-----------------------|------------------|--------|--------|--------|-----|-------|------------|------------------------|-------|-----|-------|----|--------------|
|          |   | CN2000 | CN30 | NC5330     | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 |                       | PC9530           | PC9540 | PC5300 | PC5400 | H01 | l     |            |                        | d     | t   | r     | d1 | a            |
|          | <b>1204-TBW</b>                           |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 12.7       | 4.76                   | -     | 5.7 | (2.1) |    | E397         |
|          | <b>1204R-WMF</b>                          |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 12.7       | 4.76                   | -     | 5.7 | -     |    | E397         |
|          | <b>101010</b>                             |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 10         | 10                     | 1.0   | 4.6 | -     |    | -            |
|          | <b>1010ZNN</b>                            |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 10         | 10                     | (1.0) | 4.6 | -     |    | -            |
|          | <b>101010-CU1</b>                         |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 10         | 10                     | 1.0   | 4.6 | -     |    | -            |
|          | <b>1010ZNN-CU1</b>                        |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 10         | 10                     | (1.0) | 4.6 | -     |    | -            |
|          | <b>121212-CU1</b>                         |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 12.7       | 12.7                   | 1.2   | 5.6 | -     |    | -            |
|          | <b>1212ZNN-CU1</b>                        |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 12.7       | 12.7                   | (1.2) | 5.6 | -     |    | -            |
|          | <b>1206ANN-MA</b>                         |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 12.7       | 6.35                   | -     | 4.5 | 2.36  |    | E115~        |
|          | <b>1206ENN-MA</b>                         |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 12.7       | 6.35                   | -     | 5.2 | 1.82  |    | E124         |
|          | <b>1206QNN-MA</b>                         |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 12.7       | 6.35                   | -     | 5.2 | 1.39  |    | -            |
|          | <b>120612-MA</b>                          |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 12.7       | 6.35                   | 1.2   | 5.2 | -     |    | -            |
|          | <b>1206ANN-ML</b>                         |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 12.7       | 6.35                   | -     | 4.5 | 2.36  |    | E115~        |
|          | <b>1206ENN-ML</b>                         |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 12.7       | 6.35                   | -     | 4.5 | 1.82  |    | E124         |
|          | <b>1206QNN-ML</b>                         |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 12.7       | 6.35                   | -     | 4.5 | 1.39  |    | -            |
|          | <b>120612-ML</b>                          |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 12.7       | 6.35                   | 1.2   | 4.5 | -     |    | -            |
|          | <b>1507ANN-ML</b>                         |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 15.875     | 7.94                   | -     | 5.6 | 3.16  |    | -            |
|          | <b>1507ENN-ML</b>                         |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | -     | 15.875     | 7.94                   | -     | 5.6 | 2.66  |    | -            |
|          | <b>09T3ADFR</b>                           |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | 9.525 | 9.525      | 3.97                   | -     | 4.4 | -     |    | E139<br>E140 |
|          | <b>09T3ADTR-NAF</b>                       |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | 9.525 | 9.525      | 3.97                   | -     | 4.4 | -     |    | E139         |
|          | <b>09T3ADTR-NAW</b><br>NAW: inserto wiper |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | 9.525 | 9.525      | 3.97                   | -     | 4.4 | -     |    | E140         |
|          | <b>09T3ADTR-XAF</b>                       |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | 9.525 | 9.525      | 3.97                   | -     | 4.4 | -     |    | E139         |
|          | <b>09T3ADTR-XAW</b><br>XAW: inserto wiper |        |      |            |        |        |        |        |        |        |        |                       |                  |        |        |        |     | 9.525 | 9.525      | 3.97                   | -     | 4.4 | -     |    | E140         |

● : En Almacen





| Pieza Trabajo    | Acero                                   | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|                  | Acero Inoxidable                        | M | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|                  | Fundición                               | K | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|                  | Metales No-Ferrosos                     | N | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|                  | Aleaciones Resist. al Calor, de Titanio | S | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Acero Endurecido | H                                       | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |

**Tipos de Maquinado**

- Corte Continuo
- (with dot) Corte en General
- ⚡ Corte Interumpido

| Insertos    | Codigo          | Cemet  |      | Recubierto |        |        |        |        |        | PCD    |        | Dimensiones (mm) |        |        |       |        |      | Geometrias | Herramienta Disponible |      |     |   |                      |              |   |
|-------------|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|------------------|--------|--------|-------|--------|------|------------|------------------------|------|-----|---|----------------------|--------------|---|
|             |                 | CN2000 | CN30 | NC5330     | NCM535 | NCM545 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540           | PC5300 | PC5400 | DP150 | DP200  | l    |            |                        | d    | t   | r | d <sub>i</sub>       | a            | b |
|             | 1102308R-WX     |        |      |            |        |        |        |        |        |        |        | ●                |        |        |       | -      | 11   | 2.30       | -                      | 4    | -   | - |                      | E384<br>E385 |   |
|             | 110308R-WX      |        |      |            |        |        |        |        |        |        |        | ●                |        |        |       | -      | 11   | 3.00       | -                      | 4    | -   | - |                      |              |   |
|             | 120308R-WX      |        |      |            |        |        |        |        |        |        |        |                  |        |        |       | -      | 12.7 | 3.25       | -                      | 5    | -   | - |                      |              |   |
|             | 1203508R-WX     |        |      |            |        |        |        |        |        |        |        | ●                |        |        |       | -      | 12.7 | 3.50       | -                      | 5    | -   | - |                      |              |   |
|             | 120408R-WX      |        |      |            |        |        |        |        |        |        |        |                  |        |        |       | -      | 12.7 | 4.00       | -                      | 5    | -   | - |                      |              |   |
|             | 1204508R-WX     |        |      |            |        |        |        |        |        |        |        | ●                |        |        |       | -      | 12.7 | 4.54       | -                      | 5    | -   | - |                      |              |   |
|             | 120508R-WX      |        |      |            |        |        |        |        |        |        |        | ●                |        |        |       | -      | 12.7 | 5.00       | -                      | 5    | -   | - |                      |              |   |
|             | 1205408R-WX     |        |      |            |        |        |        |        |        |        |        | ●                |        |        |       | -      | 12.7 | 5.47       | -                      | 5    | -   | - |                      |              |   |
|             | 120608R-WX      |        |      |            |        |        |        |        |        |        |        |                  |        |        |       | -      | 12.7 | 6.00       | -                      | 5    | -   | - |                      |              |   |
|             | 1206508R-WX     |        |      |            |        |        |        |        |        |        |        |                  |        |        |       | -      | 12.7 | 6.50       | -                      | 5    | -   | - |                      |              |   |
|             | 120708R-WX      |        |      |            |        |        |        |        |        |        |        |                  |        |        |       | -      | 12.7 | 7.00       | -                      | 5    | -   | - |                      |              |   |
|             | 1207508R-WX     |        |      |            |        |        |        |        |        |        |        |                  |        |        |       | -      | 12.7 | 7.5        | -                      | 5    | -   | - |                      |              |   |
|             | 1102308L-WX     |        |      |            |        |        |        |        |        |        |        | ●                |        |        |       |        | -    | 11         | 2.30                   | -    | 4   | - | -                    |              |   |
|             | 110308L-WX      |        |      |            |        |        |        |        |        |        |        | ●                |        |        |       |        | -    | 11         | 3.00                   | -    | 4   | - | -                    |              |   |
|             | 120308L-WX      |        |      |            |        |        |        |        |        |        |        |                  |        |        |       | -      | 12.7 | 3.25       | -                      | 5    | -   | - |                      |              |   |
|             | 1203508L-WX     |        |      |            |        |        |        |        |        |        |        | ●                |        |        |       | -      | 12.7 | 3.50       | -                      | 5    | -   | - |                      |              |   |
|             | 120408L-WX      |        |      |            |        |        |        |        |        |        |        |                  |        |        |       | -      | 12.7 | 4.00       | -                      | 5    | -   | - |                      |              |   |
| 1204508L-WX |                 |        |      |            |        |        |        |        |        |        | ●      |                  |        |        | -     | 12.7   | 4.54 | -          | 5                      | -    | -   |   |                      |              |   |
| 120508L-WX  |                 |        |      |            |        |        |        |        |        |        | ●      |                  |        |        | -     | 12.7   | 5.00 | -          | 5                      | -    | -   |   |                      |              |   |
| 1205408L-WX |                 |        |      |            |        |        |        |        |        |        | ●      |                  |        |        | -     | 12.7   | 5.47 | -          | 5                      | -    | -   |   |                      |              |   |
| 120608L-WX  |                 |        |      |            |        |        |        |        |        |        |        |                  |        |        | -     | 12.7   | 6.00 | -          | 5                      | -    | -   |   |                      |              |   |
| 1206508L-WX |                 |        |      |            |        |        |        |        |        |        |        |                  |        |        | -     | 12.7   | 6.50 | -          | 5                      | -    | -   |   |                      |              |   |
| 120708L-WX  |                 |        |      |            |        |        |        |        |        |        |        |                  |        |        | -     | 12.7   | 7.00 | -          | 5                      | -    | -   |   |                      |              |   |
| 1207508L-WX |                 |        |      |            |        |        |        |        |        |        |        |                  |        |        | -     | 12.7   | 7.5  | -          | 5                      | -    | -   |   |                      |              |   |
|             | 1204ENN         |        |      |            |        |        |        |        |        |        |        |                  |        |        | -     | 12.7   | 4.76 | -          | -                      | 1.4  | 1.0 |   | E49                  |              |   |
|             | 1504ENN         |        |      |            |        |        |        |        |        |        |        |                  |        |        | -     | 15.875 | 4.76 | -          | -                      | 1.4  | 1.0 |   |                      |              |   |
|             | SNMX 1206ANN-MF |        |      | ●          |        |        | ●      | ●      | ●      | ●      | ●      | ●                | ●      |        | -     | 12.7   | 6.35 | -          | 4.5                    | 2.36 | -   |   | E117<br>E118<br>E125 |              |   |
|             | 1507ANN-MF      |        |      | ●          |        |        | ●      | ●      | ●      | ●      | ●      | ●                | ●      |        | -     | 15.875 | 7.94 | -          | 5.6                    | 3.15 | -   |   |                      |              |   |
|             | SNEX 1206ANN-MF |        |      |            |        |        | ●      | ●      | ●      | ●      | ●      | ●                | ●      |        | -     | 12.7   | 6.35 | -          | 4.5                    | 2.36 | -   |   |                      |              |   |
|             | 1507ANN-MF      |        |      |            |        |        |        |        |        | ●      | ●      | ●                | ●      |        | -     | 15.875 | 7.94 | -          | 5.6                    | 3.15 | -   |   |                      |              |   |
|             | SNMX 1206ENN-MF |        |      | ●          |        |        | ●      | ●      | ●      | ●      | ●      | ●                | ●      |        | -     | 12.7   | 6.35 | -          | 4.5                    | 1.82 | -   |   | E115~<br>E118        |              |   |
|             | 1507ENN-MF      |        |      | ●          |        |        | ●      | ●      | ●      | ●      | ●      | ●                | ●      |        | -     | 15.875 | 7.94 | -          | 5.6                    | 2.66 | -   |   |                      |              |   |
|             | SNEX 1206ENN-MF |        |      |            |        |        | ●      | ●      | ●      | ●      | ●      | ●                | ●      |        | -     | 12.7   | 6.35 | -          | 4.5                    | 1.82 | -   |   |                      |              |   |
|             | 1507ENN-MF      |        |      |            |        |        |        |        |        | ●      | ●      | ●                | ●      |        | -     | 15.875 | 7.94 | -          | 5.6                    | 2.66 | -   |   |                      |              |   |
|             | SNMX 1206QNN-MF |        |      | ●          |        |        | ●      | ●      | ●      | ●      | ●      | ●                | ●      |        | -     | 12.7   | 6.35 | -          | 5.2                    | 2.36 | -   |   | E123<br>E124         |              |   |
|             | 120612-MF       |        |      |            |        |        | ●      | ●      | ●      | ●      | ●      | ●                | ●      |        | -     | 12.7   | 6.35 | 1.2        | 5.2                    | -    | -   |   |                      |              |   |
|             | SNEX 1206QNN-MF |        |      |            |        |        | ●      | ●      | ●      | ●      | ●      | ●                | ●      |        | -     | 12.7   | 6.35 | -          | 5.2                    | 2.36 | -   |   |                      |              |   |
|             | 120612-MF       |        |      |            |        |        |        |        |        | ●      | ●      | ●                | ●      |        | -     | 12.7   | 6.35 | 1.2        | 5.2                    | -    | -   |   |                      |              |   |
|             | SNMX 1206ANN-MM |        |      | ●          |        |        | ●      | ●      | ●      | ●      | ●      | ●                | ●      |        | -     | 12.7   | 6.35 | -          | 4.5                    | 2.36 | -   |   | E115~<br>E118        |              |   |
|             | 1507ANN-MM      |        |      | ●          |        |        | ●      | ●      | ●      | ●      | ●      | ●                | ●      |        | -     | 15.875 | 7.94 | -          | 5.6                    | 3.15 | -   |   |                      |              |   |
|             | SNEX 1206ANN-MM |        |      |            |        |        | ●      | ●      | ●      | ●      | ●      | ●                | ●      |        | -     | 12.7   | 6.35 | -          | 4.5                    | 2.36 | -   |   |                      |              |   |
|             | 1507ANN-MM      |        |      |            |        |        |        |        |        | ●      | ●      | ●                | ●      |        | -     | 15.875 | 7.94 | -          | 5.6                    | 3.15 | -   |   |                      |              |   |

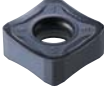
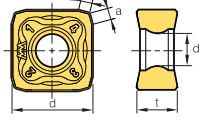
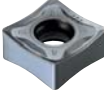




● : En Almacen



# E Listado insertos de fresado

| Pieza Trabajo    | Acero                                   | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tipos de Maquinado |   |   |   |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------------------|---|---|---|
|                  | Acero Inoxidable                        | M |   |   |   | ● |   |   |   |   |   |   |   |   |   | ●                  | ● | ● | ● |
|                  | Fundición                               | K |   |   |   |   |   |   |   |   |   |   |   |   |   |                    |   |   |   |
|                  | Metales No-Ferrosos                     | N |   |   |   |   |   |   |   |   |   |   |   |   |   |                    |   |   |   |
|                  | Aleaciones Resist. al Calor, de Titanio | S |   |   |   |   |   |   |   |   |   |   |   |   |   |                    |   |   |   |
| Acero Endurecido | H                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                    |   |   |   |


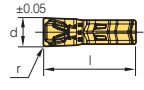

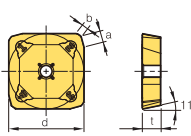

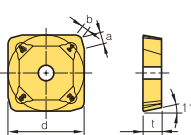

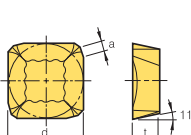

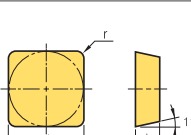

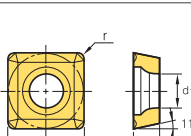

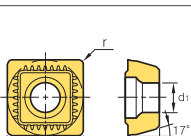

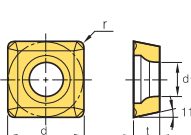
● Corte Continuo  
 ● Corte en General  
 ● Corte Intermitente

| Insertos  | Codigo          | Recubierta |   |   |   |  |  |  |  |   |   | Sin Rec. |       |     | Dimensiones (mm) |   |   |   |   |                |   | Geometrias | Herramienta Disponible |        |      |     |      |      |   |               |
|---|-----------------|------------|---|---|---|--|--|--|--|---|---|----------|-------|-----|------------------|---|---|---|---|----------------|---|------------|------------------------|--------|------|-----|------|------|---|---------------|
|   |                 | Cermet     |   |   |   |  |  |  |  |   |   |          | ST30A | G10 | H01              | l | d | t | r | d <sub>1</sub> | a |            |                        | b      |      |     |      |      |   |               |
|    | SNMX 1206ENN-MM |            |   |   |   |  |  |  |  | ● | ● | ●        | ●     | ●   | ●                |   |   |   |   |                |   | -          | 12.7                   | 6.35   | -    | 5.2 | 1.82 | -    |  | E119~<br>E122 |
|   | 1507ENN-MM      |            |   |   |   |  |  |  |  | ● | ● | ●        | ●     | ●   | ●                |   |   |   |   |                |   |            | -                      | 15.875 | 7.94 | -   | 5.6  | 2.66 |   | -             |
|   | SNEX 1206ENN-MM |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 6.35 | -   | 5.2  | 1.82 |   | -             |
|   | 1507ENN-MM      |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 15.875 | 7.94 | -   | 5.6  | 2.66 |   | -             |
|    | SNMX 1206QNN-MM |            |   |   |   |  |  |  |  | ● | ● | ●        | ●     | ●   | ●                |   |   |   |   |                |   |            | -                      | 12.7   | 6.35 | -   | 4.5  | 2.36 | -   |               |
|   | 120612-MM       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 6.35 | 1.2 | 4.5  | -    | -   |               |
|   | SNEX 1206QNN-MM |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 6.35 | -   | 4.5  | 2.36 | -   |               |
|   | 120612-MM       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 6.35 | 1.2 | 4.5  | -    | -   |               |
|   | 1206ANN-W       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 6.35 | -   | 4.5  | 7.6  | -   |               |
|   |                 |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            |                        |        |      |     |      |      |   |               |
|  | 1203EDR         |            | ● | ● | ● |  |  |  |  |   |   |          |       |     |                  | ● | ● | ● |   |                |   | -          | 12.7                   | 3.18   | -    | -   | 1.4  | 1.0  |   |               |
|   | 1203EDR-RH      |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 3.18 | -   | -    | 1.4  | 1.0   |               |
|   | 1203EDL         |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 3.18 | -   | -    | 1.4  | 1.0   |               |
|   | 1203EDR-G       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 3.18 | -   | -    | 1.4  | 1.0   |               |
|   | 1203EDR-RN      |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 3.18 | -   | -    | 1.4  | 1.0   |               |
|   | 1203EDER-RH     |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 3.18 | -   | -    | 1.63 | 0.8   |               |
|   | 1203EDSR-RH     |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 3.18 | -   | -    | 1.63 | 0.8   |               |
|   | 1203EDTR-RH     |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 3.18 | -   | -    | 1.63 | 0.8   |               |
|   | 1203EDR-S20     |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 3.18 | -   | -    | 1.4  | 1.0   |               |
|   | 150412T         |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 15.875 | 4.76 | 1.2 | -    | -    | -   |               |
|   | 1504EDR         |            | ● | ● |   |  |  |  |  |   |   |          |       |     |                  |   | ● | ● |   |                |   |            | -                      | 15.875 | 4.76 | -   | -    | 1.4  | 1.0   |               |
|   | 1504EDR-RH      |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 15.875 | 4.76 | -   | -    | 1.4  | 1.0   |               |
|   | 1504EDSR        |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 15.875 | 4.76 | -   | -    | 1.4  | 1.0   |               |
|   | 1504EDL         |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 15.875 | 4.76 | -   | -    | 1.4  | 1.0   |               |
|   | 1504EDR-G       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 15.875 | 4.76 | -   | -    | 1.4  | 1.0   |               |
|   | 1504EDR-RN      |            | ● |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 15.875 | 4.76 | -   | -    | 1.4  | 1.0   |               |
| 1504EDER-RH   |                 |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   | -          | 15.875                 | 4.76   | -    | -   | 1.64 | 0.8  |   |               |
| 1504EDSR-RH   |                 |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   | -          | 15.875                 | 4.76   | -    | -   | 1.64 | 0.8  |   |               |
| 1504EDTR-RH   |                 |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   | -          | 15.875                 | 4.76   | -    | -   | 1.64 | 0.8  |   |               |
| 1504EDR-S20   |                 |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   | -          | 15.875                 | 4.76   | -    | -   | 1.4  | 1.0  |   |               |
|  | 120416-WC       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   | -          | 12.7                   | 4.76   | 1.6  | -   | -    | -    |   |               |
|   | 150412-WC       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 15.875 | 4.76 | 1.2 | -    | -    | -   |               |
|   | 150416-WC       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 15.875 | 4.76 | 1.6 | -    | -    | -   |               |
|   | 150420-WC       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 15.875 | 4.76 | 2.0 | -    | -    | -   |               |
|   | 190424-WC       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 19.05  | 4.76 | 2.4 | -    | -    | -   |               |
|  | 1203EDR-1       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   | -          | 12.7                   | 3.18   | -    | -   | 10.2 | -    |   |               |
|   | 1203EDL-1       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 12.7   | 3.18 | -   | -    | 10.2 | -   |               |
|   | 1504EDR-1       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 15.875 | 4.76 | -   | -    | 10.2 | -   |               |
|   | 1504EDL-1       |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            | -                      | 15.875 | 4.76 | -   | -    | 10.2 | -   |               |
|   |                 |            |   |   |   |  |  |  |  |   |   |          |       |     |                  |   |   |   |   |                |   |            |                        |        |      |     |      |      |   |               |

● : En Almacen



| Pieza Trabajo    | Acero                                   | <b>P</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tipos de Maquinado<br>● Corte Continuo<br>● Corte en General<br>✦ Corte Interrumpido |
|------------------|---|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
|                  | Acero Inoxidable                        | <b>M</b> |   | ✦ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                  | Fundición                               | <b>K</b> |   |   |   | ● | ● |   |   | ● |   |   |   |   |   |   |   |   |   |  |
|                  | Metales No-Ferrosos                     | <b>N</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                  | Aleaciones Resist. al Calor, de Titanio | <b>S</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Acero Endurecido | <b>H</b>                                |          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |

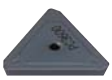
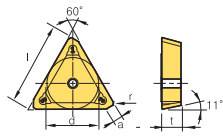

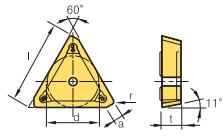

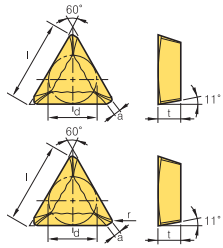

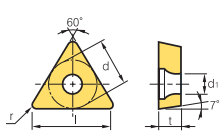
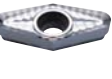
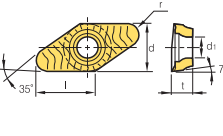

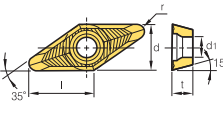

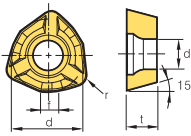
| Insertos   | Codigo      | Cermet |      | Recubierto |        |        |        |        |        |        |        | Sin Rec. | Dimensiones (mm) |        |        |       |     |        |      | Geometrias | Herramienta Disponible |      |      |   |                              |
|--|-------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|----------|------------------|--------|--------|-------|-----|--------|------|------------|------------------------|------|------|---|------------------------------|
|  |             | CN2000 | CN30 | NCM325     | NCM335 | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510 | PC9530   | PC9540           | PC5300 | PC5400 | ST30A | G10 | l      | d    |            |                        | t    | r    | d <sub>1</sub>  | a                            |
| SPFN<br>      | 200-N       |        |      |            |        |        |        |        |        |        |        |          |                  |        |        |       | 8.8 | 2.2    | -    | 0.2        | -                      | -    | -    |    | E381                         |
|  | 300-N       |        |      |            |        |        |        |        |        |        |        |          |                  |        |        |       | 9.8 | 3.0    | -    | 0.2        | -                      | -    | -    |   |                              |
|  | 400-N       |        |      |            |        |        |        |        |        |        |        |          |                  |        |        |       |     | 9.8    | 4.0  | -          | 0.25                   | -    | -    |   |                              |
| SPKN-MU<br>   | 1203EDSR-MU |        |      |            |        |        |        |        | ●      |        |        |          |                  |        |        |       | -   | 12.7   | 3.18 | -          | -                      | 0.86 | 1.87 |    | E50<br>E51                   |
|  | 1504EDSR-MU |        |      |            |        |        |        | ●      |        |        |        |          |                  |        |        |       | -   | 15.875 | 4.76 | -          | -                      | 0.84 | 1.92 |   |                              |
| SPKN-SU<br>  | 1203EDSR-SU |        |      |            |        |        |        |        | ●      | ●      |        |          | ●                | ●      |        |       | -   | 12.7   | 3.18 | -          | -                      | 1.66 | 0.92 |   | E50<br>E51                   |
|  | 1203EDSL-SU |        |      |            |        |        |        |        | ●      |        |        |          | ●                |        |        |       | -   | 12.7   | 3.18 | -          | -                      | 1.66 | 0.92 |   |                              |
|  | 1504EDSR-SU |        |      |            |        |        |        |        | ●      | ●      |        |          | ●                | ●      |        |       | -   | 15.875 | 4.76 | -          | -                      | 1.62 | 0.93 |   |                              |
|  | 1504EDSL-SU |        |      |            |        |        |        |        | ●      |        |        |          | ●                |        |        |       | -   | 15.875 | 4.76 | -          | -                      | 1.62 | 0.93 |   |                              |
| SPKR-MX<br> | 1203EDSR-MX |        |      | ●          | ●      |        |        |        |        |        |        |          |                  |        |        |       | -   | 12.7   | 3.18 | -          | -                      | 1.4  | -    |  | E50<br>E51                   |
|  | 1203EDSL-MX |        |      |            |        |        |        |        |        |        |        |          |                  |        |        |       | -   | 12.7   | 3.18 | -          | -                      | 1.4  | -    |   |                              |
|  | 1504EDR-MX  |        |      |            |        |        |        |        | ●      |        |        |          |                  |        |        |       | -   | 15.875 | 4.76 | -          | -                      | 1.45 | -    |   |                              |
|  | 1504EDSR-MX |        |      |            |        |        |        |        | ●      |        |        |          |                  |        |        |       | -   | 15.875 | 4.76 | -          | -                      | 1.45 | -    |   |                              |
| SPMN<br>    | 120308      |        |      |            |        |        |        |        |        |        |        |          |                  | ●      |        |       | -   | 12.7   | 3.18 | 0.8        | -                      | -    | -    |  | E338                         |
| SPMT<br>    | 060304      |        |      | ●          |        |        |        |        |        |        |        |          |                  |        |        |       | -   | 6.35   | 3.18 | 0.4        | 2.8                    | -    | -    |  | E299<br>E326<br>E327         |
| SPMT-KC<br> | 110408-KC   |        |      |            |        |        |        |        | ●      |        |        |          |                  | ●      | ●      |       | -   | 11.5   | 4.8  | 0.8        | 4.5                    | -    | -    |  | E338                         |
| SPMT-MM<br> | 120408-MM   |        |      |            |        |        |        |        |        | ●      |        |          |                  |        | ●      |       | -   | 12.7   | 4.76 | 0.8        | 5.6                    | -    | -    |  | E199<br>E299<br>E326<br>E328 |
|  | 120508-MMN  |        |      |            |        |        |        |        |        |        |        |          |                  |        |        |       | -   | 12.7   | 5.56 | 0.8        | 5.6                    | -    | -    |   |                              |

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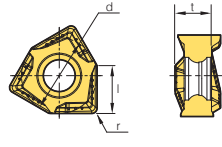

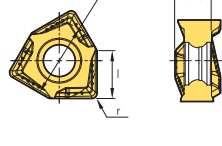

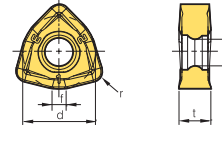

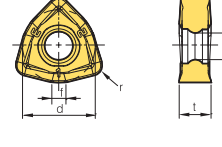

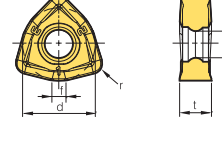
| Pieza Trabajo    | Acero                                   | <b>P</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tipos de Maquinado<br>● Corte Continuo<br>●● Corte en General<br>●●● Corte Interrumpido |
|------------------|---|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|                  | Acero Inoxidable                        | <b>M</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |
|                  | Fundición                               | <b>K</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |
|                  | Metales No-Ferrosos                     | <b>N</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |
|                  | Aleaciones Resist. al Calor, de Titanio | <b>S</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |
| Acero Endurecido | <b>H</b>                                | ●        | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |

| Insertos   | Codigo        | Cemet  |      | Recubierto |        |        |        |        |        |        |        | Sim. Rec. | Dimensiones (mm) |        |        |        |        |       |      |     | Geometrias | Herramienta Disponible |     |   |   |               |
|--|---------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|-----------|------------------|--------|--------|--------|--------|-------|------|-----|------------|------------------------|-----|---|---|---------------|
|  |               | CN2000 | CN30 | NCM325     | NCM335 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 |           | PC6510           | PC9530 | PC9540 | PC5300 | PC5400 | HO1   | l    | d   |            |                        | t   | r   | d <sub>1</sub>  | a             |
| TPKN-MU<br>   | 2204PDSR-MU   |        |      |            |        |        |        |        |        | ●      |        |           |                  |        |        |        | 22.0   | 12.7  | 4.76 | 0.8 | -          | 1.96                   | -   |    | E53   |               |
|  |               |        |      |            |        |        |        |        |        |        |        |           |                  |        |        |        |        |       |      |     |            |                        |     |   |   |               |
| TPKN-SU<br>   | 1603PDSL-SU   |        |      |            |        |        |        |        |        |        |        |           |                  |        |        |        | 16.5   | 9.525 | 3.18 | 1.0 | -          | 1.70                   | -   |    | E53   |               |
|  | 1603PDSR-SU   |        |      |            |        |        |        |        |        | ●      | ●      |           |                  |        |        |        | 16.5   | 9.525 | 3.18 | 1.0 | -          | 1.70                   | -   |   |   |               |
|  | 2204PDSL-SU   |        |      |            |        |        |        |        |        |        | ●      |           |                  |        |        |        | 22.0   | 12.7  | 4.76 | 1.0 | -          | 1.91                   | -   |   |   |               |
|  | 2204PDSR-SU   |        |      |            |        |        |        |        |        |        | ●      | ●         |                  | ●      | ●      |        | 22.0   | 12.7  | 4.76 | 1.0 | -          | 1.91                   | -   |   |   |               |
| TPKR-MX<br>  | 1603PDSN-MX   |        |      |            |        |        |        |        |        |        |        |           |                  |        |        |        | 16.5   | 9.525 | 3.18 | -   | -          | 1.2                    | 1.2 |   | E53   |               |
|  | 1603PDSR-MX   |        |      |            |        |        |        |        |        |        |        | ●         |                  |        |        |        | 16.5   | 9.525 | 3.18 | -   | -          | 1.2                    | 0.7 |   |   |               |
|  | 1603PPR-MX    |        |      |            | ●      |        |        |        |        |        |        |           |                  |        |        |        | 16.5   | 9.525 | 3.18 | -   | -          | 1.2                    | 1.0 |   |   |               |
|  | 1603PPSN-MX   |        |      |            |        |        |        |        |        |        |        |           |                  |        |        |        | 16.5   | 9.525 | 3.18 | -   | -          | 1.2                    | 1.2 |   |   |               |
|  | 1603PPSR-MX   |        |      |            |        | ●      |        |        |        |        |        |           |                  |        |        |        | 16.5   | 9.525 | 3.18 | -   | -          | 1.2                    | 1.0 |   |   |               |
|  | 2204PDR-MX    |        |      |            |        | ●      |        |        |        |        |        |           |                  |        |        |        | 22.0   | 12.7  | 4.76 | 1.0 | -          | 1.4                    | -   |   |   |               |
|  | 2204PDSR-MX   |        |      |            |        | ●      | ●      |        |        |        |        |           |                  |        |        |        | 22.0   | 12.7  | 4.76 | 1.0 | -          | 1.4                    | -   |   |   |               |
|  | 2204PPR-MX    |        |      |            |        |        |        |        |        |        |        |           |                  |        |        |        | 22.0   | 12.7  | 4.76 | 1.0 | -          | 1.4                    | -   |   |   |               |
| TWX-KC<br>  | 16R-KC        |        |      |            |        |        |        |        |        |        | ●      |           |                  |        | ●      |        | 16.5   | 9.52  | 3.97 | 0.8 | 4.45       | -                      | -   |  | E340  |               |
|  | 22R-KC        |        |      |            |        |        |        |        |        |        | ●      |           |                  |        |        |        | 22.0   | 12.7  | 4.76 | 0.8 | 4.45       | -                      | -   |   |   |               |
| VCKT-MA<br> | 220530N-MA    |        |      |            |        |        |        |        |        |        |        |           |                  |        | ●      | 15.6   | 12.7   | 5.56  | 3.0  | 5.6 | -          | -                      | -   |  | E354<br>E355  |               |
|  |               |        |      |            |        |        |        |        |        |        |        |           |                  |        |        |        |        |       |      |     |            |                        |     |   |   |               |
| VDKT-MA<br> | 11T210N-MA    |        |      |            |        |        |        |        |        |        |        |           |                  |        | ●      | 8.8    | 6.35   | 2.87  | 1.0  | 2.8 | -          | -                      | -   |  | E356  |               |
|  | 11T220N-MA    |        |      |            |        |        |        |        |        |        |        |           |                  |        |        |        | 6.7    | 6.35  | 2.87 | 2.0 | 2.8        | -                      | -   |   |   | -             |
| WDKT-MH<br> | 080316ZDSR-MH |        |      |            |        |        |        |        |        | ●      | ●      | ●         | ●                | ●      | ●      | ●      | -      | 8.0   | 3.18 | 1.6 | 3.3        | -                      | -   | 1.8   |  | E292~<br>E298 |
|  | 10T320ZDSR-MH |        |      |            |        |        |        |        |        | ●      | ●      | ●         | ●                | ●      | ●      | ●      | -      | 10.0  | 3.97 | 2.0 | 4.3        | -                      | -   | 2.3   |   |               |
|  | 130520ZDSR-MH |        |      |            |        |        |        |        |        | ●      | ●      | ●         | ●                | ●      | ●      | ●      | -      | 13.5  | 5.56 | 2.0 | 5.56       | -                      | -   | 3.1   |   |               |
|  | 150625ZDSR-MH |        |      |            |        |        |        |        |        | ●      | ●      | ●         | ●                | ●      | ●      | ●      | -      | 15.0  | 6.35 | 2.5 | 5.56       | -                      | -   | 3.4   |   |               |
|  |               |        |      |            |        |        |        |        |        |        |        |           |                  |        |        |        |        |       |      |     |            |                        |     |   |   |               |

● : En Almacen

# E Listado insertos de fresado

| Pieza Trabajo | Acero                                   | P | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tipos de Maquinado |  |
|---------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------------------|--|
|               | Acero Inoxidable                        | M |   |   |   |   |   |   |   |   |   |   |   |   |   |                    | ● Corte Continuo<br>● Corte en General<br>✱ Corte Intermitente |
|               | Fundición                               | K | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |   |                    |  |
|               | Metales No-Ferrosos                     | N |   |   |   |   |   |   |   |   |   |   |   |   |   |                    |  |
|               | Aleaciones Resist. al Calor, de Titanio | S |   |   |   |   |   |   |   |   |   |   |   |   |   |                    |  |
|               | Acero Endurecido                        | H |   |   |   | ● | ● | ● |   |   |   |   |   |   |   |                    |  |

| Insertos  | Codigo        | Cermet  |               | Recubierto |        |        |        |        |        |        |        | Sin Rec. |        | Dimensiones (mm) |       |     |      |       |       | Geometrias | Herramienta Disponible |      |                |   |   |               |  |
|---|---------------|---|---------------|------------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------------------|-------|-----|------|-------|-------|------------|------------------------|------|----------------|---|---|---------------|--|
|   |               | CN2000  | CN30          | NCM535     | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400           | ST30A | H01 | l    | d     | t     |            |                        | r    | d <sub>1</sub> | f   |   |               |  |
|   |               |  | 040304PNFR-MA |            |        |        |        |        |        |        |        |          |        |                  |       |     | ●    | 4.3   | 7.0   |            |                        | 3.46 | 0.4            | -   | -   |               |  |
| 040308PNFR-MA   |               |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 4.3 | 7.0  | 3.46  | 0.8   | -          | -                      |      |                |   |   |               |  |
| 040312PNFR-MA   |               |   |               |            |        |        |        |        |        |        |        |          |        |                  | ●     | 4.3 | 7.0  | 3.46  | 1.2   | -          | -                      |      |                |   |   |               |  |
| 040316PNFR-MA   |               |   |               |            |        |        |        |        |        |        |        |          |        |                  | ●     | 4.3 | 7.0  | 3.46  | 1.6   | -          | -                      |      |                |   |   |               |  |
| 080604PNFR-MA   |               |   |               |            |        |        |        |        |        |        |        |          |        |                  | ●     | 8.2 | 13.0 | 6.4   | 0.4   | -          | -                      |      |                |   |   |               |  |
| 080608PNFR-MA   |               |   |               |            |        |        |        |        |        |        |        |          |        |                  | ●     | 8.2 | 13.0 | 6.4   | 0.8   | -          | -                      |      |                |   |   |               |  |
| 080612PNFR-MA   |               |   |               |            |        |        |        |        |        |        |        |          |        |                  | ●     | 8.2 | 13.0 | 6.4   | 1.2   | -          | -                      |      |                |   |   |               |  |
| 080616PNFR-MA   |               |   |               |            |        |        |        |        |        |        |        |          |        |                  | ●     | 8.2 | 13.0 | 6.4   | 1.6   | -          | -                      |      |                |   |   |               |  |
| 080620PNFR-MA   |               |   |               |            |        |        |        |        |        |        |        |          |        |                  | ●     | 8.2 | 13.0 | 6.4   | 2.0   | -          | -                      |      |                |   |   |               |  |
|    | 040304PNER-ML |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 4.3 | 7.0  | 3.46  | 0.4   | -          | -                      |      |                |    | E110~<br>E114   |               |  |
|   | 040308PNER-ML |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 4.3 | 7.0  | 3.46  | 0.8   | -          | -                      |      |                |   |   |               |  |
|   | 040312PNER-ML |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 4.3 | 7.0  | 3.46  | 1.2   | -          | -                      |      |                |   |   |               |  |
|   | 040316PNER-ML |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 4.3 | 7.0  | 3.46  | 1.6   | -          | -                      |      |                |   |   |               |  |
|   | 080604PNER-ML |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 8.2 | 13.0 | 6.4   | 0.4   | -          | -                      |      |                |   |   |               |  |
|   | 080608PNER-ML |   |               | ●          |        |        |        |        |        |        |        |          |        |                  |       | 8.2 | 13.0 | 6.4   | 0.8   | -          | -                      |      |                |   |   |               |  |
|   | 080612PNER-ML |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 8.2 | 13.0 | 6.4   | 1.2   | -          | -                      |      |                |   |   |               |  |
|   | 080616PNER-ML |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 8.2 | 13.0 | 6.4   | 1.6   | -          | -                      |      |                |   |   |               |  |
|   | 080620PNER-ML |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 8.2 | 13.0 | 6.4   | 2.0   | -          | -                      |      |                |   |   |               |  |
|  | 040304PNSR-MM |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 4.3 | 7.0  | 3.46  | 0.4   | -          | -                      |      |                |  | E110~<br>E114   |               |  |
|   | 040308PNSR-MM |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 4.3 | 7.0  | 3.46  | 0.8   | -          | -                      |      |                |   |   |               |  |
|   | 040312PNSR-MM |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 4.3 | 7.0  | 3.46  | 1.2   | -          | -                      |      |                |   |   |               |  |
|   | 040316PNSR-MM |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 4.3 | 7.0  | 3.46  | 1.6   | -          | -                      |      |                |   |   |               |  |
|   | 080604PNSR-MM |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 8.2 | 13.0 | 6.4   | 0.4   | -          | -                      |      |                |   |   |               |  |
|   | 080608PNSR-MM |   |               | ●          |        |        |        |        |        |        |        |          |        |                  |       | 8.2 | 13.0 | 6.4   | 0.8   | -          | -                      |      |                |   |   |               |  |
|   | 080612PNSR-MM |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 8.2 | 13.0 | 6.4   | 1.2   | -          | -                      |      |                |   |   |               |  |
|   | 080616PNSR-MM |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 8.2 | 13.0 | 6.4   | 1.6   | -          | -                      |      |                |   |   |               |  |
|   | 080620PNSR-MM |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | 8.2 | 13.0 | 6.4   | 2.0   | -          | -                      |      |                |   |   |               |  |
|  | 060312ZNN-MF  |   |               |            |        |        |        |        |        |        |        |          |        |                  |       | -   | 6.35 | 3.18  | 1.2   | 2.86       | 1.2                    |      |                |  | E281~<br>E291   |               |  |
|   | 09T316ZNN-MF  |   |               |            |        |        |        |        |        |        |        |          |        |                  |       |     | -    | 9.525 | 3.97  | 1.6        | 3.6                    | 1.7  |                |   |   |               |  |
|   | 130520ZNN-MF  |   |               |            |        |        |        |        |        |        |        |          |        |                  |       |     | -    | 12.7  | 5.56  | 2.0        | 4.7                    | 2.5  |                |   |   |               |  |
|   | 160720ZNN-MF  |   |               |            |        |        |        |        |        |        |        |          |        |                  |       |     | -    | 16.0  | 7.0   | 2.0        | 5.8                    | 3.0  |                |   |   |               |  |
|  | 060312ZNN-ML  |   |               |            |        |        |        |        |        |        |        |          |        |                  |       |     | -    | 6.35  | 3.18  | 1.2        | 2.86                   | 1.2  |                |   |  | E281~<br>E291 |  |
|   | 09T316ZNN-ML  |   |               |            |        |        |        |        |        |        |        |          |        |                  |       |     |      | -     | 9.525 | 3.97       | 1.6                    | 3.6  | 1.7            |   |   |               |  |
|   | 130520ZNN-ML  |   |               |            |        |        |        |        |        |        |        |          |        |                  |       |     |      | -     | 12.7  | 5.56       | 2.0                    | 4.7  | 2.5            |   |   |               |  |
|   | 160720ZNN-ML  |   |               |            |        |        |        |        |        |        |        |          |        |                  |       |     |      | -     | 16.0  | 7.0        | 2.0                    | 5.8  | 3.0            |   |   |               |  |
|  | 060312ZNN-MM  |   |               |            |        |        |        |        |        |        |        |          |        |                  |       |     | -    | 6.35  | 3.18  | 1.2        | 2.86                   | 1.2  |                |   |  | E281~<br>E291 |  |
|   | 09T316ZNN-MM  |   |               |            |        |        |        |        |        |        |        |          |        |                  |       |     |      | -     | 9.525 | 3.97       | 1.6                    | 3.6  | 1.7            |   |   |               |  |
|   | 130520ZNN-MM  |   |               |            |        |        |        |        |        |        |        |          |        |                  |       |     |      | -     | 12.7  | 5.56       | 2.0                    | 4.7  | 2.5            |   |   |               |  |
|   | 160720ZNN-MM  |   |               |            |        |        |        |        |        |        |        |          |        |                  |       |     |      | -     | 16.0  | 7.0        | 2.0                    | 5.8  | 3.0            |   |   |               |  |


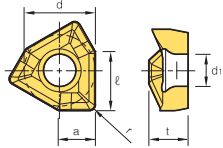

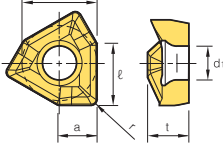

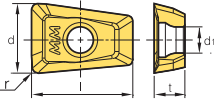

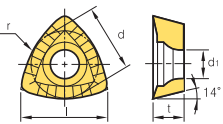
● : En Almacen





# E Listado insertos de fresado

|               |   |          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|---------------|---|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Pieza Trabajo | Acero                                   | <b>P</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | Tipos de Maquinado<br>● Corte Continuo<br>● Corte en General<br>● Corte Interrumpido |
|               | Acero Inoxidable                        | <b>M</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|               | Fundición                               | <b>K</b> | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |  |
|               | Metales No-Ferrosos                     | <b>N</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|               | Aleaciones Resist. al Calor, de Titanio | <b>S</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|               | Acero Endurecido                        | <b>H</b> |   |   |   |   | ● | ● |   |   |   |   |   |   |   |   |   |  |

| Insertos   | Codigo        | Cermet |      | Recubierto |        |        |        |        |        |        |        | Sin Rec. |        | Dimensiones (mm) |        |       |      |      |      | Geometrias | Herramienta Disponible |     |   |                |     |
|--|---------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------------------|--------|-------|------|------|------|------------|------------------------|-----|---|----------------|-----|
|  |               | CN2000 | CN30 | NC5330     | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530   | PC9540 | PC5300           | PC5400 | ST30A | H01  | l    | d    |            |                        | t   | r   | d <sub>1</sub> | a   |
| <br>XNKT-ML     | 060405PNER-ML |        |      |            |        |        |        | ●      | ●      | ●      | ●      | ●        | ●      | ●                | ●      | ●     | 5.7  | 6.5  | 4.0  | 0.5        | 3.4                    | 1.8 |    | E89~<br>E94    |     |
|  | 060408PNER-ML |        |      |            |        |        |        |        | ●      |        | ●      |          | ●      | ●                | ●      | ●     | 5.7  | 6.5  | 4.0  | 0.8        | 3.4                    | 1.8 |   |                |     |
|  | 080504PNER-ML |        |      |            |        |        |        |        |        |        | ●      |          |        | ●                | ●      | ●     | ●    | 8.2  | 10.0 | 5.5        | 0.4                    | 4.5 |   |                | 2.9 |
|  | 080508PNER-ML |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      |          | ●      | ●                | ●      | ●     | ●    | 8.2  | 10.0 | 5.5        | 0.8                    | 4.5 |   |                | 2.9 |
|  | 080512PNER-ML |        |      |            |        |        |        |        |        |        |        |          | ●      | ●                | ●      | ●     | ●    | 8.2  | 10.0 | 5.5        | 1.2                    | 4.5 |   |                | 2.9 |
|  | 080516PNER-ML |        |      |            |        |        |        |        |        |        |        |          |        | ●                | ●      | ●     | ●    | 8.2  | 10.0 | 5.5        | 1.6                    | 4.5 |   |                | 2.9 |
|  | 080520PNER-ML |        |      |            |        |        |        |        |        |        |        |          |        | ●                | ●      | ●     | ●    | 8.2  | 10.0 | 5.5        | 2.0                    | 4.5 |   |                | 2.9 |
|  | 120608PNER-ML |        |      |            |        |        |        |        |        | ●      | ●      | ●        |        | ●                | ●      | ●     | ●    | 12.0 | 13.0 | 6.5        | 0.8                    | 5.5 |   |                | 3.5 |
|  | 120612PNER-ML |        |      |            |        |        |        |        |        |        |        |          |        | ●                | ●      | ●     | ●    | 12.0 | 13.0 | 6.5        | 1.2                    | 5.5 |   |                | 3.5 |
|  | 120616PNER-ML |        |      |            |        |        |        |        |        |        |        |          |        | ●                | ●      | ●     | ●    | 12.0 | 13.0 | 6.5        | 1.6                    | 5.5 |   |                | 3.5 |
|  | 120620PNER-ML |        |      |            |        |        |        |        |        |        |        |          |        | ●                | ●      | ●     | ●    | 12.0 | 13.0 | 6.5        | 2.0                    | 5.5 |   |                | 3.5 |
| <br>XNKT-MM   | 060405PNSR-MM |        |      |            |        |        |        | ●      | ●      | ●      | ●      | ●        | ●      | ●                | ●      | ●     | 5.7  | 6.5  | 4.0  | 0.5        | 3.4                    | 1.8 |  | E89~<br>E94    |     |
|  | 060408PNSR-MM |        |      |            |        |        |        |        | ●      | ●      | ●      |          | ●      | ●                | ●      | ●     | 5.7  | 6.5  | 4.0  | 0.8        | 3.4                    | 1.8 |   |                |     |
|  | 080504PNSR-MM |        |      |            |        |        |        |        |        |        | ●      |          |        | ●                | ●      | ●     | ●    | 8.2  | 10.0 | 5.5        | 0.4                    | 4.5 |   |                | 2.9 |
|  | 080508PNSR-MM |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      |          | ●      | ●                | ●      | ●     | ●    | 8.2  | 10.0 | 5.5        | 0.8                    | 4.5 |   |                | 2.9 |
|  | 080512PNSR-MM |        |      |            |        |        |        |        |        |        |        |          | ●      | ●                | ●      | ●     | ●    | 8.2  | 10.0 | 5.5        | 1.2                    | 4.5 |   |                | 2.9 |
|  | 080516PNSR-MM |        |      |            |        |        |        |        |        |        |        |          |        | ●                | ●      | ●     | ●    | 8.2  | 10.0 | 5.5        | 1.6                    | 4.5 |   |                | 2.9 |
|  | 080520PNSR-MM |        |      |            |        |        |        |        |        |        |        |          |        | ●                | ●      | ●     | ●    | 8.2  | 10.0 | 5.5        | 2.0                    | 4.5 |   |                | 2.9 |
|  | 120604PNSR-MM |        |      |            |        |        |        |        |        |        |        |          |        | ●                | ●      | ●     | ●    | 12.0 | 13.0 | 6.5        | 0.4                    | 5.5 |   |                | 3.5 |
|  | 120608PNSR-MM |        |      |            |        |        |        |        | ●      | ●      | ●      | ●        |        | ●                | ●      | ●     | ●    | 12.0 | 13.0 | 6.5        | 0.8                    | 5.5 |   |                | 3.5 |
|  | 120612PNSR-MM |        |      |            |        |        |        |        |        |        |        |          |        | ●                | ●      | ●     | ●    | 12.0 | 13.0 | 6.5        | 1.2                    | 5.5 |   |                | 3.5 |
| 120616PNSR-MM  |               |        |      |            |        |        |        |        |        |        |        |          | ●      | ●                | ●      | ●     | 12.0 | 13.0 | 6.5  | 1.6        | 5.5                    | 3.5 |   |                |     |
| 120620PNSR-MM  |               |        |      |            |        |        |        |        |        |        |        |          | ●      | ●                | ●      | ●     | 12.0 | 13.0 | 6.5  | 2.0        | 5.5                    | 3.5 |   |                |     |
| <br>XPMT-MM   | 0802ER-MM     |        |      |            |        |        |        |        |        |        |        |          |        |                  | ●      | ●     | 8.5  | 5.9  | 2.38 | 0.8        | -                      | -   |  | E331<br>E332   |     |
|  | 1003ER-MM     |        |      |            |        |        |        |        |        |        |        |          |        |                  | ●      | ●     | 10.5 | 7.25 | 3.18 | 0.8        | -                      | -   |   |                |     |
|  | 13T3ER-MM     |        |      |            |        |        |        |        |        |        |        |          |        |                  | ●      | ●     | 13.1 | 9    | 3.97 | 0.8        | -                      | -   |   |                |     |
|  | 1604ER-MM     |        |      |            |        |        |        |        |        |        |        |          |        |                  | ●      | ●     | 16.5 | 11.5 | 4.76 | 0.8        | -                      | -   |   |                |     |
|  | 1805ER-MM     |        |      |            |        |        |        |        |        |        |        |          |        |                  | ●      | ●     | 18   | 12.4 | 5.56 | 0.8        | -                      | -   |   |                |     |
|  | 2006ER-MM     |        |      |            |        |        |        |        |        |        |        |          |        |                  | ●      | ●     | 20.5 | 14.1 | 6.35 | 0.8        | -                      | -   |   |                |     |
|  | 2507ER-MM     |        |      |            |        |        |        |        |        |        |        |          |        |                  | ●      | ●     | 25.5 | 17.6 | 7.94 | 0.8        | -                      | -   |   |                |     |
| <br>ZDMT-R-MM | 080310R-MM    |        |      |            |        |        |        |        |        |        |        |          |        |                  | ●      | ●     | 8.4  | 6.73 | 3.2  | 10         | 2.8                    | -   |  | E327           |     |
|  | 110312.5R-MM  |        |      |            |        |        |        |        |        |        |        |          |        |                  | ●      | ●     | 10.6 | 8.5  | 3.65 | 12.5       | 2.8                    | -   |   |                |     |
|  | 130416R-MM    |        |      |            |        |        |        |        |        |        |        |          |        |                  | ●      | ●     | 13.2 | 10.5 | 4.76 | 16         | 4.4                    | -   |   |                |     |

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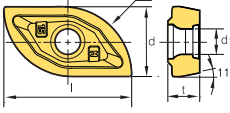


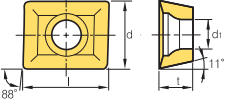

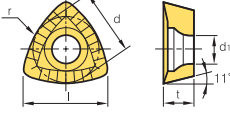

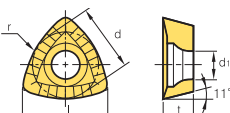


















| Pieza Trabajo    | Acero                                   | P |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|                  | Acero Inoxidable                        | M |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                  | Fundición                               | K |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                  | Metales No-Ferrosos                     | N |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                  | Aleaciones Resist. al Calor, de Titanio | S |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Acero Endurecido | H                                       |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Tipos de Maquinado**

- Corte Continuo
- Corte en General
- ✳ Corte Interrumpido




















| Insertos   | Codigo  | Cemet       |      | Recubierto |        |        |        |        |        |        | Sin Rec. | Dimensiones (mm) |        |        |        |        | Geometrias | Herramienta Disponible |       |      |     |   |   |
|--|---|-------------|------|------------|--------|--------|--------|--------|--------|--------|----------|------------------|--------|--------|--------|--------|------------|------------------------|-------|------|-----|---|---|
|  |   | CN2000      | CN30 | NC5330     | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 |          | PC6510           | PC9530 | PC9540 | PC5300 | PC5400 |            |                        | ST30A | H01  | l   | d   | t   |
|  ZPET-MM<br>Interno | 080M-MM   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 16         | 8.0                    | 3.5   | 8    | 2.9 |    | E326  |
|  | 090M-MM   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 17.7       | 7.2                    | 4.3   | 9    | 3.4 |   |   |
|  | 100M-MM   |             |      |            |        |        |        | ●      | ●      |        |          |                  |        |        |        |        | 19         | 10.4                   | 4.5   | 10   | 3.4 |   |   |
|  | 110M-MM   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 22.2       | 11.4                   | 4.8   | 11   | 4.5 |   |   |
|  | 125M-MM   |             |      |            |        |        |        | ●      |        |        |          |                  |        |        |        |        | 24         | 12.9                   | 5.3   | 12.5 | 4.5 |   |   |
|  | 130M-MM   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 25.7       | 13.4                   | 5.3   | 13   | 4.5 |   |   |
|  | 140M-MM   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 27.2       | 14.3                   | 6.3   | 14   | 5.6 |   |   |
|  | 150M-MM   |             |      |            |        |        |        |        | ●      |        |          |                  |        |        |        |        | 28         | 15.4                   | 7     | 15   | 5.6 |   |   |
|  | 160M-MM   |             |      |            |        |        |        |        | ●      |        |          |                  |        |        |        |        | 28.5       | 16.4                   | 7     | 16   | 5.6 |   |   |
|  | 200M-MM   |             |      |            |        |        |        |        |        | ●      |          |                  |        |        |        |        | 38         | 20.7                   | 8     | 20   | 6.6 |   |   |
|  | 250M-MM   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 48         | 25.9                   | 9.5   | 25   | 8.6 |   |   |
|  |  ZPET-MM<br>Externo | 080S-MM     |      |            |        |        |        |        |        |        |          |                  |        |        |        |        |            | 15                     | 6.6   | 3.1  | 8   |   |   |
| 090S-MM  |   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 15.5       | 7.4                    | 3.7   | 9    | 3.4 |   |   |
| 100S-MM  |   |             |      |            |        |        |        | ●      | ●      |        |          |                  |        |        |        |        | 15.5       | 8.4                    | 3.8   | 10   | 3.4 |   |   |
| 110S-MM  |   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 18.1       | 9                      | 4.4   | 11   | 4.5 |   |   |
| 125S-MM  |   |             |      |            |        |        |        | ●      | ●      |        |          |                  |        |        |        |        | 20.5       | 10.7                   | 4.5   | 12.5 | 4.5 |   |   |
| 130S-MM  |   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 22.2       | 11                     | 4.4   | 13   | 4.5 |   |   |
| 140S-MM  |   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 24.1       | 11.2                   | 5.7   | 14   | 5.6 |   |   |
| 150S-MM  |   |             |      |            |        |        |        |        |        | ●      |          |                  |        |        |        |        | 25         | 12.4                   | 6.5   | 15   | 5.6 |   |   |
| 160S-MM  |   |             |      |            |        |        |        |        | ●      |        |          |                  |        |        |        |        | 26         | 13.4                   | 6.5   | 16   | 5.6 |   |   |
| 200S-MM  |   |             |      |            |        |        |        |        |        | ●      |          |                  |        |        |        |        | 32         | 16.7                   | 7     | 20   | 6.6 |   |   |
| 250S-MM  |   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 40         | 20.7                   | 8.5   | 25   | 8.6 |   |   |
|  ZPMT-MM          |   | 1504PPSR-MM |      |            |        |        |        |        |        |        | ●        |                  |        |        |        |        |            | 15.9                   | 12.7  | 4.76 | -   | 5.6   |  |
|  | 1505PPSR-MMN  |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 15.9       | 12.7                   | 5.76  | -    | 5.6 |   |   |
|  |   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        |            |                        |       |      |     |   |   |
|  ZPMT-R-MM        | 160520R-MM  |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 16.1       | 12.7                   | 5.56  | 20   | 5.6 |  | E328  |
|  | 160525R-MM  |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 16.9       | 12.7                   | 5.56  | 25   | 5.6 |   |   |
|  | 160531.5R-MM  |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 17.6       | 12.7                   | 5.56  | 31.5 | 5.6 |   |   |
|  |   |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        |            |                        |       |      |     |   |   |
|  ZPMT-R-MR        | 160525R-MR  |             |      |            |        |        |        |        |        |        |          |                  |        |        |        |        | 17.6       | 12.7                   | 5.56  | 25   | 5.6 |  | E327  |

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| Tipo                    | Cortador       | Codigo                              | Forma   | A.A | Rango<br>Diámetro | Características   | Aplicación |           |           |         |                  | Pag.       |
|-------------------------|----------------|-------------------------------------|---|-----|-------------------|---|------------|-----------|-----------|---------|------------------|------------|
|                         |                |                                     |   |     |                   |   | Careado    | Contorneo | Mortajado | Copiado | Rampa helicoidal |            |
| Cortadores para Careado | Mill-max       | ADN(M)<br>4000/5000+                |                      | 45° | Ø80~Ø315          | Filo resistente exelente flujo de viruta  | ●          |           |           |         |                  | E44<br>E45 |
|                         |                | AE(M)<br>4000/5000                  |                      | 45° | Ø80~Ø315          | Cortes suaves debido a su bajacarga de corte  | ●          |           |           |         |                  | E46<br>E47 |
|                         |                | EF(M)<br>4000                       | <span>Al</span><br>  | 75° | Ø80~Ø315          | Mejor angulo de desahogo queevita la adherencia de material                                       | ●          |           |           |         |                  | E48        |
|                         |                | EN(M)<br>4000                       |                      | 75° | Ø80~Ø315          | Economico si se utilizan los ambos lados del filo   | ●          |           |           |         |                  | E49        |
|                         |                | EPN(M)<br>4000/5000+                |                      | 75° | Ø80~Ø315          | Baja carga de corte debido a ladoble posición positiva del inserto                                | ●          |           |           |         |                  | E50<br>E51 |
|                         |                | PF(M)<br>4000                       | <span>Al</span><br> | 90° | Ø80~Ø315          | Cortes suaves con alto angulode desahogo  | ●          | ●         | ●         |         |                  | E52        |
|                         |                | PPN(M)<br>4000                      |                    | 90° | Ø80~Ø315          | Baja carga de corte debido a ladoble posición positiva del inserto                                | ●          | ●         | ●         |         |                  | E53        |
|                         | Mill-max Heavy | HDDCM<br>7000/9000 <span>new</span> |                    | 55° | Ø125~Ø315         | Disponibilidad de desbaste profundo gracias a inserciones altamente rígidas                       | ●          |           |           |         |                  | E55        |
|                         | Turbo Mill     | ADS<br>4000/5000                    |                    | 45° | Ø50~Ø63           | Anti-vibración  | ●          |           |           |         |                  | E56<br>E57 |
|                         |                | PES<br>2000/3000/<br>4000           |                    | 90° | Ø20~Ø63           | Alto angulo de ataque, Corte eficiente  | ●          | ●         | ●         |         |                  | E58        |
|                         | Double Mill    | AFO(M)4000                          |                    | 45° | Ø80~Ø125          | Baja carga de corte debido asu alto angulo de desahogo<br>Puede utilizar los 8 fillos del inserto | ●          |           |           |         |                  | E59        |
|                         |                | AFO(M)5000                          |   |     | Ø80~Ø315          |   |            |           |           |         |                  | E60        |
|                         | Power Buster   | PBAC(M)5000                         |                    | 45° | Ø80~Ø315          | Inserto de dolble cara<br>Alta profundidad y con alto avance en desbaste                          | ●          |           |           |         |                  | E65        |
|                         |                | PBZC(M)5000                         |                    | 90° | Ø80~Ø315          |   | ●          |           |           |         |                  | E66        |
|                         |                | PBPCM6000 <span>new</span>          |                    |     | Ø80~Ø315          |   | ●          | ●         |           |         |                  | E67        |













Al Cortador de Aluminio














| Tipo   | Cortador               | Codigo                        | Forma  | A.A   | Rango Diametro | Características  | Aplicación                                   |           |           |         |                  | Pag.         |     |
|--|------------------------|-------------------------------|--|---|----------------|--|--|-----------|-----------|---------|------------------|--------------|-----|
|  |                        |                               |  |   |                |  | Careado                                      | Contorneo | Mortajado | Copiado | Rampa Helicoidal |              |     |
| Cortadores para Careado  | Aero Mill              | APD(M)<br>A tipo              | <br> | 90°   | Ø80~Ø315       | Conveniente para cortes a altas velocidades debido a su cuerpo de aluminio.<br>Recomendado para insertos PCD ó sin recubrimiento<br>Nivel de Balanceo G2.5 | ●  |           |           |         |                  | E136         |     |
|  | Aero Mill - Plus       | APD(M)-PB                     | <br> | 90°   | Ø80~Ø315       | Evita la sobrecarga del husillo gracias a la reducción de peso del cuerpo de aluminio; posibilitando un maquinado a muy alta velocidad                     | ●  |           |           |         |                  | E137<br>E138 |     |
|  | Aero Mill-Mini         | MAPDS                         | <br> | 90°   | Ø40~Ø63        | Disponible para centros de mecanizado pequeños.<br>Mecanizado con insertos PCD o de carburo.   | ●  |           |           |         |                  | E139         |     |
|  |                        | MAPD                          | <br> | 90°   | Ø32~Ø40        | Herramienta Balanceada G2.5  | ●  |           |           |         |                  | E140         |     |
|  | Rich Mill              | RM8AC(M)4000<br>RMH8AC(M)4000 |    | 45°   | Ø50~Ø400       | Inserto de 8 fillos<br>Inserto de doble filo para acero, fundición, acero inoxidable, aluminio   | ●  |           |           |         |                  | E115<br>E116 |     |
|  |                        |                               |  |   |                |  | Ø80~Ø400                                     | ●         |           |         |                  | E117<br>E118 |     |
|  |                        | RM8EC(M)4000<br>RMH8EC(M)4000 |   | 75°   | Ø50~Ø400       | Inserto de 8 fillos<br>Inserto de doble filo para acero fundición  | ●  |           |           |         |                  | E119<br>E120 |     |
|  |                        |                               |  |   |                |  | Ø80~Ø400                                     | ●         |           |         |                  | E121<br>E122 |     |
|  |                        | RM8QC(M)4000<br>RMH8QC(M)4000 |   | 88°   | Ø63~Ø200       | Inserto de 8 fillos<br>Reducción del corte interrumpido en fundición   | ●  |           |           |         |                  | E123<br>E124 |     |
|  |                        | RMT8A(M)<br>4000/5000         |   | 45°   | Ø80~Ø315       |  | ●  |           |           |         |                  | E125<br>E126 |     |
|  |                        | RMT8E(M)<br>4000/5000         |   | 75°   | Ø80~Ø315       | Insertos de cambio rapido y gran maquinabilidad gracias al sistema de sujeción de brida<br>Disponibles en 8 fillos<br>Excelente acabado                    | ●  |           |           |         |                  | E127<br>E128 |     |
|  |                        | RMT8Q(M)<br>4000              |   | 88°   | Ø80~Ø315       |  | ●  |           |           |         |                  | E129         |     |
|  |                        | RM16AC(M)<br>6000/8000        |   | 45°   | Ø63~Ø400       | Insertos de doble filo (16 fillos).<br>Disponibles tambien con rompeviruta Wiper un para mejor acabado.<br>Insertos resistentes con una sujeción fuerte.   | ●  |           |           |         |                  | E130<br>E131 |     |
|  | Cortadores para Moldes | Rich Mill                     | RM3PC(M)3000    |  | 90°            | Ø40~Ø80  | Excelente perpendicularidad<br>Fuerte agarre |           |           |         |                  |              | E89 |
|  |                        |                               | Ø40~Ø125    |   |                | ●  |  | ●         | ●         | ●       | E90              |              |     |
| Ø80~Ø125  |                        |                               |  |   |                |  |  |           |           | E91     |                  |              |     |



















 Cortador de Aluminio
















| Tipo                   | Cortador     | Codigo                               | Forma   | A.A | Rango<br>Diámetro | Características   | Aplicación  |           |           |         |                      | Pag.          |
|------------------------|--------------|--------------------------------------|---|-----|-------------------|---|---|-----------|-----------|---------|----------------------|---------------|
|                        |              |                                      |   |     |                   |   | Careado   | Conformeo | Mortajado | Copiado | Pempa helicoidal     |               |
| Cortadores para Moldes | Rich Mill    | RM4PC(M)3000                         |    | 90° | Ø40~Ø100          | 4 esquinas disponibles<br>Ángulo de ataque muy positivo, para reducir carga de corte<br>Excelente rigidez   | ●   | ●         | ●         | ●       | ●                    | E95<br>E96    |
|                        |              | RM4PC(M)4000                         |   |     | Ø50~Ø160          |   |   |           |           |         |                      |               |
|                        |              | RM4ZCM3000                           |    | 90° | Ø40~Ø52           | Profundidad de corte máxima en maquinado vertical:<br>RM4Z3000: 9.00 mm<br>RM4Z4000: 14.00 mm   | ●   | ●         | ●         | ●       | ●                    | E108          |
|                        |              | RM4ZC(M)4000                         |   |     | Ø63~Ø100          |   |   |           |           |         |                      |               |
|                        |              | RM6PC(M)-WN04 <sup>new</sup>         |    | 90° | Ø40~Ø63           | Mayor velocidad de corte y avance, mejorando la productividad   | ●   | ●         | ●         | ●       | ●                    | E110          |
|                        |              | RM6PC(M)-WN08 <sup>new</sup>         |   |     | Ø50~Ø125          |   |   |           |           |         |                      |               |
|                        | Alpha Mill-X | AMXCM <sup>new</sup>                 |    | 90° | Ø40~Ø80           | El filo de corte presenta un ángulo de ataque muy positivo y un rompevirutas para reducir la carga de corte y mejorar la evacuación de la viruta.<br><br>Alta rigidez debido a un diseño especial.            | ●   | ●         | ●         | ●       | ●                    | E145          |
|                        | Alpha Mill   | AMC(M)<br>1000S/1500S/<br>2000S      |   | 90° | Ø32~Ø100          | Figura de 3 dimensional y alto agulo de ataque se garantiza a bajar fuerza de corte y mejor evacuacin de rompevirutas.<br>Systema de refrigeración para mejor control de virutas se dirige a larga vida útil. | ●   | ●         | ●         | ●       | ●                    | E154<br>~E156 |
|                        |              | AMC(M)<br>3000S/3000S-K<br>/4000S    |  | 90° | Ø40~Ø200          |   | Variedad de tamaño de insertos se mejora aplicaciones variables.<br>Varios tipos de Alpha- Mills se pueden aplicar cortes profundo y alto avance. | ●         | ●         | ●       | ●                    | ●             |
|                        |              | AMC(M)<br>1000SE<br>2000SE<br>3000SE |  | 75° | Ø40~Ø100          | ●   | ●   | ●         | ●         | ●       | E160<br>E161         |               |
|                        |              | AMC(M)<br>2000M<br>3000M<br>4000M    |  | 90° | Ø50~Ø125          | ●   | ●   | ●         | ●         | ●       | E162<br>E163<br>E164 |               |
|                        | Future Mill  | FMAC(M)3000                          |  | 45° | Ø50~Ø125          | Exelente precisión de cortedel inserto  | ●   |           |           |         |                      | E222          |
|                        |              | FMAC(M)4000                          |   |     | Ø50~Ø200          |   |   |           |           |         |                      |               |
|                        |              | FMAC(M)3000A                         |  | 45° | Ø63~Ø125          | Exelente para cortar a alta velocidad, debido al ligero peso del cortador.  | ●   |           |           |         |                      | E224          |
|                        |              | FMAC(M)4000A                         |   |     | Ø63~Ø315          |   |   |           |           |         |                      |               |
|                        |              | FMPC(M)3000                          |  | 90° | Ø50~Ø100          | Permite utilizar los 4 fillos del inserto.<br>Mejora la resistencia del filo debido a su baja carga de corte  | ●   | ●         | ●         |         |                      | E228          |
|                        |              | FMPC(M)4000                          |   |     | Ø63~Ø125          |   |   |           |           |         |                      |               |
|                        |              | FMPC(M)3000A                         |  | 90° | Ø63~Ø100          | Exelente para cortar a alta velocidad, debido al ligeropeso del cortador.   | ●   | ●         | ●         |         |                      | E230          |
| FMPC(M)4000A           |              | Ø63~Ø315                             |   |     | E231              |   |   |           |           |         |                      |               |














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|                        |                        |   |   |         |                |   | Careado    | Contorneo | Mortajado | Copiado | Rampa Helicoidal |   |
| Cortadores para Moldes | Future Mill            | FMRC(M)3000   |    | -       | Ø40~Ø100       | 4~8 fillos disponibles<br>Fuerte sujecion de anclaje debrida por su diseño especialconvexo - concavo<br>Sistema sencillo para el cambio de filo en los insertos   | ●          | ●         | ●         | ●       | ●                | E234  |
|                        |                        | FMRC(M)4000   |   |         | Ø50~Ø125       |   |            |           |           |         |                  | E235  |
|                        |                        | FMRC(M)5000   |    | -       | Ø50~Ø125       |   |            |           |           |         |                  | E236  |
|                        |                        | FMRC(M)6000   |   |         | Ø63~Ø160       |   |            |           |           |         |                  | E237  |
|                        | Future Mill P-positive | FMRC(M) <sup>new</sup><br>3000<br>4000<br>5000<br>6000                              |    | -       | Ø40~Ø250       | Fuerte sistema de agarre, facilitando un maquinado excelente<br>Variedad de productos para muchas aplicaciones<br>Formas y diseños óptimos y diversidad de grados para maquinar todo tipo de materiales, incluyendo materiales de de alta dureza y aleaciones termorresistentes   | ●          | ●         | ●         | ●       | ●                | E248<br>~E251   |
|                        | HFMD                   | HFMDCM-LN06 <sup>new</sup>  |   | -       | Ø32~Ø66        | Inserto de doble cara con 4 fillos para mecanizado de diámetros ppequeños.<br>Para mecanizado de alto avance y mecanizado multifuncional.<br>La sujeción fuerte permite un mecanizado estable.  | ●          | ●         | ●         |         | ●                | E266  |
|                        | HRM                    | HRMC(M)13   |  | 15°     | Ø50~Ø80        | Exelente sistema debido a la doble sujeción del inserto, puede utilizar los 3 fillos. Alta velocidad de corte con baja carga  | ●          | ●         | ●         |         | ●                | E292  |
|                        |                        | HRMC(M)15   |   |         | Ø63~Ø160       |   |            |           |           |         |                  | E293  |
|                        | HRMD                   | HRMDC(M)09  |  | 14°     | Ø40~Ø100       | Para inserto de 6 fillos exelente sistema de doble sujecion.<br>Para alta velocidad decorte con baja carga.   | ●          | ●         | ●         |         | ●                | E281  |
|                        |                        | HRMDC(M)13  |   |         | Ø50~Ø125       |   |            |           |           |         |                  | E282  |
|                        |                        | HRMDC(M)16 <sup>new</sup>   |   |         | Ø80~Ø315       |   |            |           |           |         |                  | E283  |
|                        | Tangen-Pro             | TP2PC(M)-LN08 <sup>new</sup>  |  | 90°     | Ø40~Ø63        | Fuerte sistema de agarre tangencial que facilita un mecanizado de muy alta calidad incluso en las peores condiciones de corte   | ●          | ●         | ●         |         |                  | E303  |
|                        |                        | TP2PC(M)-LN14 <sup>new</sup>  |   |         | Ø40~Ø125       |   |            |           |           |         |                  | E304  |
|                        |                        | TP2PC(M)-LN17 <sup>new</sup>  |   |         | Ø40~Ø125       |   |            |           |           |         |                  | E305  |
|                        | Herramientales BT/HSK  | BT30/40/50  |  | 90°     | Ø10~Ø50        | BT / HSK un tipo sólido ha sido aceptada para aumentar la precisión del sistema de refrigeración interno también puede hacer que sea posible evacuar la viruta eficazmente. Alto avance y profundidad alta<br>Cabezas Modulares M6-M16 de: Alpha-Mill, Rich Mill, FMR, Laser Mill, HRM(D), Pro-A, Pro-X se pueden utilizar.<br>Sólo la cabeza de reemplazo eficiencia posible y superior en la cabeza auto ensamblaje | ●          | ●         | ●         |         | ●                | E184<br>~E188   |
|                        |                        | HSK63   |   |         |                |   |            |           |           |         |                  | E189<br>~E193   |
|                        |                        | BT30/40/50  |  | 90°     | Ø16~Ø100       |   |            |           |           |         |                  | E194<br>~E199   |
|                        |                        | HSK63/100   |   |         |                |   |            |           |           |         |                  | E200<br>~E204   |
|                        |                        | BT30/40/50-MAT  |   |         |                |   |            |           |           |         |                  |  |
|                        |                        | HSK63/100-MAT   | E206  |         |                |   |            |           |           |         |                  |   |
| BT50 HAT4000           |                        |  | 90°   | Ø50~Ø80 | E199           |   |            |           |           |         |                  |   |

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|  |  |   |   |          |   |   | Careado    | Contorneo | Mortajado | Copiado | Pampa helicoidal |      |
| Cortadores para Aluminio                 | Pro-A Mill   | PAC(M)<br>2000/4000   |   | 90°      | Ø40~Ø100  | El acabado en la cara superior brinda un mejor desalajo y control de virutas, evitando la adhesión.   | ●          | ●         | ●         | ●       | ●                | E354 |
|  | Pro-X Mill   | PAXC(M)5000   |   | 90°      | Ø40~Ø125  | Sistema de sujeción poderoso.   | ●          | ●         | ●         | ●       | ●                | E357 |
|  |  | PAXC(M)6000   | Ø50~Ø125  |          | Disponible para escuadrado y maquinado en superficies curvas.   | E358  |            |           |           |         |                  |      |
|  | Pro-L Mill   | PALC(M)   |   | 90°      | Ø63   | Hélice alta y gran profundidad de corte<br>Gran perpendicularidad<br>Baja carga de corte              | ●          | ●         | ●         | ●       | ●                | E363 |
| Pro-V Mill                               | PAVCM-XD19  |   | 90°   | Ø40~Ø125 | Herramienta de fresado exclusiva para el mecanizado de aluminio a alta velocidad con sujeción en forma de ranura asegurando una sujeción estable. | ●   | ●          | ●         | ●         | ●       | E368             |      |
| Cortadores de Alto Avance para Fundición | Fresas de alto avance  | PNH<br>4000/5000  |    | 90°      | Ø125~Ø450   | Angulo doblemente negativo.<br>Exelentes acabados.<br>Inserto wiper disponible.                       | ●          |           |           |         |                  | E395 |
|  |  | PPH<br>4000   |    | 90°      | Ø125~Ø450   | Exelentes acabados.<br>Inserto cuadrado y wiper disponibles.  | ●          |           |           |         |                  | E396 |
|  | Shave Mill   | SVM(M)4000  |    | 90°      | Ø80~Ø315  | Su exclusivo dispositivo de ajuste del filo de corte ajusta la excentricidad fácilmente.              | ●          |           |           |         |                  | E397 |
|  | Shave Mill-Ultra   | SVUM6000  |    | 90°      | Ø80~Ø315  | Buena rigidez y economica debido a la sujecion de tornillo tipo simple                                | ●          |           |           |         |                  | E398 |
|  |  | SVUM6000-B  |    | 90°      | Ø80~Ø315  | Facil de manejar en "run-out" debido a la alta resistencia en el corte                                | ●          |           |           |         |                  | E399 |
| Cortador Lateral Indexable               | Completo   | TAFCP   |    | -        | Ø100~Ø315   | Amplio rango de maquinado con un cortador lateral, gracias al ajuste de altura de corte en del filo.  |            | ●         | ●         |         |                  | E375 |
|  |  | TAFCB   |    | -        | Ø100~Ø315   |   | ●          | ●         | ●         |         | E375             |      |
|  | Medio  | TAHCP   |    | -        | Ø100~Ø315   | Filo de corte flerte<br>Muestra un exelente desempeño en desbastes medios y pesados en cortes amplios |            | ●         | ●         |         |                  | E376 |
|  |  | TAHCB   |    | -        | Ø100~Ø315   | ●   | ●          | ●         |           | E376    |                  |      |

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|                            |                             |         |   |     |                   |  | Careado    | Contorneo | Mortajado | Copiado      | Rampa helicoidal |      |
| Cortador Lateral Indexable | Tipo Radial                 | RAFCP   |    | -   | Ø100~Ø315         | Amplio rango de maquinado con un cortador lateral, gracias al ajuste de altura de corte en del filo.         |            | ●         | ●         |              |                  | E377 |
|                            |                             | RAFCB   |    | -   | Ø100~Ø315         |  | ●          | ●         | ●         |              | E377             |      |
|                            | Cortador de perfil medio    | RAHCP   |    | -   | Ø100~Ø315         | Recomendado para acabado medio y acabado final en maquinados estrechos y con buen control y flujo de virutas |            | ●         | ●         |              | E378             |      |
|                            |                             | RAHCB   |    | -   | Ø100~Ø315         | ●  | ●          | ●         |           | E378         |                  |      |
| Cortador Lateral           | -                           | SPP(M)  |    | -   | Ø80~Ø200          | Recomendado para ranurados profundos y estrechos<br>Inserto pentagonal muy economico                         |            |           | ●         |              | E379             |      |
|                            |                             | SPB(M)  |  | -   | Ø80~Ø200          | Recomendado para ranurados profundos y estrechos<br>Inserto pentagonal muy economico                         |            |           | ●         |              | E380             |      |
|                            |                             | SPS     |  | -   | Ø50~Ø200          | Recomendado para ranurados profundos y estrechos   |            |           | ●         |              | E381             |      |
|                            | Cortador de perfil completo | RM4PFCB |  | -   | Ø80~Ø160          | Económico inserto de doble cara con 4 filos de corte dispolibles   |            |           | ●         |              | E97<br>E98       |      |
|                            |                             | RM4PFCP |  | -   | Ø80~Ø160          |  | ●          |           |           | E101<br>E102 |                  |      |
|                            | Cortador de perfil medio    | RM4PHCB |  | -   | Ø80~Ø160          | Económico inserto de doble cara con 4 filos de corte dispolibles   |            |           | ●         |              | E99<br>E100      |      |
|                            |                             | RM4PHCP |  | -   | Ø80~Ø160          |  | ●          |           |           | E103<br>E104 |                  |      |
|                            | Wind Mill                   | WFSB(M) |  | -   | Ø100~Ø250         | La punta redondeada de la placa asegura una larga vida útil de la.   | ●          | ●         | ●         |              | E384             |      |
|                            |                             | WFSP(M) |  | -   | Ø100~Ø250         | Amplia gama de aplicaciones con fresas tóricas de diferentes anchos y tamaños.                               |            | ●         | ●         |              | E385             |      |








# E Fresas mango KORLOY

| Tipo                                      | Cortador     | Codigo  | Forma   | A.A     | Rango<br>Diámetro | Características   | Aplicación |           |           |         |                  | Pag.          |
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|   |              |   |   |         |                   |   | Careado    | Contorneo | Mortajado | Copiado | Rampa helicoidal |               |
| Cortadores para Careado                   | Turbo Mill   | ADS<br>4000/5000  |    | 45°     | Ø50~Ø63           | La distribución irregular de los inserto ayuda a evitar las vibraciones   | ●          |           |           |         |                  | E56<br>E57    |
|   |              | PES<br>2000/3000/4000   |    | 90°     | Ø20~Ø63           | Maquinado facil gracias al amplio angulo de salida  | ●          | ●         | ●         |         |                  | E58           |
| Cortadores para Moldes                    | Rich Mill    | RM3PS3000 <b>new</b>  |    | 90°     | Ø20~Ø40           | Perpendicularidad perfecta<br>Fuerte agarre   | ●          | ●         | ●         |         | ●                | E92           |
|   |              | Ø32~Ø63   |   |         | E93               |   |            |           |           |         |                  |               |
|   |              | RM4PS3000   |    | 90°     | Ø14~Ø50           | 4 filios de corte disponibles<br>Ángulo de ataque muy positivo  | ●          | ●         | ●         |         | ●                | E105          |
|   |              | Ø32~Ø63   |   |         | E106              |   |            |           |           |         |                  |               |
|   |              | RM4ZS3000   |   | 90°     | Ø25~Ø40           | Profundidad de corte máxima en maquinado vertical: 9.00 mm  | ●          | ●         | ●         |         | ●                | E109          |
|   |              | RM6PS-WN04 <b>new</b>   |  | 90°     | Ø20~Ø32           | Alta velocidad de corte y alto avance; garantía de un escuadrado perfecto   | ●          | ●         | ●         |         | ●                | E112          |
|   |              | Ø32~Ø50   |   |         | E113              |   |            |           |           |         |                  |               |
|   | Alpha Mill-X | AMXS <b>new</b>   |  | 90°     | Ø32~Ø40           | El filo de corte presenta un ángulo de ataque muy positivo y un rompevirutas para reducir la carga de corte y mejorar la evacuación de la viruta.<br><br>Alta rigidez debido a un diseño especial.  | ●          | ●         | ●         | ●       | ●                | E146          |
|   | Alpha Mill   | AMS<br>1000S/1500S<br>2000S/3000S<br>3000S-K/4000S                                  |  | 90°     | Ø10~Ø63           | La combinación del diseño tridimensional de curva y el agran angulo positivo de incidencia mejora la evacuación de rompevirutas eficientemente con la baja fuerza de corte<br><br>El sistema de refrigerante interno<br>El vario rango de insertos puede proporcionar elección ampliada<br><br>La mayor profundidad y avance pueden ser disponibles | ●          | ●         | ●         | ●       | ●                | E165<br>~E172 |
|   |              | AMS<br>1000SE/2000SE<br>3000SE  |  | 75°     | Ø25~Ø63           |   | ●          |           |           |         |                  | E173<br>E174  |
| AMS<br>1000M/1500M<br>2000M/4000M         |              |  | 90°   | Ø16~Ø50 | ●                 |   | ●          | ●         | ●         | ●       | E175<br>~E177    |               |
| AMS<br>1000MH/1500MH<br>2000MH/3000MH(-K) |              |  | 90°   | Ø14~Ø40 | ●                 |   | ●          | ●         | ●         | ●       | E178<br>E179     |               |













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|                        |                           |   |   |        |  |  | Careado    | Contorneo | Mortajado | Copiado | Rampa Helicoidal |            |            |
| Cortadores para Moldes | Future Mill               | FMAS3000  |    | 45°    | Ø25~Ø63  | Excelente precisión de corte en el inserto   | ●          |           |           |         |                  | E226       |            |
|                        |                           | FMAS4000  |   |        | Ø50~Ø63  |  |            |           |           |         |                  | E227       |            |
|                        |                           | FMPS3000  |    | 90°    | Ø25~Ø63  | Puede utilizar los 4filos del inserto  | ●          |           |           |         |                  |            | E232       |
|                        |                           | FMPS4000  |   |        | Ø40~Ø63  | Resistente filo con baja carga de corte  |            |           |           |         |                  |            | E233       |
|                        |                           | FMRS 1000/1500/2000 2500/3000/4000 5000/6000  |    | -      | Ø8~Ø63   | Fuerte sistema de sujeción por su diseño concavo-convexo. Sistema de facil cambio de filo del inserto.   | ●          | ●         | ●         | ●       | ●                |            | E238 ~243  |
|                        | Future Mill P-positive    | FMRS <sup>new</sup> 2500/3000 4000/5000 6000  |    | -      | Ø17~Ø50  | Ángulo de incidencia a 11° grados garantizando una alta rigidez y una mejor maquinabilidad en acero para moldes y en superaleaciones termorresistentes   | ●          | ●         | ●         | ●       | ●                |            | E252 ~E255 |
|                        | HFMD                      | HFMS-LN06 <sup>new</sup>  |    | -      | Ø16~Ø40  | Inserto de doble cara con 4 fillos para mecanizado de diámetros pequeños. Para mecanizado de alto avance y mecanizado multifuncional. La sujeción fuerte permite un mecanizado estable.                    | ●          | ●         | ●         | ●       | ●                |            | E264 E265  |
|                        | HFH                       | HFMS <sup>new</sup> 1000  |    | -      | Ø8~Ø21   | Filo de corte helicoidal, baja carga de corte y tenacidad reforzada en punta Doble ángulo de incidencia (11° y 13°) aumentando la rigidez Ángulo de ataque negativo, ampliando la resistencia al astillado | ●          | ●         | ●         | ●       | ●                |            | E273 E274  |
|                        | HRM                       | HRMS 08/10/13/15  |   | 15°    | Ø20~Ø63  | Excelente sistema debido a la doble sujeción del inserto Puede utilizar los fillos en alta velocidad de corte, con baja carga de corte.  | ●          | ●         | ●         | ●       | ●                |            | E294 ~E296 |
|                        | HRMD                      | HRMS 06/09/13 <sup>new</sup>  |  | 14°    | Ø16~Ø63  | 6 fillos disponibles, puede utilizar los fillos en alta velocidad de corte debido al sistema de sujeción de tornillo   | ●          | ●         | ●         | ●       | ●                |            | E284 ~E287 |
|                        | Tangen-Pro                | TP2PS-LN08 <sup>new</sup>   |  | 90°    | Ø16~Ø25  | Fuerte sistema de agarre tangencial que facilita un mecanizado de muy alta calidad incluso en las peores condiciones de corte  | ●          | ●         | ●         |         |                  |            | E306       |
|                        | TP2PS-LN14 <sup>new</sup> | Ø25~Ø50   |   |        | E307   |  |            |           |           |         |                  |            |            |
|                        | TP2PS-LN17 <sup>new</sup> | Ø32~Ø50   |   |        | E308   |  |            |           |           |         |                  |            |            |
|                        | Tank Mill                 | THE   |  | 90°    | Ø25~Ø50  | Angulo de helice en mano derecha empleado para tener un buen desalajo de la viruta. Superficie tratada para evivar fracturas y mejorar su rigidez.   | ●          | ●         |           |         |                  |            | E299       |
|                        | Laser Mill                | LBE□□ LRE□□   |  | -      | Ø8~Ø32   | Endmil esferico indexable para hacer acabados con precision. Rigidez de la herramienta por su diseño simple. Sistema MLQ disponible.   | ●          | ●         | ●         | ●       |                  |            | E318 ~E322 |
| LBE□□-C LRE□□-C        |                           |  | -   | Ø8~Ø32 | Endmil esferico indexable parahacer acabados con precision. Rigidez de la herramienta por su diseño simple. Sistema MLQ disponible. Zanco de Carburo | ●  | ●          | ●         |           |         |                  | E318 ~E322 |            |

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|                        |   |   |   |         |                              |  | Careado    | Contorneo | Mortajado | Copiado | Rampa helicoidal |      |      |
| Cortadores para Moldes | Mach Mill   | BFE   |    | -       | Ø16~Ø32                      | Buen desempeño cortando, debido al filo tipo ondulado.   | ●          | ●         | ●         | ●       |                  | E323 |      |
|                        |   | GBE   |    | -       | Ø16~Ø50                      | Diseño helicoidal de última generación que reduce la fuerza durante la operación y garantiza mayor la Tornillo a la herramienta  | ●          | ●         | ●         | ●       |                  | E324 |      |
|                        |   | BRE   |    | -       | Ø20~Ø63                      | El diseño de la flauta brinda un mejor control y desalajo de la viruta. Diseño especial para el filo que previene el quiebre de la herramienta.                            | ●          | ●         | ●         | ●       |                  | E327 |      |
|                        | HAVE  | Filo de corte múltiple  |    | 90°     | Ø16~Ø50                      | Herramientas para mecanizado en sentido axial, para un maquinado vertical efectivo y seguro<br>Maquinado con diámetro completo   | ●          | ●         | ●         | ●       |                  | E331 |      |
|                        |   | Un solo filo de corte   |   |         |                              |  |            |           |           |         |                  | E332 |      |
|                        | O-ring Cutter   | ORC   |  | 90°     | Ø11~Ø46                      | Para ranurar el asiento de un seguro en un molde de plástico<br>Rugosidad de la superficie superior y rendimiento de corte en comparación de HSS y a herramientas soldadas | -          | -         | -         | -       | -                | E334 |      |
|                        | Chamfer Tool  | CE  |  | 75°     | Ø25~Ø30                      | Para chaflan frontal y posterior de exelente calidad.  | ●          |           |           |         |                  |      | E338 |
|                        |   |   |   | 60°     | Ø25~Ø35                      |  |            |           |           |         |                  |      |      |
|                        |   |   |   | 45°     | Ø7~Ø39                       |  |            |           |           |         |                  |      |      |
|                        |   |   |   | 30°     | Ø25~Ø42                      |  |            |           |           |         |                  |      |      |
|                        |   | CE  |  | 30°     | Ø5~Ø35                       | Para maquinado en diferentes angulos.  | ●          | ●         | ●         |         |                  |      | E339 |
|                        |   |   |   | 45°     | Ø5~Ø48                       |  |            |           |           |         |                  |      |      |
|                        | 60°   |   |   | Ø5~Ø57  |                              |  |            |           |           |         |                  |      |      |
|                        |   |   |  | 45°     | ~Ø28                         | Ranurado, para maquinar Anillo central y chaflan en anillo.  | ●          | ●         | ●         | ●       |                  | E340 |      |
|                        | CCT   |  |   | 30°     | Ø3~Ø16                       | Centrado, Ranurado, Chaflan  |            |           |           |         |                  |      | E342 |
| 45°                    |   |   |   |         |                              |  |            |           |           |         |                  |      |      |
| 60°                    |   |   |   |         |                              |  |            |           |           |         |                  |      |      |
| CET                    |  |   | 30°   | Ø4~Ø16  | Raunrado , Chaflan, Planeado | ●  | ●          | ●         |           |         |                  | E341 |      |
|                        |   |   | 45°   |         |                              |  |            |           |           |         |                  |      |      |
|                        |   |   | 60°   |         |                              |  |            |           |           |         |                  |      |      |
| T-Cutter               | TFE   |  | 90°   | Ø21~Ø50 | Para fresado T               | ●  | ●          | ●         | ●         | ●       | E343             |      |      |



| Tipo                     | Cortador    | Codigo                              | Forma   | A.A | Rango<br>Diámetro  | Características   | Aplicación |           |           |         |                  | Pag.         |
|--------------------------|-------------|-------------------------------------|---|-----|--------------------|---|------------|-----------|-----------|---------|------------------|--------------|
|                          |             |                                     |   |     |                    |   | Careado    | Contorneo | Mortajado | Copiado | Rampa Helicoidal |              |
| Cortadores para Aluminio | Pro-A Mill  | PAS<br>2000/4000                    |    | 90° | Ø12~Ø42<br>Ø32~Ø40 | Pulido en la parte superior del inserto, esto es para mejorar el flujo y mejor control de la viruta y evitar la adhesion de material              | ●          | ●         | ●         | ●       | ●                | E355         |
|                          | Pro-X Mill  | PAXS<br>5000/6000                   |    | 90° | Ø20~Ø40<br>Ø25~Ø40 | Exelente sistema de sujeción cuerpo fuerte del cortador para el maquinado rectangular y curvado   | ●          | ●         | ●         | ●       | ●                | E359<br>E360 |
|                          | Pro-L Mill  | PALS-HR<br>(Un solo filo de corte)  |    | 90° | Ø32~Ø63            | la gran profundidad de corte y el gran hélice.<br>La alta perpendicularidad<br>La baja carga de corte   | ●          | ●         | ●         | ●       | ●                | E364<br>E365 |
|                          |             | PALS-HM<br>(Filo de corte múltiple) |    |     | Ø63                |   | ●          | ●         | ●         | ●       | ●                | E366         |
|                          | Pro-XL Mill | PXLS <b>new</b>                     |   | 90° | Ø40~Ø80            | Exelente sistema de sujeción cuerpo fuerte del cortador para el maquinado rectangular y curvado   | ●          | ●         |           |         |                  | E367         |
|                          | Pro-V Mill  | PAVS-XD19 <b>new</b>                |  | 90° | Ø25~Ø40            | Herramienta de fresado exclusiva para el mecanizado de aluminio a alta velocidad con sujeción en forma de ranura asegurando una sujeción estable. | ●          | ●         | ●         | ●       | ●                | E369         |
|                          |             | HSK-XD19 <b>new</b>                 |  |     | Ø32~Ø50            |   | ●          | ●         | ●         | ●       | ●                | E370         |
| Roscado                  | -           | TM                                  |  | -   | Ø32~Ø50            | Para roscado interior y exterior  | ●          |           |           |         |                  | D49          |

# E Adaptador modular KORLOY

Tipo FMRM

→ E244~247  
E256~259



Tipo LBE-MHD

→ E322



Tipo PAM

→ E356



Tipo PAXM

→ E361



Tipo AMM

→ E180~182



Tipo RM3PM

→ E94



Tipo RM4PM

→ E107



Tipo  
Mango de Acero

→ E371



Tipo  
Mango de Carburo

→ E372



Adaptador  
cono BT












→ E205



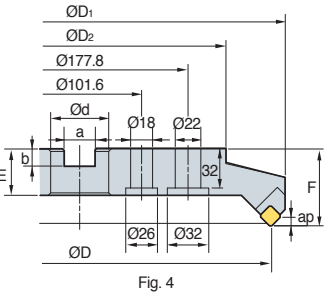
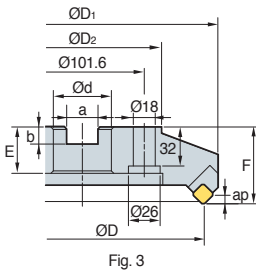
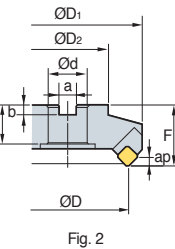
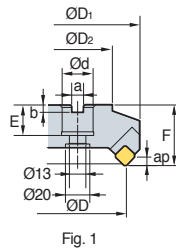
Adaptador  
HSK

→ E206



|                                  |   |  |   |
|----------------------------------|---|--|---|
| <p>Tipo RM4ZM<br/>➔ E109</p>     |    |    | <p>Tipo Mango de Acero<br/>➔ E371</p>   |
| <p>Tipo RM6PM<br/>➔ E114</p>     |    |   | <p>Tipo Mango de Carburo<br/>➔ E372</p> |
| <p>Tipo HFMDM<br/>➔ E267</p>     |    |  | <p>Adaptador cono BT<br/>➔ E205</p>     |
| <p>Tipo HFMM<br/>➔ E275</p>      |  |  | <p>Adaptador HSK<br/>➔ E206</p>         |
| <p>Tipo HRMM<br/>➔ E297, 298</p> |  |  |   |
| <p>Tipo HRMDM<br/>➔ E289~291</p> |  |  |   |
| <p>Tipo GBEM<br/>➔ E326</p>      |  |  |   |

# ADN(M)4000



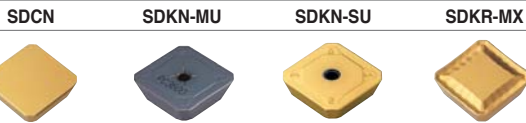
AA  
45°  
• AR: 15°  
• RR: -4°

(mm)

| Codigo | ØD      | ØD1 | ØD2 | Ød  | a   | b           | E           | F       | ap      | kg | Fig. |      |   |
|--------|---------|-----|-----|-----|-----|-------------|-------------|---------|---------|----|------|------|---|
| ADN    | 4080R/L | 4   | 80  | 57  | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 6    | 1.9  | 1 |
| (ADNM) | 4100R/L | 5   | 100 | 67  | 67  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 6    | 2.5  | 2 |
|        | 4125R/L | 6   | 125 | 87  | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 6    | 4.3  | 2 |
|        | 4160R/L | 8   | 160 | 107 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 6    | 6.4  | 2 |
|        | 4200R/L | 10  | 200 | 130 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 6    | 8.7  | 3 |
|        | 4250R/L | 12  | 250 | 180 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 6    | 14.0 | 3 |
|        | 4315R/L | 14  | 315 | 240 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 6    | 21.0 | 4 |

( ) Tamaño métrico

## Insertos disponibles



| Codigo           | Cermet | Recubierto |      |        |        |        |        |        |        | Sin Rec. | pag. |        |        |        |        |        |        |       |     |     |
|------------------|--------|------------|------|--------|--------|--------|--------|--------|--------|----------|------|--------|--------|--------|--------|--------|--------|-------|-----|-----|
|                  |        | CN2000     | CN30 | NCM325 | NCM335 | NC5330 | NCM535 | NCM545 | PC3600 |          |      | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400 | ST30A | G10 | H01 |
| SDCN 42M         |        |            |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     |     |
| 42M-G            |        |            |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     |     |
| 42MT             | •      | •          |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     |     |
| 42MT-RH          |        |            |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     |     |
| 42MT-S20         |        |            |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     | E17 |
| 1203AEEN         |        |            |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     |     |
| 1203AEEN-RH      |        |            |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     |     |
| 1203AESN         |        |            |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     |     |
| 1203AESN-RH      |        |            |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     |     |
| SDKN 1203AESN-MU |        |            |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     | E18 |
| 1203AESN-SU      |        |            |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     |     |
| SDKR 1203AESN-MX |        |            |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     | E18 |
| 1203AETN-MX      |        |            |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     |     |
| 1203AEN-MX       |        | •          |      |        |        |        |        |        |        |          |      |        |        |        |        |        |        |       |     |     |

## Adaptadores disponibles

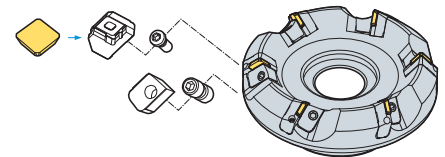
| Codigo         | Adaptador general                 | Adaptadores NC      |       |
|----------------|-----------------------------------|---------------------|-------|
|                |                                   | ADN                 | ADNM  |
| ADN 4080R/L    | NT*□□ (MU)-FMA25.4-25             | BT**□□-FMA25.4-□□   | FMC27 |
| (ADNM) 4100R/L | NT*□□ (MU)-FMA31.75-□□            | BT**□□-FMA31.75-□□  | FMC32 |
| 4125R/L        | NT*□□ (MU)-FMA38.1-□□             | BT**□□-FMA38.1-□□   | FMB40 |
| 4160R/L        | NT*□□ (MU)-FMA50.8-□□             | BT**□□-FMA50.8-□□   | FMB40 |
| 4200R/L        | NT*□□ (MU)-FMA47.625-25, KCP-8*** | BT**□□-FMA47.625-□□ | FMB60 |
| 4250R/L        | NT*□□ (MU)-FMA47.625-25, KCP-8*** | BT**□□-FMA47.625-□□ | FMB60 |
| 4315R/L        | KCP-8*** (Center Candado C Plug)  |                     |       |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5






## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                 |
|---------------|--------------------|----------------|---------------------------|
|               | vc (m/min)         | fz (mm/diente) |                           |
| P             | 190~320            | 0.05~0.20      | NCM325<br>PC3600<br>ST30A |
|               | 161~270            | 0.05~0.20      |                           |
|               | 80~140             | 0.05~0.20      |                           |
| M             | 90~150             | 0.05~0.20      | PC9530                    |
| K             | 140~230            | 0.05~0.30      | PC6510<br>G10             |
|               | 50~90              | 0.05~0.30      |                           |

Ensamblado



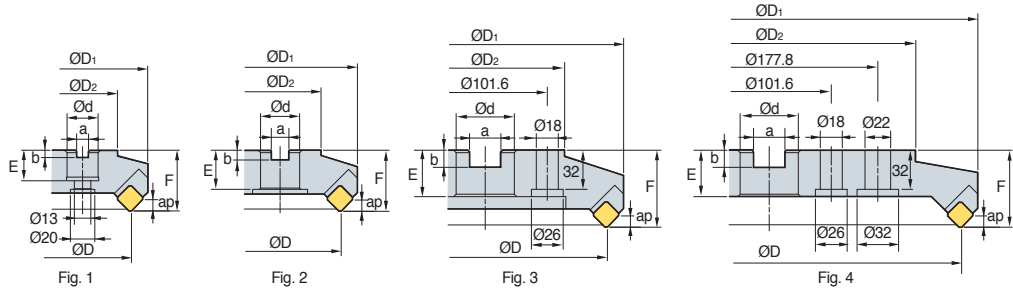
## Partes

| Especificación |  Cartucho |  Cuña |  Perno cuña |  Tornillo Cartucho |  Llave |
|----------------|--|--|--|---|---|
| Ø80~Ø315       | LADN4R/L   | WEPN4R/L   | DHA0821F   | LTX0514   | HW40  |

Insertos disponibles E17, E18 Detalles del cortador E400~E402



# ADN(M)5000+



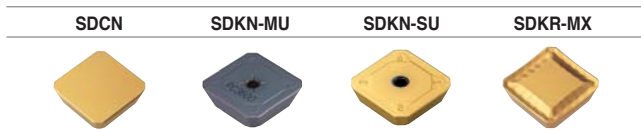
AA  
45°  
• AR: 15°  
• RR: -4°

(mm)

| Codigo          | ØD | ØD1 | ØD2 | Ød  | a           | b           | E       | F       | ap | kg | Fig. |   |
|-----------------|----|-----|-----|-----|-------------|-------------|---------|---------|----|----|------|---|
| ADN 5080R/L+    | 4  | 80  | 107 | 65  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 63 | 8  | 2.4  | 1 |
| (ADNM) 5100R/L+ | 5  | 100 | 126 | 75  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 63 | 8  | 3.0  | 2 |
| 5125R/L+        | 6  | 125 | 150 | 100 | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 8  | 4.7  | 2 |
| 5160R/L+        | 8  | 160 | 185 | 120 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 8  | 6.5  | 2 |
| 5200R/L+        | 10 | 200 | 225 | 140 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 8  | 8.7  | 3 |
| 5250R/L+        | 12 | 250 | 275 | 220 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 8  | 15.5 | 3 |
| 5315R/L+        | 14 | 315 | 340 | 280 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 8  | 23.7 | 4 |

( ) Tamaño métrico

## Insertos disponibles



| Codigo           | Cemert |      | Recubierto |        |        |        |        |        |        | Sin Rec. |        | pag. |        |        |        |       |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|--------|--------|-------|-----|-----|
|                  | CN2000 | CN30 | NCM325     | NCM385 | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510   | PC9530 |      | PC9540 | PC9500 | PC9400 | ST30A | G10 | H01 |
| SDCN 53M         |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| 53M-G            |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| 53MT             |        | ●    | ●          |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| 53MT-RH          |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| 53MT-S20         |        |      |            |        |        |        |        |        |        | ●        |        |      |        |        |        |       |     | E17 |
| 1504AEEN         |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| 1504AEEN-RH      |        |      |            |        |        |        |        |        |        |          | ●      | ●    |        |        |        |       |     |     |
| 1504AESN         |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| 1504AESN-RH      |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| SDKN 1504AESN-MU |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| 1504AESN-SU      |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     | E18 |
| SDKR 1504AESN-MX |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| 1504AETN-MX      |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     | E18 |
| 1504AEN-MX       |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |

## Adaptadores disponibles

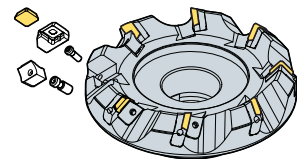
| Codigo          | Adaptador general                 | Adaptadores NC     |       |
|-----------------|-----------------------------------|--------------------|-------|
|                 |                                   | ADN                | ADNM  |
| ADN 5080R/L+    | NT*□□ (MU)-FMA25.4-25             | BT**□□-FMA25.4-□□  | FMC27 |
| (ADNM) 5100R/L+ | NT*□□ (MU)-FMA31.75-□□            | BT**□□-FMA31.75-□□ | FMC32 |
| 5125R/L+        | NT*□□ (MU)-FMA38.1-□□             | BT**□□-FMA38.1-□□  | FMB40 |
| 5160R/L+        | NT*□□ (MU)-FMA50.8-□□             | BT**□□-FMA50.8-□□  | FMB40 |
| 5200R/L+        | NT*□□ (MU)-FMA47.625-25, KCP-8*** | BT*□□-FMA47.625-□□ | FMB60 |
| 5250R/L+        | NT*□□ (MU)-FMA47.625-25, KCP-8*** | BT*□□-FMA47.625-□□ | FMB60 |
| 5315R/L+        | KCP-8*** (Center Candedo C Plug)  |                    |       |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                 |
|---------------|--------------------|----------------|---------------------------|
|               | vc (m/min)         | fz (mm/diente) |                           |
| P             | 190~320            | 0.05~0.20      | NCM325<br>PC3600<br>ST30A |
|               | 161~270            | 0.05~0.20      |                           |
|               | 80~140             | 0.05~0.20      |                           |
| M             | 90~150             | 0.05~0.20      | PC9530                    |
| K             | 140~230            | 0.05~0.30      | PC6510<br>G10             |
|               | 50~90              | 0.05~0.30      |                           |

## Ensamblado



## Partes

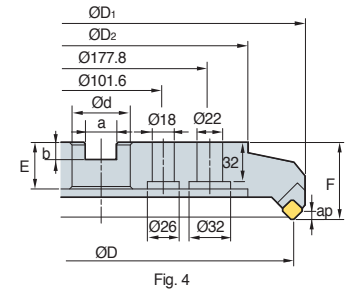
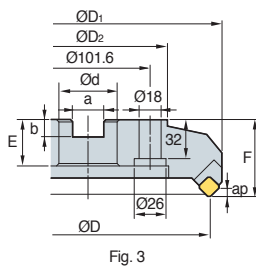
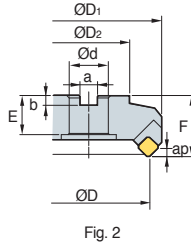
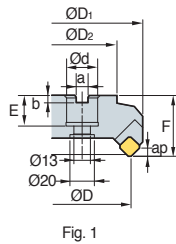
| Especificación | Cartucho | Cuña     | Perno cuña          | Tornillo Cartucho | Llave |
|----------------|----------|----------|---------------------|-------------------|-------|
| Ø80-Ø315       | LADN5R/L | WHPS5R/L | WHX0817<br>WHX0813* | LTX0514           | HW40  |

Insertos disponibles E17, E18

Detalles del cortador E400-E402

\*: Ø80

# AE(M)4000



AA  
45°  
• AR: 20°  
• RR: -3°

(mm)

| Codigo       | ØD             | ØD1 | ØD2 | Ød  | a   | b           | E           | F         | ap      | kg | Fig. |      |   |
|--------------|----------------|-----|-----|-----|-----|-------------|-------------|-----------|---------|----|------|------|---|
| <b>AE</b>    | <b>4080R/L</b> | 4   | 80  | 103 | 60  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)     | 25 (22) | 50 | 5.5  | 1.7  | 1 |
| <b>(AEM)</b> | <b>4100R/L</b> | 5   | 100 | 122 | 80  | 31.75 (32)  | 12.7 (14.4) | 8 (8)     | 32 (28) | 50 | 5.5  | 2.9  | 2 |
|              | <b>4125R/L</b> | 6   | 125 | 146 | 100 | 38.1 (40)   | 15.9 (16.4) | 10 (9)    | 38 (30) | 63 | 5.5  | 4.4  | 2 |
|              | <b>4160R/L</b> | 8   | 160 | 181 | 120 | 50.8 (40)   | 19.0 (16.4) | 11 (9)    | 38 (30) | 63 | 5.5  | 6.1  | 2 |
|              | <b>4200R/L</b> | 10  | 200 | 220 | 130 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 5.5  | 8.9  | 3 |
|              | <b>4250R/L</b> | 12  | 250 | 270 | 180 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 5.5  | 15.7 | 3 |
|              | <b>4315R/L</b> | 15  | 315 | 335 | 240 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 5.5  | 25.1 | 4 |

( ) Tamaño métrico

## Insertos disponibles



| Codigo           | Cermet         | Recubierto |        |        |        |        |        |        |        | Sin Rec. | pag. |        |        |                     |
|------------------|----------------|------------|--------|--------|--------|--------|--------|--------|--------|----------|------|--------|--------|---------------------|
|                  | CN2000<br>CN30 | NCM325     | NCM335 | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510 | PC9530   |      | PC5300 | PC5400 | ST30A<br>G10<br>H01 |
| SECN 1203AFFN    |                |            |        |        |        |        |        |        |        |          |      |        | ••     |                     |
| 1203AFTN         | ••             |            |        |        |        |        |        |        |        |          |      |        | •      |                     |
| 1203AFEN         |                |            |        |        |        |        |        |        |        |          |      |        |        |                     |
| 1203AFSN         |                |            | ••     |        |        |        |        |        |        |          |      |        |        | E19                 |
| 1203AFEN-RH      |                |            |        |        |        |        |        | •      |        | •        |      |        |        |                     |
| 1203AFSN-RH      |                |            |        |        |        |        |        |        |        |          |      |        |        |                     |
| 1203AFTN-S20     |                |            |        |        |        |        |        |        |        | •        |      |        |        |                     |
| SEKN 1203AFSN-SU |                |            |        |        |        |        |        | ••     |        |          |      |        |        | E19                 |
| SEKR 1203AFSN-MX |                | ••         |        |        |        |        |        |        |        | •        |      |        |        | E20                 |

## Adaptadores disponibles

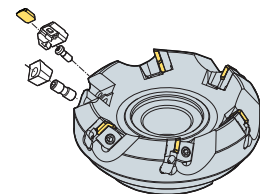
| Codigo       | Adaptador general | Adaptadores NC                     |                      |       |
|--------------|-------------------|------------------------------------|----------------------|-------|
|              |                   | ADN                                | ADNM                 |       |
| <b>AE</b>    | <b>4080R/L</b>    | NT*□□ (M/U)-FMA25.4-25             | BT**□□ -FMA25.4-□□   | FMC27 |
| <b>(AEM)</b> | <b>4100R/L</b>    | NT*□□ (M/U)-FMA31.75-□□            | BT**□□ -FMA31.75-□□  | FMC32 |
|              | <b>4125R/L</b>    | NT*□□ (M/U)-FMA38.1-□□             | BT**□□ -FMA38.1-□□   | FMB40 |
|              | <b>4160R/L</b>    | NT*□□ (M/U)-FMA50.8-□□             | BT**□□ -FMA50.8-□□   | FMB40 |
|              | <b>4200R/L</b>    | NT*□□ (M/U)-FMA47.625-25, KCP-8*** | BT**□□ -FMA47.625-□□ | FMB60 |
|              | <b>4250R/L</b>    | NT*□□ (M/U)-FMA47.625-25, KCP-8*** | BT**□□ -FMA47.625-□□ | FMB60 |
|              | <b>4315R/L</b>    | KCP-8*** (Center Candado C Plug)   |                      |       |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                                      |
|---------------|--------------------|----------------|--|
|               | vc (m/min)         | fz (mm/diente) |  |
| <b>P</b>      | 190~320            | 0.05~0.20      | <b>NCM325</b><br><b>PC3600</b><br><b>ST30A</b> |
|               | 161~270            | 0.05~0.20      |  |
|               | 80~140             | 0.05~0.20      |  |
| <b>M</b>      | 90~150             | 0.05~0.20      | <b>PC9530</b>                                  |
| <b>K</b>      | 140~230            | 0.05~0.30      | <b>PC6510</b><br><b>G10</b>                    |
|               | 50~90              | 0.05~0.30      |  |

Ensamblado



## Partes

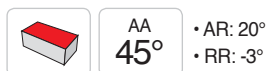
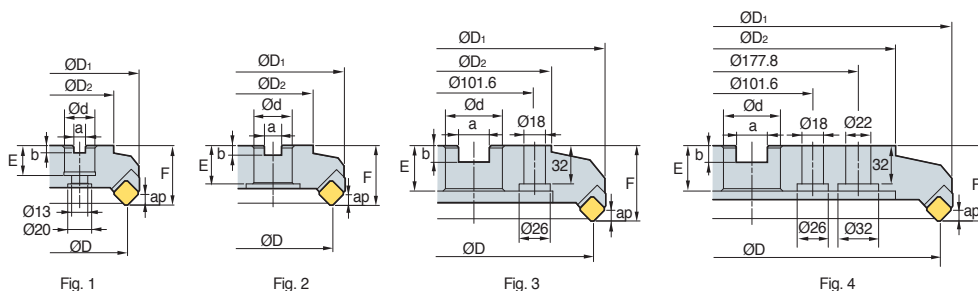
| Especificación |         |         |          |         |      |
|----------------|---------|---------|----------|---------|------|
| Ø80~Ø315       | LAE4R/L | WAE4R/L | DHA0821F | LTX0512 | HW40 |

Insertos disponibles E19, E20 Detalles del cortador E400~E402





# AE(M)5000



| Codigo       | ØD             | ØD1 | ØD2 | Ød  | a   | b           | E           | F         | ap      | kg | Fig. |      |   |
|--------------|----------------|-----|-----|-----|-----|-------------|-------------|-----------|---------|----|------|------|---|
| <b>AE</b>    | <b>5080R/L</b> | 4   | 80  | 103 | 60  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)     | 25 (22) | 50 | 7.5  | 1.7  | 1 |
| <b>(AEM)</b> | <b>5100R/L</b> | 5   | 100 | 122 | 80  | 31.75 (32)  | 12.7 (14.4) | 8 (8)     | 32 (28) | 50 | 7.5  | 2.9  | 2 |
|              | <b>5125R/L</b> | 6   | 125 | 146 | 100 | 38.1 (40)   | 15.9 (16.4) | 10 (9)    | 38 (30) | 63 | 7.5  | 4.4  | 2 |
|              | <b>5160R/L</b> | 8   | 160 | 181 | 120 | 50.8 (40)   | 19.0 (16.4) | 11 (9)    | 38 (30) | 63 | 7.5  | 6.1  | 2 |
|              | <b>5200R/L</b> | 10  | 200 | 220 | 130 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 7.5  | 8.9  | 3 |
|              | <b>5250R/L</b> | 12  | 250 | 270 | 180 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 7.5  | 15.7 | 3 |
|              | <b>5315R/L</b> | 15  | 315 | 335 | 240 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 7.5  | 25.1 | 4 |

( ) Tamaño métrico

## Insertos disponibles

|             | SECN                | SEKN-SU  | SEKR-MX             |   |          |      |
|-------------|---------------------|--|---------------------|---|----------|------|
|             |                     |  |                     |   |          |      |
| Codigo      | Cermet              | Recubierto   |                     |   | Sin Rec. | pag. |
|             | CN2000<br>CN30      | NCM325<br>NCM335<br>NC5330<br>NCM535<br>NCM545<br>PC3600<br>PC3700<br>PC6510<br>PC9530<br>PC9540<br>PC3300<br>PC5400 | ST30A<br>G10<br>H01 |   |          |      |
| <b>SECN</b> | <b>1504AFFN</b>     |  |                     |   | ●        |      |
|             | <b>1504AFTN</b>     | ●  |                     |   |          |      |
|             | <b>1504AFEN</b>     |  |                     |   |          |      |
|             | <b>1504AFSN</b>     |  |                     |   |          | E19  |
|             | <b>1504AFEN-RH</b>  |  |                     |   |          |      |
|             | <b>1504AFSN-RH</b>  |  |                     | ● |          |      |
|             | <b>1504AFTN-S20</b> |  |                     |   |          |      |
| <b>SEKN</b> | <b>1504AFSN-SU</b>  |  | ● ●                 |   | ●        | E19  |
|             | <b>1504AFSN-MX</b>  | ●  |                     | ● |          |      |

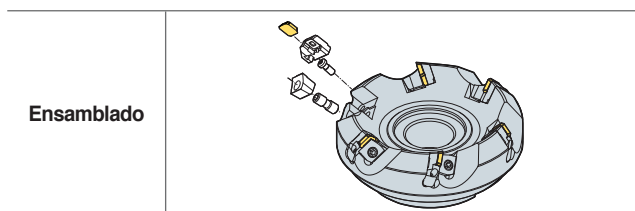
## Adaptadores disponibles

| Codigo       | Adaptador general | Adaptadores NC                     |                      |       |
|--------------|-------------------|------------------------------------|----------------------|-------|
|              |                   | AE                                 | AEM                  |       |
| <b>AE</b>    | <b>5080R/L</b>    | NT*□□ (M/U)-FMA25.4-25             | BT**□□ -FMA25.4-□□   | FMC27 |
| <b>(AEM)</b> | <b>5100R/L</b>    | NT*□□ (M/U)-FMA31.75-□□            | BT**□□ -FMA31.75-□□  | FMC32 |
|              | <b>5125R/L</b>    | NT*□□ (M/U)-FMA38.1-□□             | BT**□□ -FMA38.1-□□   | FMB40 |
|              | <b>5160R/L</b>    | NT*□□ (M/U)-FMA50.8-□□             | BT**□□ -FMA50.8-□□   | FMB40 |
|              | <b>5200R/L</b>    | NT*□□ (M/U)-FMA47.625-25, KCP-8*** | BT**□□ -FMA47.625-□□ | FMB60 |
|              | <b>5250R/L</b>    | NT*□□ (M/U)-FMA47.625-25, KCP-8*** | BT**□□ -FMA47.625-□□ | FMB60 |
|              | <b>5315R/L</b>    | KCP-8*** (Center Candedo C Plug)   |                      |       |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                                      |
|---------------|--------------------|----------------|--|
|               | vc (m/min)         | fz (mm/diente) |  |
| <b>P</b>      | 190~320            | 0.05~0.20      | <b>NCM325</b><br><b>PC3600</b><br><b>ST30A</b> |
|               | 161~270            | 0.05~0.20      |  |
|               | 80~140             | 0.05~0.20      |  |
| <b>M</b>      | 90~150             | 0.05~0.20      | <b>PC9530</b>                                  |
| <b>K</b>      | 140~230            | 0.05~0.30      | <b>PC6510</b><br><b>G10</b>                    |
|               | 50~90              | 0.05~0.30      |  |

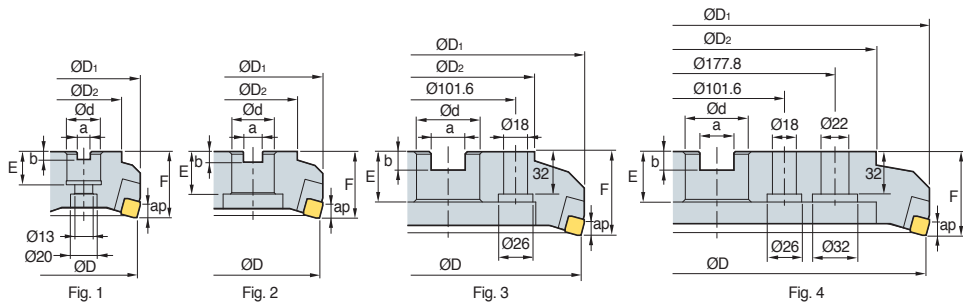
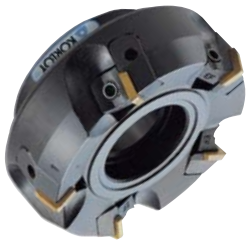


## Partes

| Especificación |         |         |          |         |      |
|----------------|---------|---------|----------|---------|------|
| Ø80-Ø315       | LAE5R/L | WAE5R/L | DHA0821F | LTX0512 | HW40 |

Insertos disponibles E19 Detalles del cortador E400~E402

# EF(M)4000



| Codigo       | ØD  | ØD1 | ØD2 | Ød          | a           | b         | E       | F  | ap  | kg   | Fig. |
|--------------|-----|-----|-----|-------------|-------------|-----------|---------|----|-----|------|------|
| <b>EF</b>    |     |     |     |             |             |           |         |    |     |      |      |
| <b>(EFM)</b> |     |     |     |             |             |           |         |    |     |      |      |
| 4080R/L      | 80  | 89  | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)     | 25 (22) | 50 | 8.0 | 1.5  | 1    |
| 4100R/L      | 100 | 108 | 70  | 31.75 (32)  | 12.7 (14.4) | 8 (8)     | 32 (28) | 50 | 8.0 | 2.1  | 2    |
| 4125R/L      | 125 | 133 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)    | 38 (30) | 63 | 8.0 | 3.8  | 2    |
| 4160R/L      | 160 | 168 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)    | 38 (30) | 63 | 8.0 | 5.5  | 2    |
| 4200R/L      | 200 | 208 | 130 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 8.0 | 8.2  | 3    |
| 4250R/L      | 250 | 257 | 180 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 8.0 | 13.4 | 3    |
| 4315R/L      | 315 | 322 | 240 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 8.0 | 21.2 | 4    |

( ) Tamaño métrico

## Insertos disponibles

SFCN



| Codigo       | Cermet |      | Recubrimiento |        |        |        |        |        |        | Sin Rec. |        | pag. |       |       |
|--------------|--------|------|---------------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|-------|
|              | CN2000 | CN30 | NCM325        | NCM535 | NCM545 | PC2010 | PC3600 | PC6510 | PC9530 | PC9540   | PC5400 |      | ST30A | G10   |
| SFCN 1203EFR |        |      |               |        |        |        |        |        |        |          |        |      |       | ● E20 |

## Adaptadores disponibles

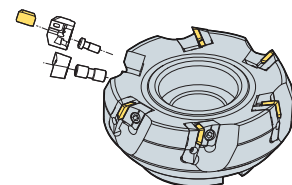
| Codigo       | Adaptador general                 | Adaptadores NC       |       |
|--------------|-----------------------------------|----------------------|-------|
|              |                                   | EF                   | EFM   |
| <b>EF</b>    |                                   |                      |       |
| <b>(EFM)</b> |                                   |                      |       |
| 4080R/L      | NT*□□ (MU)-FMA25.4-25-□□          | BT**□□ -FMA25.4-□□   | FMC27 |
| 4100R/L      | NT*□□ (MU)-FMA31.75-□□            | BT**□□ -FMA31.75-□□  | FMC32 |
| 4125R/L      | NT*□□ (MU)-FMA38.1-□□             | BT**□□ -FMA38.1-□□   | FMB40 |
| 4160R/L      | NT*□□ (MU)-FMA50.8-□□             | BT**□□ -FMA50.8-□□   | FMB40 |
| 4200R/L      | NT*□□ (MU)-FMA47.625-25, KCP-8*** | BT**□□ -FMA47.625-□□ | FMB60 |
| 4250R/L      | NT*□□ (MU)-FMA47.625-25, KCP-8*** | BT**□□ -FMA47.625-□□ | FMB60 |
| 4315R/L      | KCP-8*** (Center Candado C Plug)  |                      |       |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades  |
|---------------|--------------------|----------------|------------|
|               | vc (m/min)         | fz (mm/diente) |            |
| <b>K</b>      | 75~125             | 0.05~0.30      | <b>H01</b> |

Ensamblado



## Partes

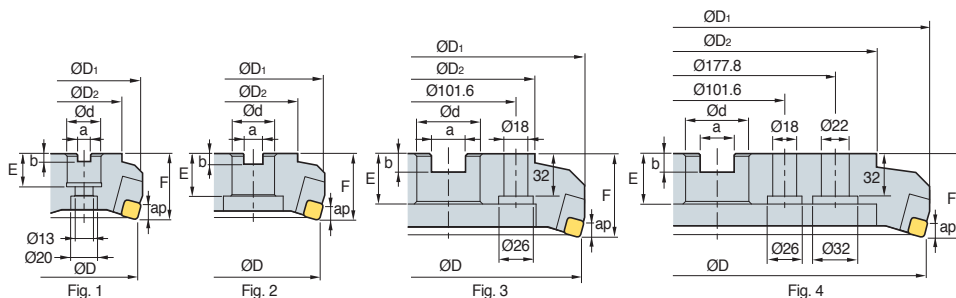
| Especificación | Cartucho               | Cuña   | Perno cuña | Tornillo Cartucho | Llave |
|----------------|------------------------|--------|------------|-------------------|-------|
| Ø80~Ø315       | LEF4R/L<br>LEF4R1*/L1* | WEFR/L | DHA0821F   | LTX0512           | HW40  |

\*: Ø80~Ø100

Insertos disponibles E20 Detalles del cortador E400~E402



# EN(M)4000



AA  
75°  
• AR: -6°  
• RR: -5°

(mm)

| Codigo       | ØD  | ØD1 | ØD2 | Ød          | a           | b         | E       | F  | ap  | kg   | Fig. |
|--------------|-----|-----|-----|-------------|-------------|-----------|---------|----|-----|------|------|
| <b>EN</b>    |     |     |     |             |             |           |         |    |     |      |      |
| <b>(ENM)</b> |     |     |     |             |             |           |         |    |     |      |      |
| 4080R/L      | 80  | 87  | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)     | 25 (22) | 50 | 8.5 | 1.4  | 1    |
| 4100R/L      | 100 | 107 | 67  | 31.75 (32)  | 12.7 (14.4) | 8 (8)     | 32 (28) | 50 | 8.5 | 2.1  | 2    |
| 4125R/L      | 125 | 132 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)    | 38 (30) | 63 | 8.5 | 3.8  | 2    |
| 4160R/L      | 160 | 167 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)    | 38 (30) | 63 | 8.5 | 5.7  | 2    |
| 4200R/L      | 200 | 207 | 130 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 8.5 | 8.4  | 3    |
| 4250R/L      | 250 | 257 | 180 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 8.5 | 13.8 | 3    |
| 4315R/L      | 315 | 322 | 240 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 8.5 | 21.6 | 4    |

( ) Tamaño métrico

## Insertos disponibles

|              | SNCN           | SNKN   |                     |      |
|--------------|----------------|--|---------------------|------|
|              |                |  |                     |      |
| Codigo       | Cermet         | Recubierta   | Sin Rec.            | pag. |
|              | CN2000<br>CN30 | NCM325<br>NCM535<br>NCM545<br>PC2010<br>PC3600<br>PC3700<br>PC6510<br>PC9530<br>PC9540<br>PC5300<br>PC5400 | ST30A<br>G10<br>H01 |      |
| SNCN 1204ENN |                | ●  | ●                   | E21  |
| SNKN 1204ENN |                | ●  |                     | E23  |

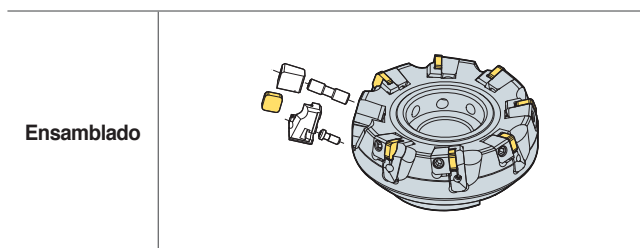
## Adaptadores disponibles

| Codigo                    | Adaptador general | Adaptadores NC                     |                      |       |
|---------------------------|-------------------|------------------------------------|----------------------|-------|
|                           |                   | EN                                 | ENM                  |       |
| <b>EF</b><br><b>(EFM)</b> | 4080R/L           | NT*□□ (M/U)-FMA25.4-25-□□          | BT**□□ -FMA25.4-□□   | FMC27 |
|                           | 4100R/L           | NT*□□ (M/U)-FMA31.75-□□            | BT**□□ -FMA31.75-□□  | FMC32 |
|                           | 4125R/L           | NT*□□ (M/U)-FMA38.1-□□             | BT**□□ -FMA38.1-□□   | FMB40 |
|                           | 4160R/L           | NT*□□ (M/U)-FMA50.8-□□             | BT**□□ -FMA50.8-□□   | FMB40 |
|                           | 4200R/L           | NT*□□ (M/U)-FMA47.625-25, KCP-8*** | BT**□□ -FMA47.625-□□ | FMB60 |
|                           | 4250R/L           | NT*□□ (M/U)-FMA47.625-25, KCP-8*** | BT**□□ -FMA47.625-□□ | FMB60 |
|                           | 4315R/L           | KCP-8*** (Center Candado C Plug)   |                      |       |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                                      |
|---------------|--------------------|----------------|--|
|               | vc (m/min)         | fz (mm/diente) |  |
| <b>P</b>      | 190~320            | 0.05~0.20      | <b>NCM325</b><br><b>PC3600</b><br><b>ST30A</b> |
|               | 161~270            | 0.05~0.20      |  |
|               | 80~140             | 0.05~0.20      |  |
| <b>M</b>      | 90~150             | 0.05~0.20      | <b>PC9530</b>                                  |
| <b>K</b>      | 140~230            | 0.05~0.30      | <b>PC6510</b><br><b>G10</b>                    |
|               | 50~90              | 0.05~0.30      |  |



## Partes

| Especificación |         |                     |                     |         |      |
|----------------|---------|---------------------|---------------------|---------|------|
| Ø80-Ø315       | LEN4R/L | WENR/L<br>WENR1*L1* | DHA0830<br>DHA0825* | LTX0512 | HW40 |

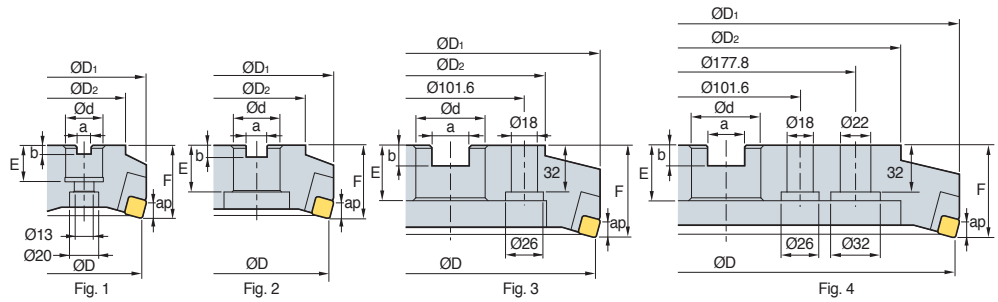
Insertos disponibles E21, E23

Detalles del cortador E400~E402

\*: Ø80-Ø100



# EPN(M)4000



| Codigo        | ØD      | ØD1 | ØD2 | Ød  | a           | b           | E       | F       | ap | kg | Fig. |   |
|---------------|---------|-----|-----|-----|-------------|-------------|---------|---------|----|----|------|---|
| EPN<br>(EPNM) | 4080R/L | 80  | 86  | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 9  | 1.4  | 1 |
|               | 4100R/L | 100 | 107 | 67  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 9  | 2.1  | 2 |
|               | 4125R/L | 125 | 132 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 9  | 3.8  | 2 |
|               | 4160R/L | 160 | 166 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 9  | 5.7  | 2 |
|               | 4200R/L | 200 | 206 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 9  | 8.2  | 3 |
|               | 4250R/L | 250 | 256 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 9  | 13.5 | 3 |
|               | 4315R/L | 315 | 321 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 9  | 21.1 | 4 |

( ) Tamaño métrico

## Insertos disponibles



| Codigo           | Cermet |      | Recubierta |        |        |        |        |        |        | Sin Rec. |        | pag. |        |        |        |       |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|--------|--------|-------|-----|
|                  | CN2000 | CN30 | NCM325     | NCM335 | NCS330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510   | PC9530 |      | PC9540 | PC5300 | PC5400 | ST30A | G10 |
| SPCN 1203EDR     | ●      | ●    | ●          | ●      |        |        |        |        |        |          |        |      |        | ●      | ●      | ●     |     |
| 1203EDL          |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       | ●   |
| 1203EDR-G        |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       | ●   |
| 1203EDER-RH      |        |      |            |        |        |        |        |        |        | ●        |        | ●    |        |        |        |       |     |
| 1203EDSR-RH      |        |      |            |        |        |        |        |        |        | ●        |        |      |        |        |        |       |     |
| 1203EDTR-RH      |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |
| 1203EDR-S20      |        |      |            |        |        |        |        |        |        |          | ●      |      |        |        |        |       |     |
| SPKN 1203EDSR-MU |        |      |            |        |        |        |        |        |        | ●        |        |      |        |        |        |       |     |
| 1203EDSR-SU      |        |      |            |        |        |        |        |        |        | ●        | ●      |      | ●      | ●      |        |       |     |
| 1203EDSL-SU      |        |      |            |        |        |        |        |        |        | ●        |        |      |        |        |        |       |     |
| SPKR 1203EDSR-MX |        |      | ●          | ●      |        |        |        |        |        |          |        |      |        |        |        |       |     |
| 1203EDSL-MX      |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |
| SPEX 1203EDR/L-1 |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |

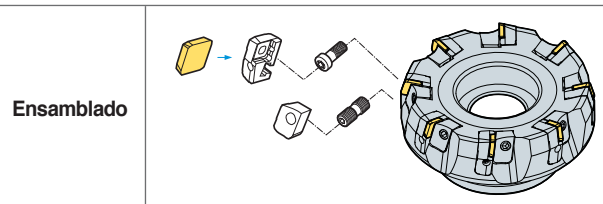
## Adaptadores disponibles

| Codigo        | Adaptador general                         | Adaptadores NC      |       |
|---------------|---|---------------------|-------|
|               |   | EPN                 | EPNM  |
| EPN<br>(EPNM) | 4080R/L NT*□□(M/U)-FMA25.4-25             | BT**□□-FMA25.4-□□   | FMC27 |
|               | 4100R/L NT*□□(M/U)-FMA31.75-□□            | BT**□□-FMA31.75-□□  | FMC32 |
|               | 4125R/L NT*□□(M/U)-FMA38.1-□□             | BT**□□-FMA38.1-□□   | FMB40 |
|               | 4160R/L NT*□□(M/U)-FMA50.8-□□             | BT**□□-FMA50.8-□□   | FMB40 |
|               | 4200R/L NT*□□(M/U)-FMA47.625-25, KCP-8*** | BT**□□-FMA47.625-□□ | FMB60 |
|               | 4250R/L NT*□□(M/U)-FMA47.625-25, KCP-8*** | BT**□□-FMA47.625-□□ | FMB60 |
|               | 4315R/L KCP-8*** (Center Candado C Plug)  |                     |       |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                 |
|---------------|--------------------|----------------|---------------------------|
|               | vc (m/min)         | fz (mm/diente) |                           |
| P             | 190~320            | 0.05~0.20      | NCM325<br>PC3600<br>ST30A |
|               | 161~270            | 0.05~0.20      |                           |
|               | 80~140             | 0.05~0.20      |                           |
| M             | 90~150             | 0.05~0.20      | PC9530                    |
| K             | 140~230            | 0.05~0.30      | PC6510<br>G10             |
|               | 50~90              | 0.05~0.30      |                           |



## Partes

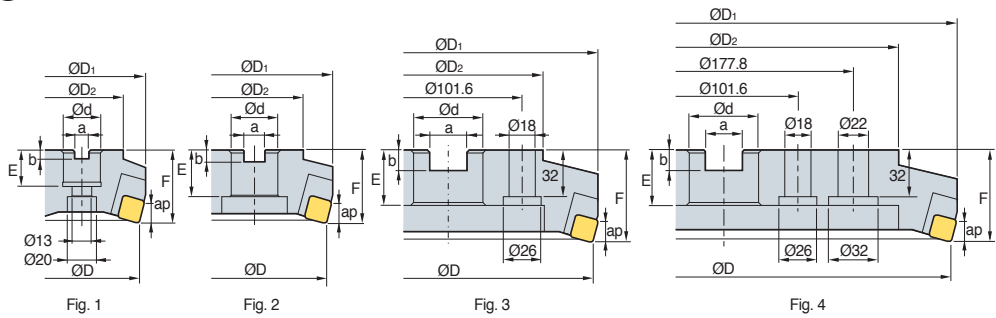
| Especificación | Cartucho                 | Cuña     | Perno cuña            | Tornillo Cartucho | Llave |
|----------------|--------------------------|----------|-----------------------|-------------------|-------|
| Ø80~Ø315       | LEPN4R/L<br>LEPN4R1*/L1* | WEPN4R/L | DHA0821F<br>DHA0817F* | LTX0514           | HW40  |

\*: Ø80~Ø100

Insertos disponibles E24, E25 Detalles del cortador E400~E402



# EPN(M)5000+



(mm)

| Codigo                     | ØD  | ØD1 | ØD2 | Ød          | a           | b       | E       | F  | ap | kg   | Fig. |
|----------------------------|-----|-----|-----|-------------|-------------|---------|---------|----|----|------|------|
| <b>EPN (EPNM)</b> 5080R/L* | 80  | 91  | 60  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 63 | 12 | 1.7  | 1    |
| 5100R/L*                   | 100 | 110 | 70  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 63 | 12 | 2.5  | 1    |
| 5125R/L*                   | 125 | 134 | 90  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 12 | 3.8  | 2    |
| 5160R/L*                   | 160 | 169 | 110 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 12 | 5.5  | 2    |
| 5200R/L*                   | 200 | 209 | 150 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 12 | 8.0  | 3    |
| 5250R/L*                   | 250 | 259 | 230 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 12 | 14.8 | 3    |
| 5315R/L*                   | 315 | 324 | 270 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 12 | 22.4 | 4    |

( )Tamaño métrico

## Insertos disponibles



| Codigo                  | Cermet |      | Recubierto |        |        |        |        |        |        | Sin Rec. |        | pag. |        |        |        |       |     |     |
|-------------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|--------|--------|-------|-----|-----|
|                         | CN2000 | CN30 | NCM325     | NCM530 | NCM535 | NCM545 | PC2010 | PC3600 | PC3700 | PC6510   | PC9530 |      | PC9540 | PC9500 | PC5400 | ST30A | G10 | H01 |
| <b>SPCN</b> 150412T     |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| 1504EDR                 | ●      | ●    |            |        |        |        |        |        |        |          |        |      |        |        | ●      | ●     |     |     |
| 1504EDSR                |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| 1504EDL                 |        |      |            |        |        |        |        |        | ●      |          |        |      |        |        |        |       |     |     |
| 1504EDR-G               |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       | ●   | E24 |
| 1504EDER-RH             |        |      |            |        |        |        |        |        | ●      | ●        |        |      |        |        |        |       |     |     |
| 1504EDSR-RH             |        |      |            |        |        |        |        |        | ●      |          |        |      |        |        |        |       |     |     |
| 1504EDTR-RH             |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| 1504EDR-S20             |        |      |            |        |        |        |        |        |        | ●        |        |      |        |        |        |       |     |     |
| <b>SPKN</b> 1504EDSR-MU |        |      |            |        |        |        |        |        | ●      |          |        |      |        |        |        |       |     |     |
| 1504EDSR-SU             |        |      |            |        |        |        |        |        | ●      | ●        |        |      |        | ●      | ●      |       |     | E25 |
| 1504EDSL-SU             |        |      |            |        |        |        |        |        | ●      |          |        |      |        |        |        |       |     |     |
| <b>SPKR</b> 1504EDR-MX  |        |      | ●          |        |        |        |        |        |        |          |        |      |        |        |        |       |     |     |
| 1504EDSR-MX             |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     | E25 |
| <b>SPEX</b> 1504EDR/L-1 |        |      |            |        |        |        |        |        |        |          |        |      |        |        |        |       |     | E24 |

## Adaptadores disponibles

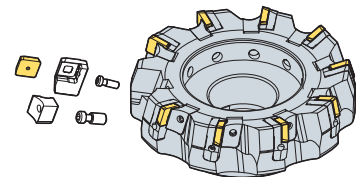
| Codigo                 | Adaptador general                 | Adaptadores NC      |       |
|------------------------|-----------------------------------|---------------------|-------|
|                        |                                   | EPN                 | EPNM  |
| <b>EPN</b> 5080R/L*    | NT*□□(M/U)-FMA25.4-25             | BT**□□-FMA25.4-□□   | FMC27 |
| <b>(EPNM)</b> 5100R/L* | NT*□□(M/U)-FMA31.75-□□            | BT**□□-FMA31.75-□□  | FMC32 |
| 5125R/L*               | NT*□□(M/U)-FMA38.1-□□             | BT**□□-FMA38.1-□□   | FMB40 |
| 5160R/L*               | NT*□□(M/U)-FMA50.8-□□             | BT**□□-FMA50.8-□□   | FMB40 |
| 5200R/L*               | NT*□□(M/U)-FMA47.625-25, KCP-8*** | BT**□□-FMA47.625-□□ | FMB60 |
| 5250R/L*               | NT*□□(M/U)-FMA47.625-25, KCP-8*** | BT**□□-FMA47.625-□□ | FMB60 |
| 5315R/L*               | KCP-8*** (Center Candeado C Plug) |                     |       |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                                      |
|---------------|--------------------|----------------|--|
|               | vc (m/min)         | fz (mm/diente) |  |
| <b>P</b>      | 190~320            | 0.05~0.20      | <b>NCM325</b><br><b>PC3600</b><br><b>ST30A</b> |
|               | 161~270            | 0.05~0.20      |  |
|               | 80~140             | 0.05~0.20      |  |
| <b>M</b>      | 90~150             | 0.05~0.20      | <b>PC9530</b>                                  |
| <b>K</b>      | 140~230            | 0.05~0.30      | <b>PC6510</b><br><b>G10</b>                    |
|               | 50~90              | 0.05~0.30      |  |

### Ensamblado



## Partes

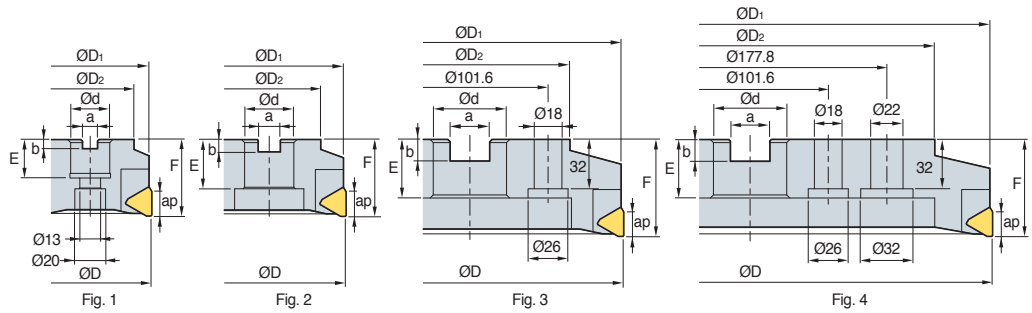
| Especificación | Cartucho                 | Cuña     | Perno cuña          | Tornillo Cartucho | Llave |
|----------------|--------------------------|----------|---------------------|-------------------|-------|
| Ø80-Ø315       | LEPN5R/L<br>LEPN5R1*/L1* | WHPS5R/L | WHX0817<br>WHX0813* | LTX0514           | HW40  |

Insertos disponibles E24, E25 Detalles del cortador E400-E402

\*: Ø80



## PF(M)4000



(mm)

| Codigo       | ØD             | ØD1 | ØD2 | Ød  | a   | b           | E           | F         | ap      | kg | Fig. |     |   |
|--------------|----------------|-----|-----|-----|-----|-------------|-------------|-----------|---------|----|------|-----|---|
| <b>PF</b>    | <b>4080R/L</b> | 4   | 80  | 79  | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)     | 25 (22) | 50 | 16   | 1.2 | 1 |
| <b>(PFM)</b> | <b>4100R/L</b> | 4   | 100 | 97  | 67  | 31.75 (32)  | 12.7 (14.4) | 8 (8)     | 32 (28) | 50 | 16   | 1.8 | 2 |
|              | <b>4125R/L</b> | 7   | 125 | 122 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)    | 38 (30) | 63 | 16   | 3.1 | 2 |
|              | <b>4160R/L</b> | 9   | 160 | 158 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)    | 38 (30) | 63 | 16   | 5.6 | 2 |
|              | <b>4200R/L</b> | 11  | 200 | 197 | 130 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 16   | 8.8 | 3 |
|              | <b>4250R/L</b> | 15  | 250 | 247 | 180 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 16   | 16  | 3 |
|              | <b>4315R/L</b> | 19  | 315 | 311 | 240 | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 16   | 22  | 4 |

( ) Tamaño métrico

### Insertos disponibles

TFCN



| Codigo       | Cermet         | Recubrimiento    |                  |                  |                  |                  |                  |                     |  | Sin Rec. | pag. |
|--------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|---------------------|--|----------|------|
|              | CN2000<br>CN30 | NCM325<br>NC5330 | NCM635<br>NCM645 | PC2010<br>PC3600 | PC3700<br>PC6510 | PC9530<br>PC9540 | PC5300<br>PC5400 | ST30A<br>G10<br>H01 |  |          |      |
| TFCN 2203PFR |                |                  |                  |                  |                  |                  |                  |                     |  | E26      |      |
| 2203PFL      |                |                  |                  |                  |                  |                  |                  |                     |  |          |      |

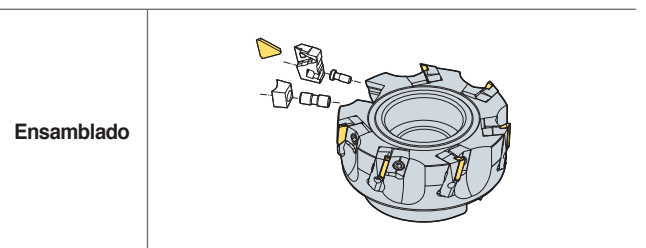
### Adaptadores disponibles

| Codigo       | Adaptador general | Adaptadores NC                     |                      |       |
|--------------|-------------------|------------------------------------|----------------------|-------|
|              |                   | PF                                 | PFM                  |       |
| <b>PF</b>    | <b>4080R/L</b>    | NT*□□ (M/U)-FMA25.4-25             | BT**□□ -FMA25.4-□□   | FMC27 |
| <b>(PFM)</b> | <b>4100R/L</b>    | NT*□□ (M/U)-FMA31.75-□□            | BT**□□ -FMA31.75-□□  | FMC32 |
|              | <b>4125R/L</b>    | NT*□□ (M/U)-FMA38.1-□□             | BT**□□ -FMA38.1-□□   | FMB40 |
|              | <b>4160R/L</b>    | NT*□□ (M/U)-FMA50.8-□□             | BT**□□ -FMA50.8-□□   | FMB40 |
|              | <b>4200R/L</b>    | NT*□□ (M/U)-FMA47.625-25, KCP-8*** | BT**□□ -FMA47.625-□□ | FMB60 |
|              | <b>4250R/L</b>    | NT*□□ (M/U)-FMA47.625-25, KCP-8*** | BT**□□ -FMA47.625-□□ | FMB60 |
|              | <b>4315R/L</b>    | KCP-8*** (Center Candado C Plug)   |                      |       |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

### Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                                      |
|---------------|--------------------|----------------|--|
|               | vc (m/min)         | fz (mm/diente) |  |
| <b>P</b>      | 190~320            | 0.05~0.20      | <b>NCM325</b><br><b>PC3600</b><br><b>ST30A</b> |
|               | 161~270            | 0.05~0.20      |  |
|               | 80~140             | 0.05~0.20      |  |
| <b>M</b>      | 90~150             | 0.05~0.20      | <b>PC9530</b><br><b>PC6510</b><br><b>G10</b>   |
| <b>K</b>      | 140~230            | 0.05~0.30      |  |
|               | 50~90              | 0.05~0.30      |  |



### Partes

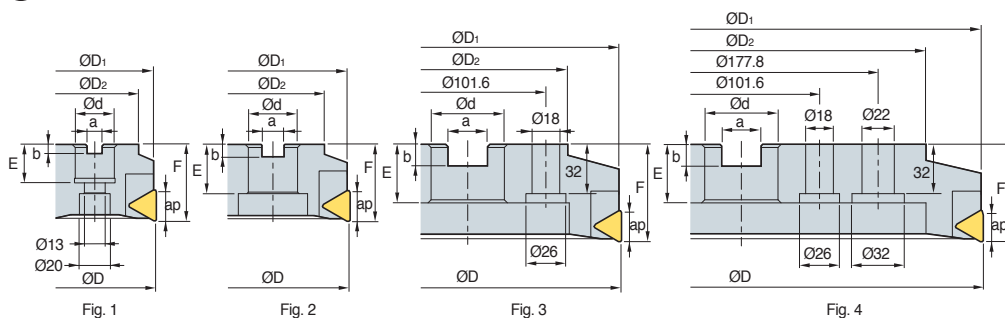
| Especificación | Cartucho                 | Cuña   | Perno cuña            | Tornillo Cartucho | Llave |
|----------------|--------------------------|--------|-----------------------|-------------------|-------|
| Ø80~Ø315       | LPF4R/L<br>LPF4R1**/L1** | WPFR/L | DHA0821F<br>DHA0817F* | LTX0512           | HW40  |

\*: Ø80~Ø100/ \*\*: Ø80~Ø125

Insertos disponibles E26 Detalles del cortador E400~E402



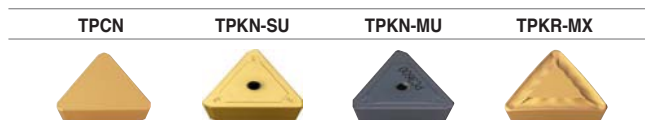
# PPN(M)4000



| Codigo             | ØD  | ØD1 | ØD2 | Ød          | a           | b       | E       | F  | ap | kg   | Fig. |
|--------------------|-----|-----|-----|-------------|-------------|---------|---------|----|----|------|------|
| PPN (PPNM) 4080R/L | 80  | 79  | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 18 | 1.3  | 1    |
| 4100R/L            | 100 | 99  | 67  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 18 | 1.9  | 2    |
| 4125R/L            | 125 | 124 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 18 | 3.5  | 2    |
| 4160R/L            | 160 | 158 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 18 | 5.6  | 2    |
| 4200R/L            | 200 | 198 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 18 | 8.1  | 3    |
| 4250R/L            | 250 | 248 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 18 | 13.3 | 3    |
| 4315R/L            | 315 | 313 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 18 | 21.4 | 4    |

( ) Tamaño métrico

## Insertos disponibles



| Codigo           | Recubierto |      |        |        |        |        |        | Sin Rec. |        | pag. |        |        |        |        |        |       |     |
|------------------|------------|------|--------|--------|--------|--------|--------|----------|--------|------|--------|--------|--------|--------|--------|-------|-----|
|                  | CN2000     | CN30 | NCM325 | NCM335 | NC5330 | NCM535 | NCM545 | PC3600   | PC3700 |      | PC6510 | PC9530 | PC9540 | PC5300 | PC5400 | ST30A | G10 |
| TPCN 2204PDR     | ●          | ●    |        |        |        |        |        |          |        |      |        |        |        |        | ●      | ●     |     |
| 2204PDR-G        |            |      |        |        |        |        |        |          |        |      |        |        |        |        |        |       | ●   |
| 2204PDL          |            |      |        |        |        |        |        |          |        |      |        |        |        |        | ●      |       |     |
| 2204PDSR         |            |      | ●      |        |        |        |        |          |        |      |        |        |        |        |        |       |     |
| 2204PDTR         |            |      |        |        |        |        |        |          |        |      |        |        |        |        |        |       | E26 |
| 2204PDR-RH       |            |      |        |        |        |        |        |          |        |      |        |        |        |        |        |       |     |
| 2204PDER-RH      |            |      |        |        |        |        |        |          |        | ●    |        |        |        |        | ●      |       |     |
| 2204PDSR-RH      |            |      |        |        |        |        |        |          |        | ●    |        |        |        |        |        |       |     |
| 2204PDR-S20      |            |      |        |        |        |        |        |          |        |      | ●      |        |        |        |        |       |     |
| TPKN 2204PDSR-MU |            |      |        |        |        |        |        |          |        | ●    |        |        |        |        |        |       | E27 |
| 2204PDSR-SU      |            |      |        |        |        |        |        |          |        | ●    | ●      |        |        |        | ●      | ●     |     |
| 2204PDSL-SU      |            |      |        |        |        |        |        |          |        | ●    |        |        |        |        |        |       |     |
| TPKR 2204PDR-MX  |            | ●    |        |        |        |        |        |          |        |      |        |        |        |        |        |       | E27 |
| 2204PDSR-MX      |            | ●    | ●      |        |        |        |        |          |        |      |        |        |        |        |        |       |     |
| 2204PPR-MX       |            |      |        |        |        |        |        |          |        |      |        |        |        |        |        |       |     |

## Adaptadores disponibles

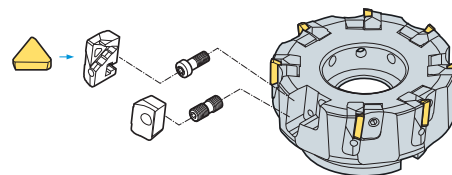
| Codigo         | Adaptador general                  | Adaptadores NC      |       |
|----------------|------------------------------------|---------------------|-------|
|                |                                    | PPN                 | PPNM  |
| PPN 4080R/L    | NT*□□ (M/U)-FMA25.4-25             | BT**□□-FMA25.4-□□   | FMC27 |
| (PPNM) 4100R/L | NT*□□ (M/U)-FMA31.75-□□            | BT**□□-FMA31.75-□□  | FMC32 |
| 4125R/L        | NT*□□ (M/U)-FMA38.1-□□             | BT**□□-FMA38.1-□□   | FMB40 |
| 4160R/L        | NT*□□ (M/U)-FMA50.8-□□             | BT**□□-FMA50.8-□□   | FMB40 |
| 4200R/L        | NT*□□ (M/U)-FMA47.625-25, KCP-8*** | BT**□□-FMA47.625-□□ | FMB60 |
| 4250R/L        | NT*□□ (M/U)-FMA47.625-25, KCP-8*** | BT**□□-FMA47.625-□□ | FMB60 |
| 4315R/L        | KCP-8*** (Center Candedo C Plug)   |                     |       |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                 |
|---------------|--------------------|----------------|---------------------------|
|               | vc (m/min)         | fz (mm/diente) |                           |
| P             | 190~320            | 0.05~0.20      | NCM325<br>PC3600<br>ST30A |
|               | 161~270            | 0.05~0.20      |                           |
|               | 80~140             | 0.05~0.20      |                           |
| M             | 90~150             | 0.05~0.20      | PC9530                    |
| K             | 140~230            | 0.05~0.30      | PC6510<br>G10             |
|               | 50~90              | 0.05~0.30      |                           |

## Ensamblado



## Partes

| Especificación | Cartucho                | Cuña     | Perno cuña            | Tornillo Cartucho | Llave |
|----------------|-------------------------|----------|-----------------------|-------------------|-------|
| Ø80-Ø315       | LPPN4R/L<br>LPPN4R1*L1* | WPPN4R/L | DHA0821F<br>DHA0817F* | LTX0514           | HW40  |

Insertos disponibles E26, E27 Detalles del cortador E400~E402

\*: Ø80~Ø100



## Insertos altamente rígidos para desbaste

# Mill-max Heavy new

- **Productividad:** reducción del tiempo de corte gracias al filo de corte diseñado específicamente para operaciones de desbaste pesado
- **Alta rigidez:** los insertos y el asiento de los insertos altamente rígidos ambos impiden que la herramienta se rompa durante desbastes pesados
- **Estabilidad de amarre:** El sistema de amarre en cuña, fácil de usar y potente, reduce el tiempo de cambio de insertos y mejora amarre

### Característica del inserto

- **Inserciones muy rígidas**
  - Ideal para desbaste a gran profundidad de corte
- **Amplia área de bolsillo**
  - Mejora la evacuación de viruta
  - Reducción de las cargas de corte
- **Filo de corte secundario**
  - Acabado superficial mejorado gracias a filo con función wiper

**MAX. ap**  
SCKN22: 10.5 mm  
SCKN28: 14.5 mm

- **Filo de corte principal**
  - Ángulo de ataque muy positivo
- **Alivio de flanco de 2 niveles superficie**
  - Disponibilidad de ángulo de incidencia, incluso a altos avances

### Características de los rompevirutas

| Insertos | Filo de corte | Usos          | Características   |
|----------|---------------|---------------|---|
| MM       |               | Para desbaste | Rompe virutas muy rígido, diseñado para desbaste a altas profundidades de corte |

### Características del plato

- **Costuras de corte**
  - Prevenir la rotura del cortador incluso en duras condiciones de corte
- **Bolsillos de chip ancho**
  - Mejorar la evacuación de viruta

- **Sistema de sujeción tipo cuña**
  - Proporciona estabilidad de sujeción
  - Reduce el tiempo de sustitución de inserciones

### Condiciones de corte recomendadas

| Pieza Trabajo                           | Calidades           | Condicion de Cortes |                |                                      |                                      |
|---|---------------------|---------------------|----------------|--------------------------------------|--------------------------------------|
|   |                     | vc (m/min)          | fz (mm/diente) | ap (mm)                              |                                      |
| <b>P</b> Acerobajoen Carbon/Acero Suave | PC5300, NC5340      | 140~270             | 0.2~0.4        | 2.0~10.0 [SCKN22], 3.0~14.0 [SCKN28] |                                      |
|   | Acero Altoen Carbon | PC5300, NC5340      | 100~220        | 0.2~0.4                              | 2.0~10.0 [SCKN22], 3.0~14.0 [SCKN28] |
|   | Acero aleado        | PC5300, NC5340      | 100~180        | 0.2~0.4                              | 2.0~10.0 [SCKN22], 3.0~14.0 [SCKN28] |
| <b>M</b> Acero Inoxidable               | PC5300, NC5340      | 90~180              | 0.2~0.4        | 2.0~10.0 [SCKN22], 3.0~14.0 [SCKN28] |                                      |
| <b>K</b> Fundición                      | PC5300, NC5340      | 100~180             | 0.2~0.4        | 2.0~10.0 [SCKN22], 3.0~14.0 [SCKN28] |                                      |





# HDDCM 7000/9000 new

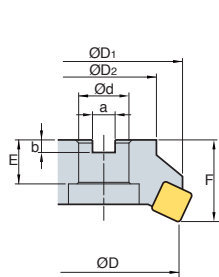


Fig. 1

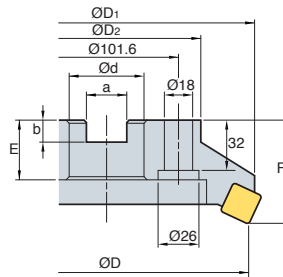


Fig. 2

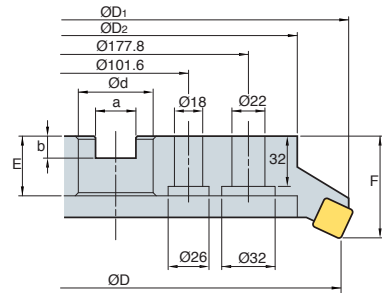


Fig. 3



AA  
**55°**  
• AR: 15°  
• RR: 5°

(mm)

| Codigo | Fig.       | ØD | ØD1 | ØD2   | Ød  | a  | b    | E  | F  | ap |      | Fig.  |   |
|--------|------------|----|-----|-------|-----|----|------|----|----|----|------|-------|---|
| HDDCM  | 7125R/L-5  | 5  | 125 | 135.6 | 90  | 40 | 16.4 | 9  | 32 | 63 | 10.5 | 3.43  | 1 |
|        | 7160R/L-6  | 6  | 160 | 169.8 | 110 | 40 | 16.4 | 9  | 32 | 63 | 10.5 | 4.89  | 2 |
|        | 7160R/L-8  | 8  | 160 | 169.8 | 110 | 40 | 16.4 | 9  | 32 | 63 | 10.5 | 4.62  | 2 |
|        | 7200R/L-8  | 8  | 200 | 209.2 | 130 | 60 | 25.7 | 14 | 38 | 80 | 10.5 | 8.49  | 2 |
|        | 7200R/L-10 | 10 | 200 | 209.2 | 130 | 60 | 25.7 | 14 | 38 | 80 | 10.5 | 8.74  | 2 |
|        | 7250R/L-10 | 12 | 250 | 258.6 | 180 | 60 | 25.7 | 14 | 38 | 80 | 10.5 | 13.44 | 2 |
|        | 7250R/L-12 | 10 | 250 | 258.6 | 180 | 60 | 25.7 | 14 | 38 | 80 | 10.5 | 13.41 | 2 |
|        | 7315R/L-12 | 12 | 315 | 323.2 | 240 | 60 | 25.7 | 14 | 38 | 80 | 10.5 | 21.69 | 3 |
| HDDCM  | 7315R/L-14 | 14 | 315 | 323.2 | 240 | 60 | 25.7 | 14 | 38 | 80 | 10.5 | 21.41 | 3 |
|        | 9125R/L-5  | 5  | 125 | 140.4 | 90  | 40 | 16.4 | 9  | 32 | 63 | 14.5 | 3.4   | 1 |
|        | 9160R/L-6  | 6  | 160 | 177.6 | 110 | 40 | 16.4 | 9  | 32 | 80 | 14.5 | 6.39  | 2 |
|        | 9200R/L-8  | 8  | 200 | 213.6 | 130 | 60 | 25.7 | 14 | 38 | 80 | 14.5 | 8.76  | 2 |
|        | 9250R/L-10 | 10 | 250 | 265   | 180 | 60 | 25.7 | 14 | 38 | 80 | 14.5 | 13.84 | 2 |
|        | 9250R/L-12 | 12 | 250 | 265   | 180 | 60 | 25.7 | 14 | 38 | 80 | 14.5 | 13.41 | 2 |
|        | 9315R/L-12 | 12 | 315 | 327.4 | 240 | 60 | 25.7 | 14 | 38 | 80 | 14.5 | 21.02 | 3 |

## Insertos disponibles

SCKN-MM



| Codigo    | Recubierta         |      |        |        |        |        |        |        | Sin Rec. | pag. |     |
|-----------|--------------------|------|--------|--------|--------|--------|--------|--------|----------|------|-----|
|           | CN2000             | CN30 | NCM825 | NC5330 | NCM535 | NCM645 | PC2010 | PC3600 |          |      |     |
| 7000 tipo | SCKN 220715DDSR-MM |      |        | ●      |        | ●      |        | ●      | ST30A    | G10  | E17 |
| 9000 tipo | SCKN 280920DDSR-MM |      |        |        |        |        |        |        | H01      |      |     |

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte            |                | Calidades                      |
|---------------|-------------------------------|----------------|--------------------------------|
|               | vc (m/min)                    | fz (mm/diente) |                                |
| <b>P</b>      | 140~270<br>100~220<br>100~180 | 0.2~0.4        | <b>PC5300</b><br><b>NC5340</b> |
| <b>M</b>      | 90~180                        |                |                                |
| <b>K</b>      | 100~180                       |                |                                |

## Adaptadores disponibles

| Codigo          | Adaptador general |
|-----------------|-------------------|
| HDDCM 7125R/L-5 | NT*□□(M/U)-FMC40  |
| 7160R/L-6       |                   |
| 7160R/L-8       |                   |
| 7200R/L-8       | NT*□□(M/U)-FMC60  |
| 7200R/L-10      |                   |
| 7250R/L-10      |                   |
| 7250R/L-12      |                   |
| 7315R/L-12      |                   |
| 7315R/L-14      | NT*□□(M/U)-FMC40  |
| 9125R/L-5       |                   |
| 9160R/L-6       |                   |
| 9200R/L-8       |                   |
| 9250R/L-10      |                   |
| 9250R/L-12      |                   |
| 9315R/L-12      |                   |

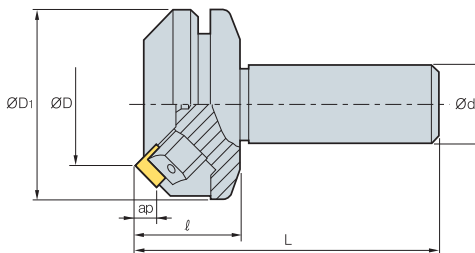
\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

## Partes

| Especificación        |       |         |         |          |      |
|-----------------------|-------|---------|---------|----------|------|
| Ø125~Ø315 (7000 tipo) | WHD7R | WHX0817 | SS64DPR | FTGA0614 | HW40 |
| Ø125~Ø315 (9000 tipo) | WHD9R | WHX0817 | SS84DPR | FTGA0818 | HW40 |

Insertos disponibles E17 Detalles del cortador E400~E402

## ADS4000



AA  
45°  
• AR: 15°  
• RR: -3°

(mm)

| Codigo | ØD          | ØD1 | Ød | ℓ  | L  | ap | kg  |
|--------|-------------|-----|----|----|----|----|-----|
| ADS    | 4050R/L     | 3   | 50 | 75 | 32 | 40 | 1.8 |
|        | 4050R/L-S42 | 3   | 50 | 75 | 42 | 40 | 2.2 |
|        | 4063R/L     | 4   | 63 | 87 | 32 | 40 | 2.3 |
|        | 4063R/L-S42 | 4   | 63 | 87 | 42 | 40 | 2.7 |

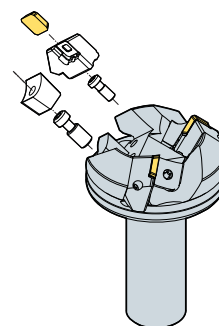
### Insertos disponibles

| SDCN             | SDKN-MU        | SDKN-SU  | SDKR-MX  |                     |  |          |      |
|------------------|----------------|--|--|---------------------|--|----------|------|
|                  |                |  |  |                     |  |          |      |
| Codigo           | Cermet         | Recubierto                                     |  |                     |  | Sin Rec. | pag. |
|                  | CN2000<br>CN30 | NCM325<br>NCM335<br>NC5330<br>NCM535<br>NCM545 | PC3600<br>PC3700<br>PC6510<br>PC9530<br>PC9540<br>PC5300<br>PC5400 | ST30A<br>G10<br>H01 |  |          |      |
| SDCN 42M         |                |  |  |                     |  | ●        |      |
| 42M-G            |                |  |  |                     |  | ●        |      |
| 42MT             | ●●             | ●  |  |                     |  | ●        |      |
| 42MT-RH          |                |  |  |                     |  |          |      |
| 42MT-S20         |                |  |  | ●                   |  | E17      |      |
| 1203AEEN         |                |  |  |                     |  |          |      |
| 1203AEEN-RH      |                |  |  |                     |  |          |      |
| 1203AESN         |                |  |  |                     |  |          |      |
| 1203AESN-RH      |                |  |  |                     |  |          |      |
| SDKN 1203AESN-MU |                |  | ●  |                     |  |          |      |
| 1203AESN-SU      |                |  | ●●   | ●●                  |  | E18      |      |
| SDKR 1203AESN-MX |                |  |  |                     |  |          |      |
| 1203AETN-MX      |                |  |  |                     |  | E18      |      |
| 1203AEN-MX       |                | ●  |  |                     |  |          |      |

### Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                 |
|---------------|--------------------|----------------|---------------------------|
|               | vc (m/min)         | fz (mm/diente) |                           |
| P             | 190~320            | 0.05~0.20      | NCM325<br>PC3600<br>ST30A |
|               | 161~270            | 0.05~0.20      |                           |
|               | 80~140             | 0.05~0.20      |                           |
| M             | 90~150             | 0.05~0.20      | PC9530                    |
| K             | 140~230            | 0.05~0.30      | PC6510<br>G10             |
|               | 50~90              | 0.05~0.30      |                           |

Ensamblado



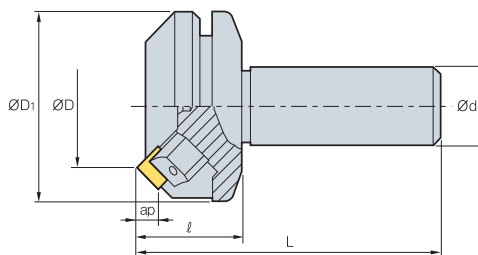
### Partes

| Especificación |          |        |         |         |      |
|----------------|----------|--------|---------|---------|------|
| Ø50-Ø63        | LASS4R/L | WASR/L | WTX0817 | LTX0512 | TW25 |

Insertos disponibles E17, E18



# ADS5000



AA  
45°  
• AR: 15°  
• RR: -3°

(mm)

| Codigo |             | ØD | ØD1 | Ød | ℓ  | L  | ap  |     |
|--------|-------------|----|-----|----|----|----|-----|-----|
| ADS    | 5050R/L     | 3  | 50  | 75 | 32 | 40 | 120 | 1.9 |
|        | 5050R/L-S42 | 3  | 50  | 75 | 42 | 40 | 120 | 2.3 |
|        | 5063R/L     | 4  | 63  | 87 | 32 | 40 | 120 | 2.4 |
|        | 5063R/L-S42 | 4  | 63  | 87 | 42 | 40 | 120 | 2.8 |

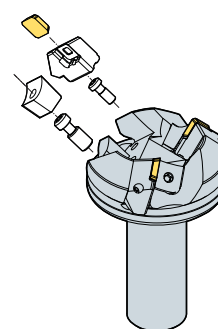
## Insertos disponibles

| SDCN   |                | SDKN-MU                    |                  | SDKN-SU  |                     | SDKR-MX  |   |      |
|--------|----------------|----------------------------|------------------|--|---------------------|----------|---|------|
|        |                |                            |                  |  |                     |          |   |      |
| Codigo | Cermet         | Recubierta                 |                  |  |                     | Sin Rec. |   | pag. |
|        | CN2000<br>CN30 | NCM325<br>NCM335<br>NC5330 | NCM535<br>NCM545 | PC3600<br>PC3700<br>PC6510<br>PC9530<br>PC9540<br>PC5300<br>PC5400 | ST30A<br>G10<br>H01 |          |   |      |
| SDCN   | 53M            |                            |                  |  |                     |          |   |      |
|        | 53M-G          |                            |                  |  |                     |          |   |      |
|        | 53MT           | ●                          | ●                |  |                     |          | ● |      |
|        | 53MT-RH        |                            |                  |  |                     |          |   |      |
|        | 53MT-S20       |                            |                  |  | ●                   |          |   | E17  |
|        | 1504AEEN       |                            |                  |  |                     |          |   |      |
|        | 1504AEEN-RH    |                            |                  |  | ●                   |          | ● |      |
|        | 1504AESN       |                            |                  |  |                     |          |   |      |
|        | 1504AESN-RH    |                            |                  |  | ●                   |          |   |      |
| SDKN   | 1504AESN-MU    |                            |                  | ●  |                     |          |   | E18  |
|        | 1504AESN-SU    |                            |                  | ●  | ●                   |          | ● |      |
| SDKR   | 1504AESN-MX    | ●                          |                  |  |                     |          |   |      |
|        | 1504AETN-MX    |                            |                  |  |                     |          |   | E18  |
|        | 1504AEN-MX     | ●                          |                  |  |                     |          |   |      |

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                 |
|---------------|--------------------|----------------|---------------------------|
|               | vc (m/min)         | fz (mm/diente) |                           |
| <b>P</b>      | 190~320            | 0.05~0.20      | NCM325<br>PC3600<br>ST30A |
|               | 161~270            | 0.05~0.20      |                           |
|               | 80~140             | 0.05~0.20      |                           |
| <b>M</b>      | 90~150             | 0.05~0.20      | PC9530                    |
| <b>K</b>      | 140~230            | 0.05~0.30      | PC6510<br>G10             |
|               | 50~90              | 0.05~0.30      |                           |

Ensamblado



## Partes

| Especificación |          |        |         |         |      |
|----------------|----------|--------|---------|---------|------|
| Ø50~Ø63        | LASS5R/L | WASR/L | WTX0817 | LTX0512 | TW25 |

Insertos disponibles E17, E18

## PES2000/3000/4000

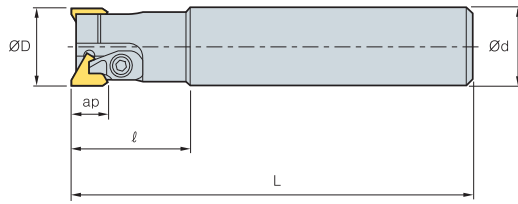


Fig. 1

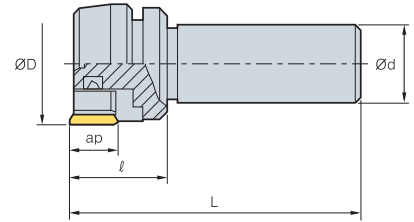
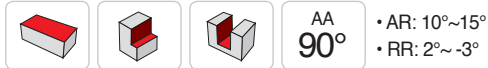


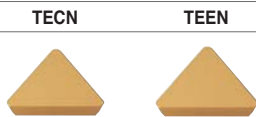
Fig. 2



(mm)

| Codigo | Flutes      | ØD | Ød | l  | L  | ap  | kg  | Fig. |
|--------|-------------|----|----|----|----|-----|-----|------|
| PES    | 2020R/L     | 2  | 20 | 20 | 30 | 110 | 0.3 | 1    |
|        | 2025R/L     | 2  | 25 | 25 | 35 | 120 | 0.5 | 1    |
|        | 3030R/L     | 2  | 30 | 32 | 45 | 160 | 0.9 | 1    |
|        | 3032R/L     | 2  | 32 | 32 | 45 | 160 | 1.0 | 1    |
|        | 3033R/L     | 2  | 33 | 32 | 45 | 160 | 1.1 | 1    |
|        | 3035R/L     | 2  | 35 | 32 | 45 | 160 | 1.2 | 1    |
|        | 3036R/L     | 2  | 36 | 32 | 45 | 160 | 1.3 | 1    |
|        | 3040R/L     | 2  | 40 | 32 | 45 | 160 | 1.4 | 1    |
|        | 4050R/L     | 3  | 50 | 32 | 40 | 120 | 1.2 | 2    |
|        | 4050R/L-S42 | 3  | 50 | 42 | 40 | 120 | 1.5 | 2    |
|        | 4063R/L     | 4  | 63 | 32 | 40 | 120 | 1.5 | 2    |
|        | 4063R/L-S42 | 4  | 63 | 42 | 40 | 120 | 1.8 | 2    |

### Insertos disponibles

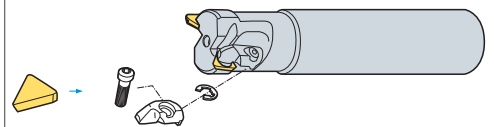


| Codigo    | Cermet   | Recubierto |      |        |        |        |        |        |        |        |        | Sin Rec. | pag. |        |        |        |  |     |
|-----------|----------|------------|------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------|--------|--------|--------|--|-----|
|           |          | CN2000     | CN30 | NCM325 | NCM335 | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510 |          |      | PC9530 | PC5300 | PC5400 |  |     |
| 2000 tipo | TECN 22R |            |      |        |        |        |        |        |        |        |        |          |      |        |        |        |  |     |
|           | 22TR     |            | ●    |        |        |        |        |        |        |        |        |          |      |        |        |        |  | E26 |
| 3000 tipo | TECN 32R |            |      |        |        |        |        |        |        |        |        |          |      |        |        |        |  |     |
|           | 32TR     |            | ●    | ●      |        |        |        |        |        |        |        |          |      |        |        |        |  | E26 |
|           | 32TR-S20 |            |      |        |        |        |        |        |        | ●      |        |          |      |        |        |        |  |     |
| 4000 tipo | TEEN 43R |            |      |        |        |        |        |        |        |        |        |          |      |        |        |        |  |     |
|           | 43R-G    |            |      |        |        |        |        |        |        |        |        |          |      |        |        |        |  |     |
|           | 43TR     |            | ●    | ●      | ●      |        |        |        |        | ●      |        |          |      |        |        |        |  | E26 |
|           | 43TR-S20 |            |      |        |        |        |        |        |        |        | ●      |          |      |        |        |        |  |     |
|           | 43TR-Z   |            |      |        |        |        |        |        |        |        |        |          |      |        |        |        |  |     |
|           | 43TR-ZH  |            |      |        |        |        |        |        |        |        |        |          |      |        |        |        |  |     |

### Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                 |
|---------------|--------------------|----------------|---------------------------|
|               | vc (m/min)         | fz (mm/diente) |                           |
| P             | 190~320            | 0.05~0.20      | NCM325<br>PC3500<br>ST30A |
|               | 161~270            | 0.05~0.20      |                           |
|               | 80~140             | 0.05~0.20      |                           |
| M             | 90~150             | 0.05~0.20      | PC9530                    |
| K             | 140~230            | 0.05~0.30      | PC6510<br>G10             |
|               | 50~90              | 0.05~0.30      |                           |

Ensamblado



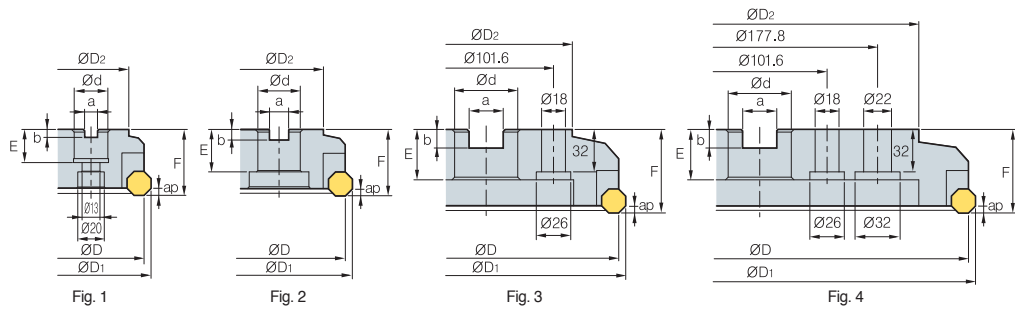
### Partes

| Especificación      | Cartucho | Cuña  | Perno cuña | Tornillo Cartucho | Llave | Llave | Brida | Candado C |
|---------------------|----------|-------|------------|-------------------|-------|-------|-------|-----------|
| Ø20~Ø25 (2000 type) | -        | -     | -          | CHX0407           | HW25L | -     | CH4R1 | ER03      |
| Ø30~Ø40 (3000 type) | -        | -     | -          | CHX0510           | HW30L | -     | CH5R1 | ER04      |
| Ø50~Ø63 (4000 type) | LPTS4R/L | WPTSR | DHA0815    | LTX0512           | -     | HW40  | -     | -         |

Insertos disponibles E26



# AFO(M)4000



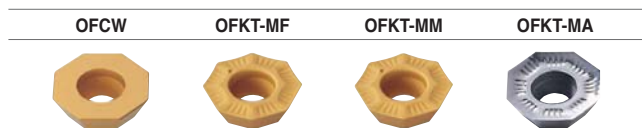
AA  
45°  
• AR: 15°  
• RR: 5°

(mm)

| Codigo         | ØD  | ØD1 | ØD2 | Ød         | a           | b      | E       | F  | ap  | kg  | Fig. |
|----------------|-----|-----|-----|------------|-------------|--------|---------|----|-----|-----|------|
| AFO 4080R/L    | 80  | 88  | 60  | 25.4 (27)  | 9.5 (12.4)  | 6 (7)  | 25 (22) | 50 | 3.3 | 1.4 | 1    |
| (AFOM) 4100R/L | 100 | 108 | 80  | 31.75 (32) | 12.7 (14.4) | 8 (8)  | 32 (28) | 50 | 3.3 | 2.0 | 1    |
| 4125R/L        | 125 | 133 | 100 | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 38 (30) | 63 | 3.3 | 3.1 | 1    |

( ) Tamaño métrico

## Insertos disponibles



| Codigo         | Recubierta |      |        |        |        |        |        |        |        |        | Sin Rec. | pag. |        |        |         |        |       |     |     |  |  |  |     |
|----------------|------------|------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------|--------|--------|---------|--------|-------|-----|-----|--|--|--|-----|
|                | CN2000     | CN30 | NCM325 | NC5330 | NCM535 | NCM545 | PC2010 | PC3600 | PC3700 | PC6510 |          |      | PC9530 | PC9540 | PC95300 | PC5400 | ST30A | G10 | H01 |  |  |  |     |
| OFCW 05T3SN    |            |      |        |        |        |        |        |        |        |        |          |      |        |        |         |        |       |     |     |  |  |  |     |
| 05T3FN         |            |      |        |        |        |        |        |        |        |        |          |      |        |        |         |        |       |     |     |  |  |  | E13 |
| 05T308FN       |            |      |        |        |        |        |        |        |        |        |          |      |        |        |         |        |       |     |     |  |  |  |     |
| OFKT 05T3SN-MF |            |      |        |        |        |        |        |        |        |        |          |      |        |        |         |        |       |     |     |  |  |  |     |
| 05T308SN-MF    |            |      |        |        |        |        |        |        |        |        |          |      |        |        |         |        |       |     |     |  |  |  |     |
| 05T3SN-MM      |            |      |        |        |        |        |        |        |        |        |          |      |        |        |         |        |       |     |     |  |  |  | E13 |
| 05T308SN-MM    |            |      |        |        |        |        |        |        |        |        |          |      |        |        |         |        |       |     |     |  |  |  | E14 |
| 05T3FN-MA      |            |      |        |        |        |        |        |        |        |        |          |      |        |        |         |        |       |     |     |  |  |  |     |
| 05T3EN-MA      |            |      |        |        |        |        |        |        |        |        |          |      |        |        |         |        |       |     |     |  |  |  |     |

## Adaptadores disponibles

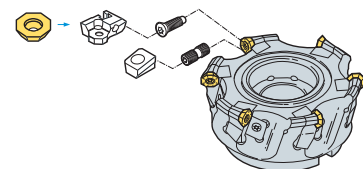
| Codigo         | Adaptador general       | Adaptadores NC      |       |
|----------------|-------------------------|---------------------|-------|
|                |                         | AFO                 | AFOM  |
| AFO 4080R/L    | NT*□□ (M/U)-FMA25.4-25  | BT**□□ -FMA25.4-□□  | FMC27 |
| (AFOM) 4100R/L | NT*□□ (M/U)-FMA31.75-□□ | BT**□□ -FMA31.75-□□ | FMC32 |
| 4125R/L        | NT*□□ (M/U)-FMA38.1-□□  | BT**□□ -FMA38.1-□□  | FMB40 |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                 |
|---------------|--------------------|----------------|---------------------------|
|               | vc (m/min)         | fz (mm/diente) |                           |
| P             | 190~320            | 0.05~0.20      | NCM325<br>PC3500<br>ST30A |
|               | 161~270            | 0.05~0.20      |                           |
|               | 80~140             | 0.05~0.20      |                           |
| M             | 90~150             | 0.05~0.20      | PC9530                    |
| K             | 140~230            | 0.05~0.30      | PC6510<br>G10             |
|               | 50~90              | 0.05~0.30      |                           |

## Ensamblado



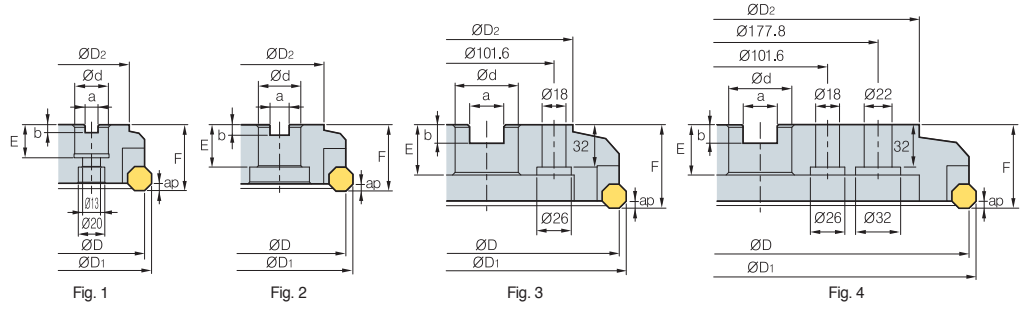
## Partes

| Especificación | Cartucho | Cuña     | Perno cuña | Tornillo | Llave |
|----------------|----------|----------|------------|----------|-------|
| Ø80-Ø125       | LAF04R/L | WAF04R/L | DHA0815    | FTKA0408 | TW15S |

Insertos disponibles E13, E14

Detalles del cortador E400~E402

## AFO(M)5000



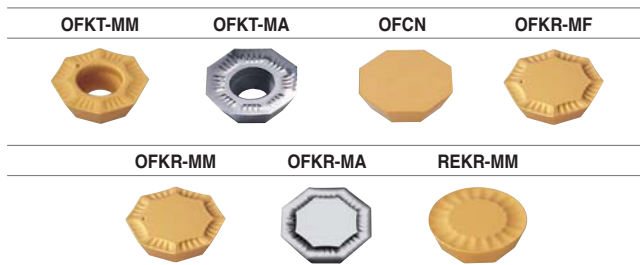
AA  
45°  
• AR: 15°  
• RR: 5°

(mm)

| Codigo                    | ØD  | ØD <sub>1</sub> | ØD <sub>2</sub> | Ød          | a           | b         | E       | F  | ap  | kg   | Fig. |
|---------------------------|-----|-----------------|-----------------|-------------|-------------|-----------|---------|----|-----|------|------|
| <b>AFO (AFOM)</b> 5080R/L | 80  | 91              | 60              | 25.4 (27)   | 9.5 (12.4)  | 6 (7)     | 25 (22) | 50 | 4.8 | 1.4  | 1    |
| 5100R/L                   | 100 | 111             | 80              | 31.75 (32)  | 12.7 (14.4) | 8 (8)     | 32 (28) | 50 | 4.8 | 2.0  | 2    |
| 5125R/L                   | 125 | 136             | 100             | 38.1 (40)   | 15.9 (16.4) | 10 (9)    | 38 (30) | 63 | 4.8 | 3.1  | 2    |
| 5160R/L                   | 160 | 171             | 120             | 50.8 (40)   | 19.0 (16.4) | 11 (9)    | 38 (30) | 63 | 4.8 | 5.2  | 2    |
| 5200R/L                   | 200 | 211             | 130             | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 4.8 | 7.5  | 3    |
| 5250R/L                   | 250 | 261             | 180             | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 4.8 | 16.1 | 3    |
| 5315R/L                   | 315 | 326             | 240             | 47.625 (60) | 25.4 (25.7) | 13.5 (14) | 38 (38) | 63 | 4.8 | 22.8 | 4    |

( ) Tamaño métrico

### Insertos disponibles



| Codigo                | Cermet         | Recubierto       |        |                  |        |                  |        |                  |        | Sin Rec.            | pag. |
|-----------------------|----------------|------------------|--------|------------------|--------|------------------|--------|------------------|--------|---------------------|------|
|                       | CN2000<br>CN30 | NCM325<br>NCM335 | NC5330 | NCM535<br>NCM545 | PC3600 | PC3700<br>PC6510 | PC9530 | PC9540<br>PC5300 | PC5400 | ST30A<br>G10<br>H01 |      |
| <b>OFCN</b> 0704SN    |                |                  |        |                  |        | ●                |        |                  |        |                     | E13  |
| 0704FN                |                |                  |        |                  |        |                  |        |                  |        |                     |      |
| 070408SN              |                |                  |        |                  |        |                  |        |                  |        |                     |      |
| 070408FN              |                |                  |        |                  |        |                  |        |                  |        |                     |      |
| <b>OFKR</b> 0704SN-MM |                | ●●               |        |                  |        |                  |        |                  |        |                     | E13  |
| 070408SN-MM           |                | ●●               |        |                  |        | ●●               |        | ●                |        |                     |      |
| 0704SN-MM             |                | ●●               |        |                  |        | ●●               |        | ●                |        |                     |      |
| 070408SN-MM           |                | ●                |        |                  |        |                  |        |                  |        |                     |      |
| 0704FN-MA             |                |                  |        |                  |        |                  |        |                  |        | ●                   | E13  |
| 0704EN-MA             |                |                  |        |                  |        |                  |        |                  |        |                     |      |
| 0704SN-MM             |                |                  |        |                  |        |                  |        |                  |        | ●                   |      |
| <b>OFKT</b> 0704FN-MA |                |                  |        |                  |        |                  |        |                  |        | ●                   | E13  |
| 0704EN-MA             |                |                  |        |                  |        |                  |        |                  |        |                     |      |
| <b>REKR</b> 170400-MM |                |                  |        |                  |        |                  |        |                  |        |                     | E16  |

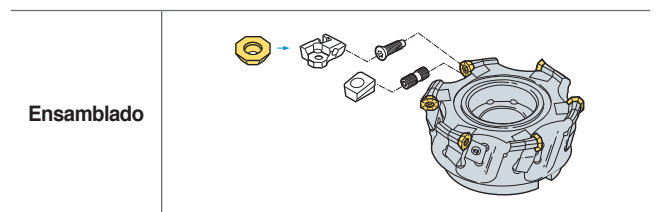
### Adaptadores disponibles

| Codigo                    | Adaptador general                  | Adaptadores NC       |       |
|---------------------------|------------------------------------|----------------------|-------|
|                           |                                    | AFO                  | AFOM  |
| <b>AFO (AFOM)</b> 5080R/L | NT*□□ (M/U)-FMA25.4-25             | BT**□□ -FMA25.4-□□   | FMC27 |
| 5100R/L                   | NT*□□ (M/U)-FMA31.75-□□            | BT**□□ -FMA31.75-□□  | FMC32 |
| 5125R/L                   | NT*□□ (M/U)-FMA38.1-□□             | BT**□□ -FMA38.1-□□   | FMB40 |
| 5160R/L                   | NT*□□ (M/U)-FMA50.8-□□             | BT**□□ -FMA50.8-□□   | FMB40 |
| 5200R/L                   | NT*□□ (M/U)-FMA47.625-25, KCP-8*** | BT**□□ -FMA47.625-□□ | FMB60 |
| 5250R/L                   | NT*□□ (M/U)-FMA47.625-25, KCP-8*** | BT**□□ -FMA47.625-□□ | FMB60 |
| 5315R/L                   | KCP-8*** (Center Candado C Plug)   |                      |       |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

### Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades                                      |
|---------------|--------------------|----------------|--|
|               | vc (m/min)         | fz (mm/diente) |  |
| <b>P</b>      | 190~320            | 0.05~0.20      | <b>NCM325</b><br><b>PC3500</b><br><b>ST30A</b> |
|               | 161~270            | 0.05~0.20      |  |
|               | 80~140             | 0.05~0.20      |  |
| <b>M</b>      | 90~150             | 0.05~0.20      | <b>PC9530</b>                                  |
| <b>K</b>      | 140~230            | 0.05~0.30      | <b>PC6510</b><br><b>G10</b>                    |
|               | 50~90              | 0.05~0.30      |  |



### Partes

| Especificación |                          |        |          |         |      |
|----------------|--------------------------|--------|----------|---------|------|
| Ø80~Ø315       | LAF05R/L<br>LAF05R*/L-1* | WEFR/L | DHA0821F | LTX0512 | HW40 |

\*: Ø80~Ø100

Insertos disponibles E13, E16 Detalles del cortador E400~E402

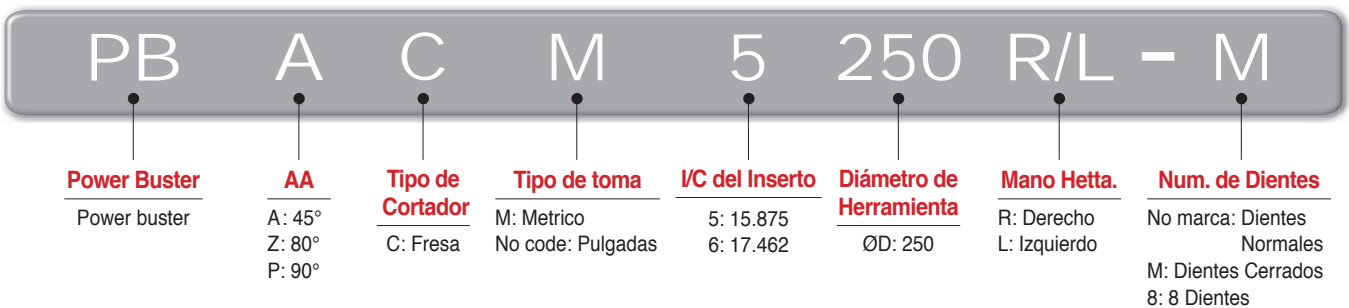


**Nuevo diseño de borde dentado incrementa la productividad por la reducción de carga del corte del inserto**

# Power Buster

- Nueva herramienta con un filo dentado especialmente diseñado para reducir la de carga de corte, y ayudar a incrementar la productividad
- Inserto de doble cara con 6 filos de corte, con una geometría específicamente diseñada para asegurar una alta rigidez, larga vida útil y de bajo costo
- El borde dentado fragmenta las virutas en segmentos más pequeños, mejorando en gran medida el control de viruta, reduciendo la interferencia del cortador y asegurando una buena durabilidad del cuerpo de la fresa.
- Dos tipos insertos disponibles:  
TNMX27: para cortadores con ángulos de entrada a 45° (cortador PBA) y 80° (cortador PBZ),  
TNMX30: para cortadores con ángulos de entrada a 90° (cortador PBP)
- Aplicación : Alta profundidad de corte y alto avance (acero y hierro fundido)

## ➤ Sistema de codificación

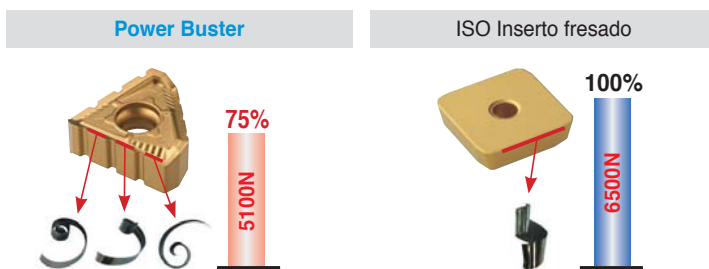


## ➤ Característica del inserto

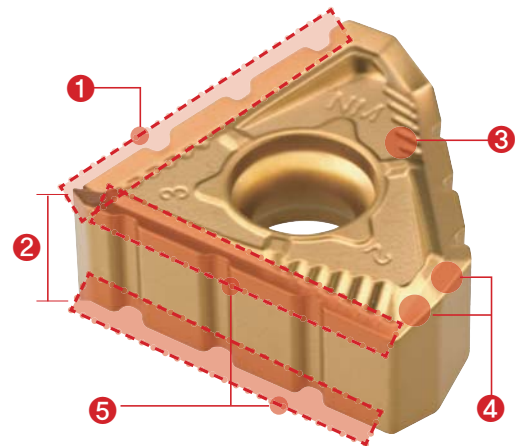
### 1 Filo de corte mayor (filo dentado)

- Baja fuerza de corte
- Ideal para el control de la viruta, las virutas se dividen en pequeñas piezas para la apropiada evacuación de la viruta. Insertos de doble cara con 6 filos.
- Diseño de filo ideal para fresado pesado de Acero y Fundiciones

### • Comparación de control de viruta y fuerza de corte

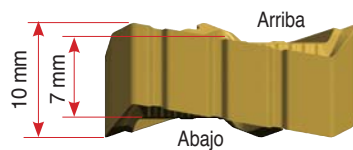


- **Pieza de trabajo** SCM440
- **Condicion de Corte**  $vc = 200 \text{ m/min}$ ,  $ap = 8 \text{ mm}$ ,  $ae = 90 \text{ mm}$ ,  $fz = 0.3 \text{ mm/diente}$



### 2 Superior y lado Inferior

- El grosor del inserto garantiza una alta rigidez
- Diseño del inserto equilibrado para un montaje estable



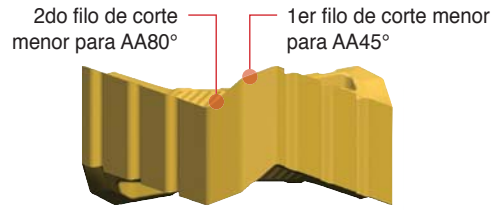
### 3 Rompeviruta NM

- Ángulo de ataque pronunciado para baja fuerza de corte
- Flujo de viruta bueno en diferentes velocidades y profundidades de corte
- Inserto protegido con asientos de montaje preciso
- Baja alta y buena evacuación del calor en cortes de alta profundidad



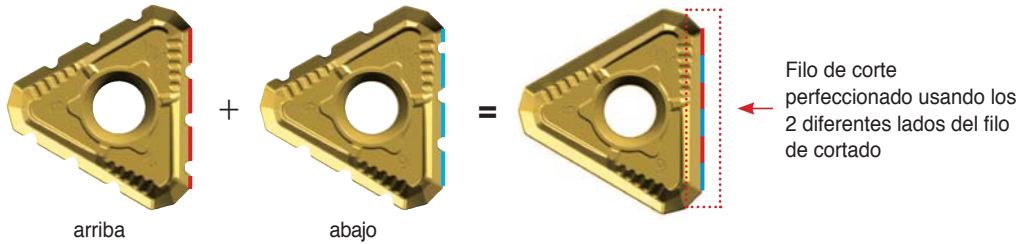
## 4 Forma y tipología del inserto Power buster (para ángulos de entrada a 45° y 80°)

- Ángulo de ataque alto para evitar interferencia con la viruta
- Ángulo de filo menor calculado para ambos cortadores AA 45° & 80°



## 5 Sistema de espejo

- El filo de corte en ambos lados del inserto cubre todo el área de corte al superponerse



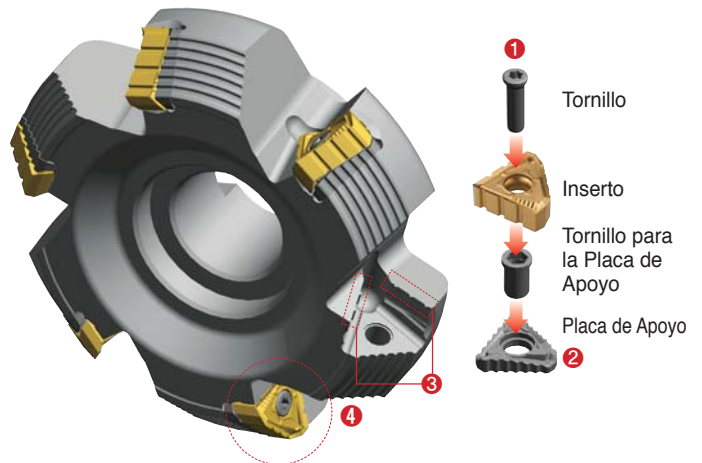
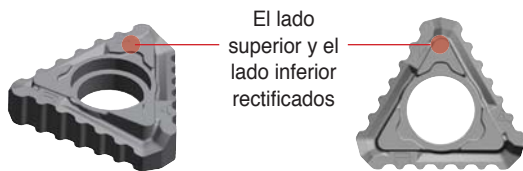
## Características de la fresa

### 1 Sistema de sujeción de tornillo

- Sistema de sujeción simple y fuerte

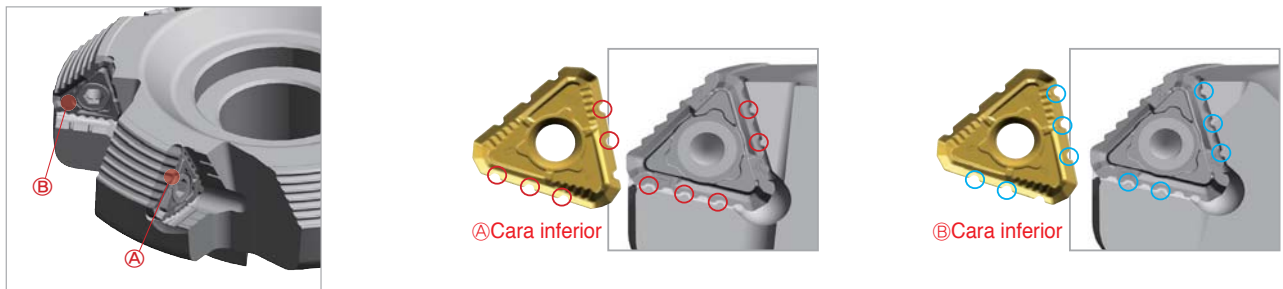
### 2 Mejor rigidez mejor y sistema de Ensamblado Estable.

- La placa de apoyo protege al cortador de daños al inserto
- Base de alta precisión garantiza la más estricta sujeción.



### 3 Sistema a toda prueba

- El diseño de las muescas debe coincidir con el asiento para impedir instalación incorrecta y desalineada de los insertos

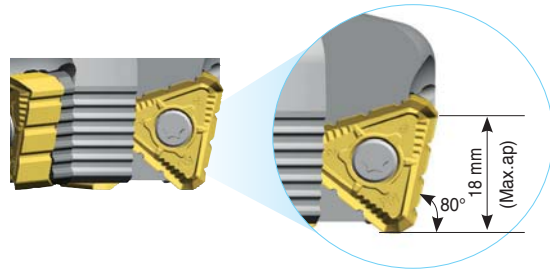
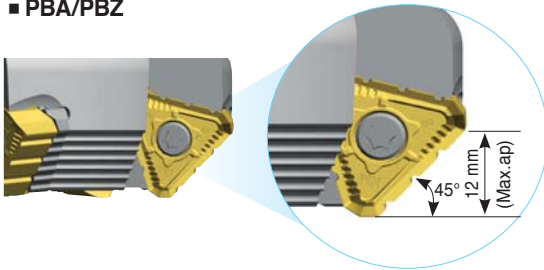




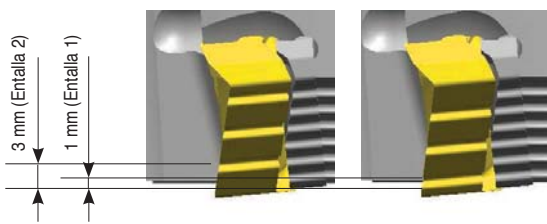
**4 Sistema de aplicación múltiple**

- El mismo inserto para el uso múltiple (45° y 80°)

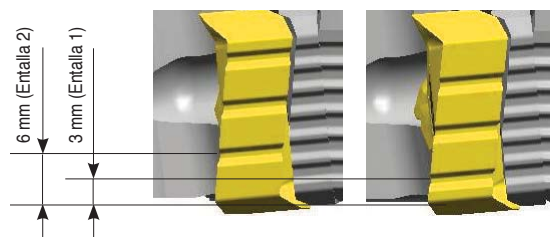
■ **PBA/PBZ**



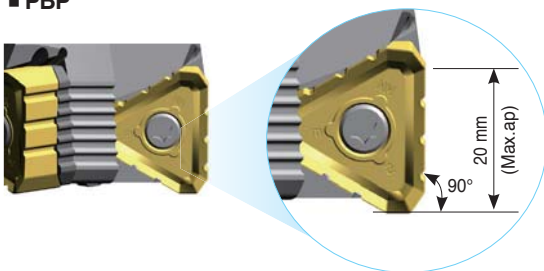
Las muelas son efectivas con una profundidad de corte mayor a 1 mm



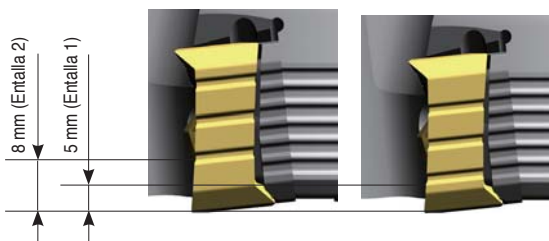
Las muelas son efectivas con una profundidad de corte mayor a 3 mm



■ **PBP**

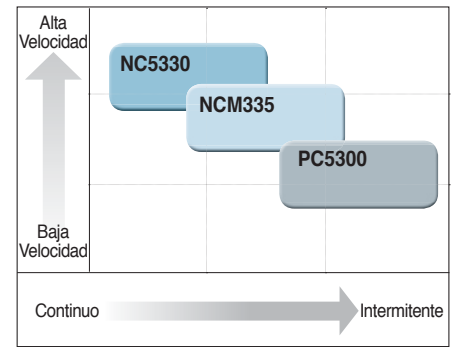


Para cortadores a 90°, los insertos con el filo dentado fragmentan la viruta en pequeños segmentos a partir de cortes de 5mm de profundidad



## Condiciones de corte recomendadas

| ISO   | Pieza Trabajo                                   | Material               | NC5330                    | NCM335      | PC5300      |     |
|---|---|------------------------|---------------------------|-------------|-------------|-----|
|   |   |                        | fz (mm/diente)            |             |             |     |
|   |   |                        | 0.1-0.2-0.3               | 0.1-0.2-0.3 | 0.1-0.2-0.3 |     |
|   |   |                        | vc (m/min)                |             |             |     |
| P   | Acero al Carbon                                 | -                      | SUM22, C = 0.1~25         | 400         | 335         | 280 |
|   |   | -                      | C = 0.30~55               | 365         | 305         | 255 |
|   |   | -                      | C = 0.55~80               | 340         | 285         | 240 |
|   | Acero de baja aleación (contenido aleación <5%) | -                      | SCM415(H), SCM420, SCM440 | 280         | 235         | 195 |
|   |   | Endurecido             |                           | 165         | 140         | 115 |
| Acero de alta aleación (contenido aleación >5%) | Recocido  | SKD61                  | 210                       | 180         | 150         |     |
|   | Endurecido                                      | SKH51, SKH55           | 175                       | 145         | 120         |     |
| K   | Fundición Gris                                  | Baja tensión de rotura | FC200, FC250              | 125         | -           | 145 |
|   |   | Alta tensión de rotura | FC300, FC350              | 105         | -           | 120 |
|   |   | Ferrítico              | FCD400, FCD500            | 80          | -           | 95  |
|   |   | Perlítica              | FCD600, FCD700            | 75          | -           | 85  |

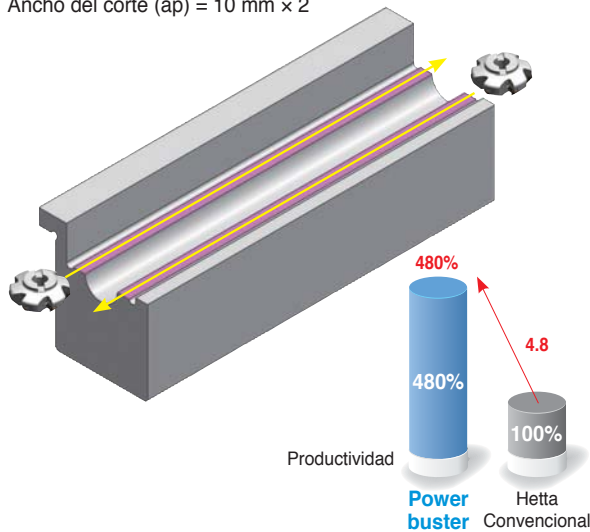


## Prueba del Power Buster

### Bloque de cilindros del motor del buque (hierro fundido)

Ancho del corte (ae) = 160 mm x 2

Ancho del corte (ap) = 10 mm x 2

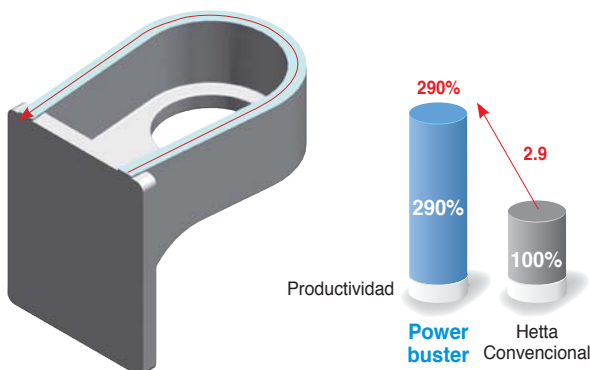


| Artículo                             | Power buster      | Hetta Convencional  |
|--------------------------------------|-------------------|---|
| diámetro (ØD)                        | 200 mm            | 200 mm  |
|                                      | 12 dientes        | 12 dientes  |
| Calidades                            | NC5330            | PVD recubierto para Fundición   |
| vc                                   | 170 m/min         | 130 m/min   |
| fz                                   | 0.24 mm/diente    | 0.16 mm/diente  |
| ap                                   | 10 mm x 2 pasadas | 4 mm x 5 pasadas  |
| min                                  | 28.2 min/ea       | 137.5 min/ea  |
| <b>4.8 veces mayor productividad</b> |                   | <ul style="list-style-type: none"> <li>• Un lado, Inserto de 4 esquinas (Sin muesca) AA del cortador 45°</li> </ul> |

### Pieza de maquinaria pesada (Aleación de acero)

Ancho del corte (ae) = 160 mm x 2

Ancho del corte (ap) = 10 mm x 2



| Artículo                             | Power Buster     | Hetta Convencional  |
|--------------------------------------|------------------|---|
| diámetro (ØD)                        | 125 mm           | 100 mm  |
|                                      | 8 dientes        | 8 dientes   |
| Calidad                              | NCM335           | PVD recubierto para Fundición   |
| vc                                   | 180 m/min        | 150 m/min   |
| fz                                   | 0.15 mm/diente   | 0.10 mm/diente  |
| ap                                   | 5 mm x 2 pasadas | 2.5 mm x 4 pasadas  |
| min                                  | 5 min/ea         | 14.7 min/ea   |
| <b>2.9 veces mayor productividad</b> |                  | <ul style="list-style-type: none"> <li>• 2 lados, Inserto de 8 esquinas (Sin muesca) AA del cortador 45°</li> </ul> |



# PBAC(M)5000

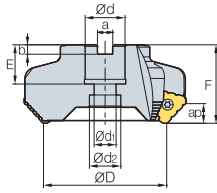


Fig. 1

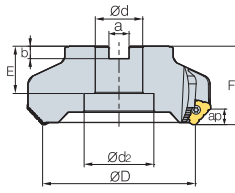


Fig. 2

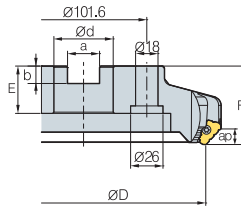


Fig. 3

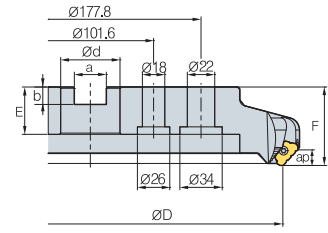


Fig. 4



AA  
45°

• AR: -5°  
• RR: -11°

(mm)

|               | Codigo                 | ØD | Ød  | Ød1         | Ød2 | a   | b           | E       | F       | ap | Fig. |   |
|---------------|------------------------|----|-----|-------------|-----|-----|-------------|---------|---------|----|------|---|
| Paso normal   | PBAC (PBACM) 5080R/L   | 4  | 80  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 12   | 1 |
|               | 5100R/L                | 4  | 100 | 31.75 (32)  | -   | 45  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 12   | 2 |
|               | 5125R/L                | 6  | 125 | 38.1 (40)   | -   | 56  | 15.9 (16.4) | 10 (9)  | 38 (32) | 63 | 12   | 2 |
|               | 5160R/L                | 8  | 160 | 50.8 (40)   | -   | 100 | 19 (16.4)   | 11 (9)  | 38 (32) | 63 | 12   | 2 |
|               | 5200R/L                | 10 | 200 | 47.625 (60) | -   | -   | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 12   | 3 |
|               | 5250R/L                | 12 | 250 | 47.625 (60) | -   | -   | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 12   | 3 |
| Paso estrecho | PBAC (PBACM) 5080R/L-M | 6  | 80  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 12   | 1 |
|               | 5100R/L-M              | 6  | 100 | 31.75 (32)  | -   | 45  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 12   | 2 |
|               | 5125R/L-M              | 8  | 125 | 38.1 (40)   | -   | 56  | 15.9 (16.4) | 10 (9)  | 38 (32) | 63 | 12   | 2 |
|               | 5160R/L-M              | 10 | 160 | 50.8 (40)   | -   | 100 | 19 (16.4)   | 11 (9)  | 38 (32) | 63 | 12   | 2 |
|               | 5200R/L-M              | 12 | 200 | 47.625 (60) | -   | -   | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 12   | 3 |
|               | 5250R/L-M              | 14 | 250 | 47.625 (60) | -   | -   | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 12   | 3 |
|               | 5315R/L-M              | 16 | 315 | 47.625 (60) | -   | -   | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 12   | 4 |

( ) Tamaño métrico

## Insertos disponibles

TNMX-NM



| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|                  | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| TNMX 2710AZNR-NM |        |      |            | ●      | ●      |        |        |        |        | ●      |        | ●      |        | ●        |        |       |      |     | E26 |
| 2710AZNL-NM      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |

## Adaptadores disponibles

| Codigo                 | Adaptadores disponibles |                                |
|------------------------|-------------------------|--------------------------------|
|                        | PBAC                    | PBACM                          |
| PBAC (PBACM) 5080R/L-□ | BT□□-FMA25.4-□□         | BT□□-FMC27-□□                  |
| 5100R/L-□              | BT□□-FMA31.75-□□        | BT□□-FMC32-□□                  |
| 5125R/L-□              | BT□□-FMA38.1-□□         | BT□□-FMB40-□□<br>BT□□-FMC40-□□ |
| 5160R/L-□              | BT□□-FMA50.8-□□         |                                |
| 5200R/L-□              | BT□□-FMA47.625-□□       | BT□□-FMB60-□□                  |
| 5250R/L-□              |                         |                                |
| 5315R/L-□              |                         |                                |

## Partes

| Especificación |          |         |           |          |
|----------------|----------|---------|-----------|----------|
| Ø80-Ø315       | FTGA0518 | ST53AZR | SHXN0712F | TW20-100 |

Insertos disponibles E26

Detalles del cortador E400~E402

## PBZC(M)5000

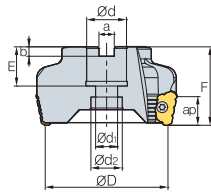
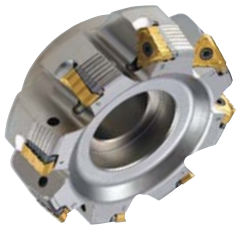


Fig. 1

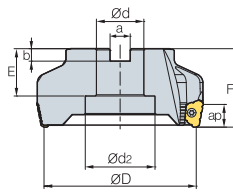


Fig. 2

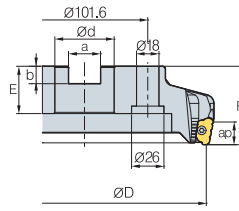


Fig. 3

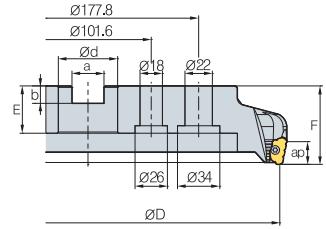


Fig. 4



AA  
80°

• AR: -5°  
• RR: -12°

(mm)

| Codigo        |                        | ØD | Ød  | Ød1         | Ød2 | a   | b           | E       | F       | ap | Fig. |   |
|---------------|------------------------|----|-----|-------------|-----|-----|-------------|---------|---------|----|------|---|
| Paso normal   | PBZC (PBZCM) 5080R/L   | 4  | 80  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 18   | 1 |
|               | 5100R/L                | 4  | 100 | 31.75 (32)  | -   | 45  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 18   | 2 |
|               | 5125R/L                | 6  | 125 | 38.1 (40)   | -   | 56  | 15.9 (16.4) | 10 (9)  | 38 (32) | 63 | 18   | 2 |
|               | 5160R/L                | 8  | 160 | 50.8 (40)   | -   | 100 | 19 (16.4)   | 11 (9)  | 38 (32) | 63 | 18   | 2 |
|               | 5200R/L                | 10 | 200 | 47.625 (60) | -   | -   | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 18   | 3 |
|               | 5250R/L                | 12 | 250 | 47.625 (60) | -   | -   | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 18   | 3 |
|               | 5315R/L                | 14 | 315 | 47.625 (60) | -   | -   | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 18   | 4 |
| Paso estrecho | PBZC (PBZCM) 5080R/L-M | 6  | 80  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 18   | 1 |
|               | 5100R/L-M              | 6  | 100 | 31.75 (32)  | -   | 45  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 18   | 2 |
|               | 5125R/L-M              | 8  | 125 | 38.1 (40)   | -   | 56  | 15.9 (16.4) | 10 (9)  | 38 (32) | 63 | 18   | 2 |
|               | 5160R/L-M              | 10 | 160 | 50.8 (40)   | -   | 100 | 19 (16.4)   | 11 (9)  | 38 (32) | 63 | 18   | 2 |
|               | 5200R/L-M              | 12 | 200 | 47.625 (60) | -   | -   | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 18   | 3 |
|               | 5250R/L-M              | 14 | 250 | 47.625 (60) | -   | -   | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 18   | 3 |
|               | 5315R/L-M              | 16 | 315 | 47.625 (60) | -   | -   | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 18   | 4 |

( ) Tamaño métrico

### Insertos disponibles

TNMX-NM



| Codigo                          | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|---------------------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|                                 | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| TNMX 2710AZNR-NM<br>2710AZNL-NM |        |      |            | ●      | ●      |        |        |        |        | ●      |        | ●      |          | ●      |        |      |       |     | E26 |

### Adaptadores disponibles

| Codigo                 | Adaptadores disponibles |               |
|------------------------|-------------------------|---------------|
|                        | PBZC                    | PBZCM         |
| PBZC (PBZCM) 5080R/L-□ | BT□□-FMA25.4-□□         | BT□□-FMC27-□□ |
| 5100R/L-□              | BT□□-FMA31.75-□□        | BT□□-FMC32-□□ |
| 5125R/L-□              | BT□□-FMA38.1-□□         | BT□□-FMB40-□□ |
| 5160R/L-□              | BT□□-FMA50.8-□□         | BT□□-FMC40-□□ |
| 5200R/L-□              | BT□□-FMA47.625-□□       | BT□□-FMB60-□□ |
| 5250R/L-□              |                         |               |
| 5315R/L-□              |                         |               |

### Partes

| Especificación |          |         |           |          |
|----------------|----------|---------|-----------|----------|
| Ø80~Ø315       | FTGA0518 | ST53AZR | SHXN0712F | TW20-100 |

Insertos disponibles E26 Detalles del cortador E400-E402



# PBPCM6000 **new**

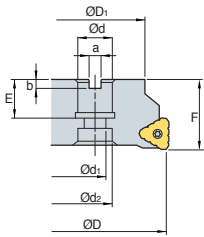


Fig. 1

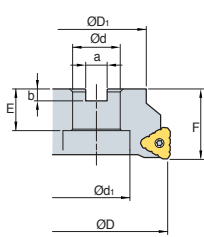


Fig. 2

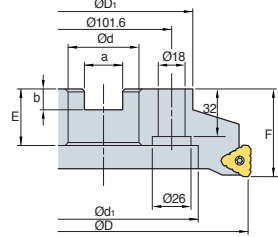


Fig. 3

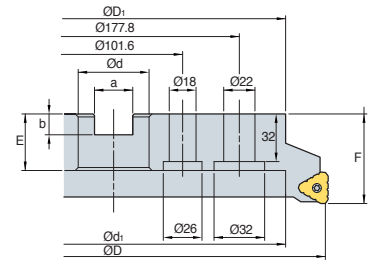


Fig. 4



AA  
**90°**

• AR: -5°  
• RR: -12°

(mm)

| Codigo       | ØD  | ØD1 | Ød | Ød2 | Ød2 | a    | b  | E  | F  | ap | kg    | Fig. |
|--------------|-----|-----|----|-----|-----|------|----|----|----|----|-------|------|
| <b>PBPCM</b> |     |     |    |     |     |      |    |    |    |    |       |      |
| 6080R-4      | 80  | 60  | 27 | 14  | 20  | 12.4 | 7  | 24 | 50 | 20 | 0.85  | 1    |
| 6100R-6      | 100 | 70  | 32 | -   | 54  | 14.4 | 8  | 30 | 50 | 20 | 1.16  | 2    |
| 6125R-6      | 125 | 90  | 40 | -   | 56  | 16.4 | 9  | 32 | 63 | 20 | 2.84  | 2    |
| 6160R-8      | 160 | 107 | 40 | -   | 90  | 16.4 | 9  | 32 | 63 | 20 | 3.58  | 3    |
| 6200R-10     | 200 | 130 | 60 | -   | 132 | 25.7 | 14 | 38 | 63 | 20 | 5.13  | 3    |
| 6250R-12     | 250 | 180 | 60 | -   | 180 | 25.7 | 14 | 38 | 63 | 20 | 9.6   | 3    |
| 6315R-14     | 315 | 240 | 60 | -   | 238 | 25.7 | 14 | 38 | 63 | 20 | 16.85 | 4    |

## Insertos disponibles

TNMX-NM



| Codigo      | Cermet     |      | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|-------------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|             | CN2000     | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC8510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| <b>TNMX</b> | 3012PNR-NM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | E26 |

## Adaptadores disponibles

| Codigo       | Adaptador general |
|--------------|-------------------|
| <b>PBPCM</b> |                   |
| 6080R-4      | BT□□ -FMC27-□□    |
| 6100R-6      | BT□□ -FMC32-□□    |
| 6125R-6      |                   |
| 6160R-8      | BT□□ -FMC40-□□    |
| 6200R-10     |                   |
| 6250R-12     |                   |
| 6315R-14     | BT□□ -FMC60-□□    |

## Partes

| Especificación |          |         |           |          |
|----------------|----------|---------|-----------|----------|
| Ø80-Ø315       | FTGA0518 | ST53PNR | SHXN0712F | TW20-100 |

Insertos disponibles E26

Detalles del cortador E400~E402

Series de Rich mill es una de las innovaciones que provee más filos de cortes disponibles con inserto doble y una vida más larga para la herramienta para nuestros usuarios

## Serie Rich Mill

- La serie Rich mill es un tipo de innovación que proporciona un mayor número de filos de corte por inserto, gracias a los insertos con doble filo, alargando la vida útil de la herramienta. Gracias al diseño de su geometría y el filo de corte especial, se garantiza una muy baja carga de corte, por consiguiente, una mayor duración de la herramienta.
- La serie Rich-Mill tiene una amplia gama de aplicaciones: acero, acero inoxidable, fundición y aluminio.
- Aplicando insertos negativos mas fuertes alargando vida útil de la herramienta
- Rich mill cuenta con 2 sistemas de sujeción: de tornillo y de brida

### Sistema de codificación

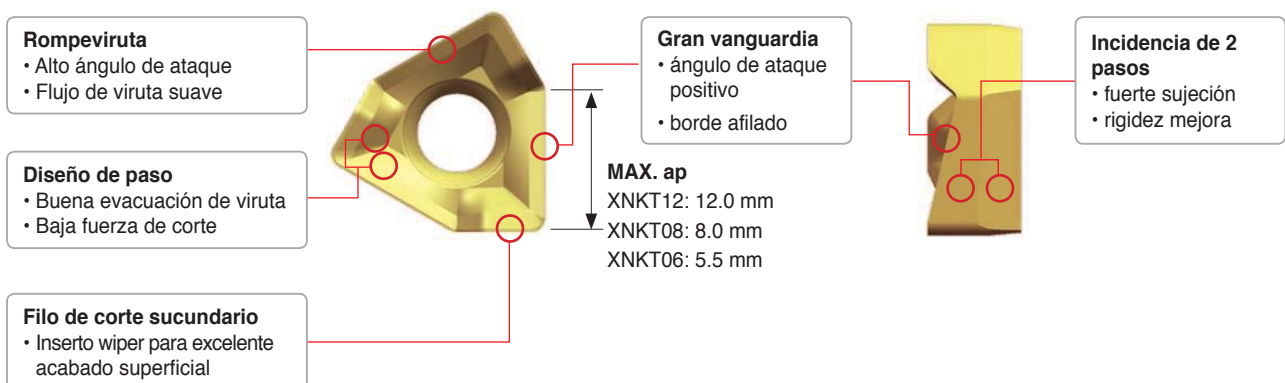
| RM16  | A   | C                                  | M                        | 4                                | 100                | H                                 | R - M                      |  |
|---|---|------------------------------------|--------------------------|----------------------------------|--------------------|-----------------------------------|----------------------------|--|
| <b>No. de Filos</b>   | <b>Angulo de Ataque</b>   | <b>Tipo</b>                        | <b>Tipo Hoder</b>        | <b>Tamaño Inserto I/C</b>        | <b>Diam. Hetta</b> | <b>Tipo Refrigeración</b>         | <b>Mano Hetta</b>          | <b>Paso</b>                              |
| RM3: No. de filos-3<br>RM4: No. de filos-4<br>RM6: No. de filos-6<br>RM8: No. de filos-8<br>RMH8: No. de filos-8 (Placa)<br>RMT8: No. de filos-8 (Pasador Brida)<br>RM16: No. de filos-16 | A: 45°<br>D: 30°<br>E: 15°<br>F: 5°<br>P: 0°<br>Q: 2°<br>Z: Fresado en plunge (dirección axial) | C: Cortador<br>S: mango cilíndrico | M: Metrico<br>A: Pulgada | 3: 9.525<br>4: 12.7<br>5: 15.875 | Ø100               | H: Orificios<br>No marca: Ninguno | R: Derecho<br>L: izquierdo | M: paso estrecho<br>H: paso muy estrecho |

## Rich Mill RM3

### Características

- Alta calidad: verdadera operación de hombro a 90°
- Alta productividad: la inserción gruesa y fuerte y la sujeción de 3 caras aseguran un funcionamiento estable incluso en condiciones difíciles
- Alta economía: larga vida útil de la herramienta debido a un proceso de fabricación optimizado

### Característica del inserto

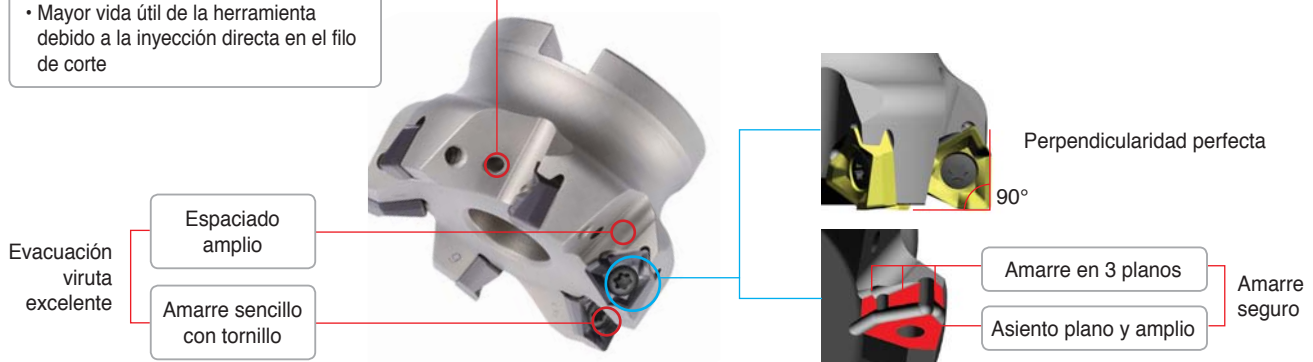


## Rich Mill RM3

### Características de la fresa

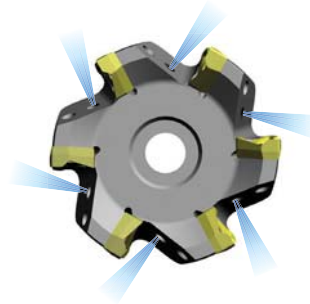
#### A través del sistema de refrigeración

- Mayor vida útil de la herramienta debido a la inyección directa en el filo de corte



### Sistema lubricación interno

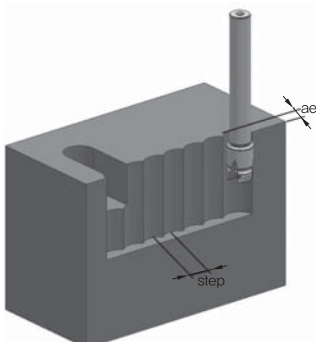
- Exclusivo a través de perno de refrigerante requerido
- Distribución efectiva del refrigerante directamente al filo de corte
- Adaptador especial para refrigerante requerido



### Características de los rompe virutas

| Insertos | Filo de corte | Usos     | Características   |
|----------|---------------|----------|---|
| MA       |               | Aluminio | Calidad de corte superior para aluminio debido al filo afilado y superficie pulida  |
| ML       |               | Ligero   | Calidad de corte superior para corte ligero y ligero, maquinado de materiales difíciles de cortar a través de la baja carga de corte del rompevirutas |
| MM       |               | General  | Adecuado para varios cortes debido al diseño de forma especial para corte general   |

### Máximo paso en maquinado axial (Fresado en plunge)

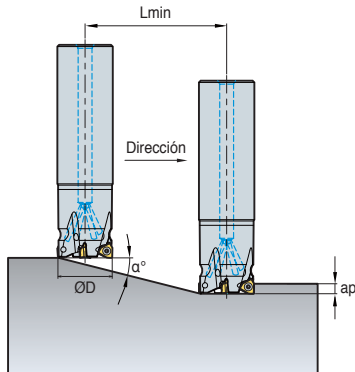


| Tipo      | max. ae | ae | Diámetro fresa (mm) |      |      |      |      |      |      |      |      |      |      |      |
|-----------|---------|----|---------------------|------|------|------|------|------|------|------|------|------|------|------|
|           |         |    | Ø20                 | Ø21  | Ø25  | Ø26  | Ø32  | Ø33  | Ø40  | Ø50  | Ø63  | Ø80  | Ø100 | Ø125 |
|           |         |    | Paso máximo (mm)    |      |      |      |      |      |      |      |      |      |      |      |
| 3000 tipo | 2.5     | 1  | 8.5                 | 8.9  | 9.7  | 10   | 11.1 | 11.3 | 12.4 | 14   | 15.7 | 17.7 | 19.9 | 22.2 |
| 4000 tipo | 3.0     | 2  | 12                  | 12.3 | 13.5 | 13.8 | 15.4 | 15.7 | 17.4 | 19.5 | 22   | 24.9 | 28   | 31.3 |
| 5000 tipo | 3.5     | 3  | -                   | -    | -    | -    | -    | -    | 21   | 23.7 | 26.8 | 30.3 | 34.1 | 38.2 |

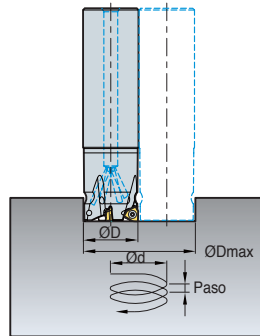
## Rich Mill RM3

### Rampeado lineal y circular

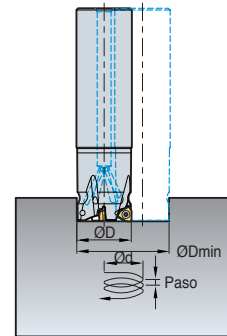
1. Rampeado lineal



2. Rampeado circular para agujero ciego



3. Rampeado circular para agujero pasante



(mm)

| Tipo      | Diámetro de herramienta ØD | ap  | 1. Rampeado lineal |       | 2. Rampeado circular para agujero ciego |                |                            |                | 3. Rampeado circular para agujero pasante |                |
|-----------|----------------------------|-----|--------------------|-------|---|----------------|----------------------------|----------------|---|----------------|
|           |                            |     | α°                 | Lmin  | Díametro mínimo de agujero Ød           | Paso máximo Ød | Díametro agujero máximo Ød | Paso máximo Ød | Díametro mínimo de agujero Ød             | Paso máximo Ød |
| 3000 tipo | 20                         | 5.5 | 15.5               | 19.8  | 36.5                                    | 5.5            | 38.5                       | 5.5            | 33.0                                      | 5.5            |
|           | 21                         | 5.5 | 14.0               | 22.1  | 38.5                                    | 5.5            | 40.5                       | 5.5            | 35.0                                      | 5.5            |
|           | 25                         | 5.5 | 10.0               | 31.2  | 46.5                                    | 5.5            | 48.5                       | 5.5            | 43.0                                      | 5.5            |
|           | 26                         | 5.5 | 9.5                | 32.9  | 48.34                                   | 5.5            | 51.0                       | 5.5            | 45.0                                      | 5.5            |
|           | 32                         | 5.5 | 6.5                | 48.3  | 60.5                                    | 5.5            | 62.5                       | 5.5            | 59.0                                      | 5.5            |
|           | 33                         | 5.5 | 6.0                | 52.3  | 62.5                                    | 5.5            | 64.5                       | 5.5            | 59.0                                      | 5.5            |
|           | 40                         | 5.5 | 4.5                | 69.9  | 46.5                                    | 5.5            | 78.5                       | 5.5            | 73.0                                      | 5.5            |
|           | 50                         | 5.5 | 3.5                | 89.9  | 96.5                                    | 5.5            | 98.5                       | 5.5            | 93.0                                      | 5.5            |
|           | 63                         | 5.5 | 2.5                | 126.0 | 122.5                                   | 5.5            | 124.5                      | 5.5            | 119.0                                     | 5.5            |
|           | 80                         | 8   | 2.0                | 157.5 | 156.5                                   | 5.5            | 158.5                      | 5.5            | 153.0                                     | 5.5            |
|           | 100                        | 8   | 1.5                | 210.0 | 194.5                                   | 5.5            | 198.5                      | 5.5            | 193.0                                     | 5.5            |
| 125       | 8                          | 1.0 | 315.1              | 246.5 | 5.5                                     | 248.5          | 5.5                        | 243.0          | 5.5                                       |                |
| 4000 tipo | 25                         | 8   | 24.0               | 18.0  | 44.5                                    | 8.0            | 48.0                       | 8.0            | 38.5                                      | 8.0            |
|           | 32                         | 8   | 13.0               | 34.7  | 58.5                                    | 8.0            | 62.0                       | 8.0            | 52.5                                      | 8.0            |
|           | 33                         | 8   | 12.0               | 37.6  | 60.02                                   | 8.0            | 64.4                       | 8.0            | 54.5                                      | 8.0            |
|           | 40                         | 8   | 8.5                | 53.5  | 74.5                                    | 8.0            | 78.0                       | 8.0            | 68.5                                      | 8.0            |
|           | 50                         | 8   | 6.0                | 76.1  | 94.5                                    | 8.0            | 98.0                       | 8.0            | 88.5                                      | 8.0            |
|           | 63                         | 8   | 4.0                | 114.4 | 12.5                                    | 8.0            | 124.0                      | 8.0            | 114.5                                     | 8.0            |
|           | 80                         | 8   | 3.0                | 152.6 | 154.5                                   | 8.0            | 158.0                      | 8.0            | 148.5                                     | 8.0            |
|           | 100                        | 8   | 2.0                | 229.1 | 194.5                                   | 8.0            | 198.0                      | 8.0            | 188.5                                     | 8.0            |
| 125       | 8                          | 1.5 | 305.5              | 244.5 | 7.7                                     | 248.0          | 7.8                        | 238.5          | 7.7                                       |                |
| 5000 tipo | 80                         | 12  | 5.5                | 124.6 | 153.5                                   | 12.0           | 158.0                      | 12.0           | 146.5                                     | 12.0           |
|           | 100                        | 12  | 4.5                | 152.5 | 193.5                                   | 12.0           | 198.0                      | 12.0           | 159.5                                     | 12.0           |
|           | 125                        | 12  | 3.5                | 196.2 | 242.5                                   | 12.0           | 248.0                      | 12.0           | 236.5                                     | 12.0           |

\* Por favor use lubricación o aire para cualquier tipo de maquinado en rampa  
 $L_{min} = ap / \tan(\alpha^\circ)$





## Rich Mill RM3

### Guía aplicación para grados

| Pieza Trabajo |                          | P                | M            | K                | N         |          |
|---------------|--------------------------|------------------|--------------|------------------|-----------|----------|
|               |                          | Acero al carbono | Acero aleado | Acero inoxidable | Fundición | Aluminio |
| Rompe virutas | Primera elección         | MM               | MM           | ML               | ML        | MA       |
|               | Segunda elección         | ML               | ML           | -                | MM        | -        |
| Grados        | Maquinado alta velocidad | PC3600           | PC3600       | PC5300           | PC6510    | H01      |
|               | Maquinado general        | PC5400           | PC5300       | PC5400           | PC5300    |          |
|               | Interrumpido             | PC5400           | PC5400       | PC5400           | PC5400    |          |

### Condiciones de corte recomendadas

#### • RM3 3000 tipo

| Pieza Trabajo      | Calidades | Condiciones de corte |                |             |                       | Condiciones de corte |                |             |                       |
|--------------------|-----------|----------------------|----------------|-------------|-----------------------|----------------------|----------------|-------------|-----------------------|
|                    |           | vc (m/min)           | fz (mm/diente) | max ap (mm) | Insertos disponibles  | vc (m/min)           | fz (mm/diente) | max ap (mm) | Insertos disponibles  |
| P Acero            | PC3600    | 160~270              | 0.25~0.05      | 5.5         | XNKT0604□□<br>PNSR-MM | 160~270              | 0.2~0.05       | 5.5         | XNKT0604□□<br>PNER-ML |
|                    | PC5300    | 150~240              | 0.25~0.05      |             |                       | 150~240              | 0.25~0.05      |             |                       |
|                    | PC5400    | 130~210              | 0.25~0.05      |             |                       | 130~210              | 0.25~0.05      |             |                       |
| M Acero inoxidable | PC5300    | 90~150               | 0.2~0.05       |             |                       | 90~150               | 0.1~0.05       |             |                       |
|                    | PC5400    | 70~120               | 0.2~0.05       |             |                       | 70~120               | 0.1~0.05       |             |                       |
| K Fundición        | PC6510    | 140~230              | 0.3~0.08       |             |                       | 140~230              | 0.25~0.08      |             |                       |
|                    | PC5300    | 120~200              | 0.3~0.08       | 120~200     | 0.25~0.08             |                      |                |             |                       |

\* Condiciones de corte máximas: VC=350 m/min, fz= 0.5 mm/diente, según tipo de maquinado

#### • RM3 4000 tipo

| Pieza Trabajo      | Calidades | Condiciones de corte |                |             |                       | Condiciones de corte |                |             |                       |
|--------------------|-----------|----------------------|----------------|-------------|-----------------------|----------------------|----------------|-------------|-----------------------|
|                    |           | vc (m/min)           | fz (mm/diente) | max ap (mm) | Insertos disponibles  | vc (m/min)           | fz (mm/diente) | max ap (mm) | Insertos disponibles  |
| P Acero            | PC3600    | 160~270              | 0.3~0.05       | 8.0         | XNKT0805□□<br>PNSR-MM | 160~270              | 0.25~0.05      | 8.0         | XNKT0805□□<br>PNER-ML |
|                    | PC5300    | 150~240              | 0.3~0.05       |             |                       | 150~240              | 0.25~0.05      |             |                       |
|                    | PC5400    | 130~210              | 0.3~0.05       |             |                       | 130~210              | 0.25~0.05      |             |                       |
| M Acero inoxidable | PC5300    | 90~150               | 0.25~0.05      |             |                       | 90~150               | 0.2~0.05       |             |                       |
|                    | PC5400    | 70~120               | 0.25~0.05      |             |                       | 70~120               | 0.2~0.05       |             |                       |
| K Fundición        | PC6510    | 140~230              | 0.35~0.08      |             |                       | 140~230              | 0.3~0.08       |             |                       |
|                    | PC5300    | 120~200              | 0.35~0.08      | 120~200     | 0.3~0.08              |                      |                |             |                       |
| N Aluminio         | H01       | 400~1200             | 0.4~0.1        |             | XNCT0805□□PNFR-MA     | -                    | -              | -           | -                     |

\* Condiciones de corte máximas: VC=350 m/min, fz= 0.5 mm/diente, según tipo de maquinado

#### • RM3 5000 tipo

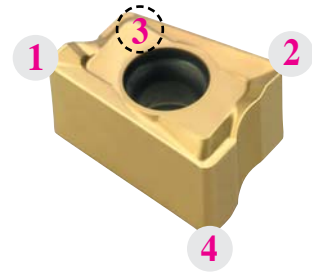
| Pieza Trabajo      | Calidades | Condiciones de corte |                |             |                       | Condiciones de corte |                |             |                       |
|--------------------|-----------|----------------------|----------------|-------------|-----------------------|----------------------|----------------|-------------|-----------------------|
|                    |           | vc (m/min)           | fz (mm/diente) | max ap (mm) | Insertos disponibles  | vc (m/min)           | fz (mm/diente) | max ap (mm) | Insertos disponibles  |
| P Acero            | PC3600    | 160~270              | 0.3~0.05       | 12.0        | XNKT1206□□<br>PNSR-MM | 160~270              | 0.25~0.05      | 12.0        | XNKT1206□□<br>PNER-ML |
|                    | PC5300    | 150~240              | 0.3~0.05       |             |                       | 150~240              | 0.25~0.05      |             |                       |
|                    | PC5400    | 130~210              | 0.3~0.05       |             |                       | 130~210              | 0.25~0.05      |             |                       |
| M Acero inoxidable | PC5300    | 90~150               | 0.25~0.05      |             |                       | 90~150               | 0.2~0.05       |             |                       |
|                    | PC5400    | 70~120               | 0.25~0.05      |             |                       | 70~120               | 0.2~0.05       |             |                       |
| K Fundición        | PC6510    | 140~230              | 0.35~0.08      |             |                       | 140~230              | 0.3~0.08       |             |                       |
|                    | PC5300    | 120~200              | 0.35~0.08      | 120~200     | 0.3~0.08              |                      |                |             |                       |
| N Aluminio         | H01       | 400~1200             | 0.4~0.1        |             | XNCT1206□□PNFR-MA     | -                    | -              | -           | -                     |

\* Condiciones de corte máximas: VC=350 m/min, fz= 0.5 mm/diente, según tipo de maquinado

## Rich Mill RM4

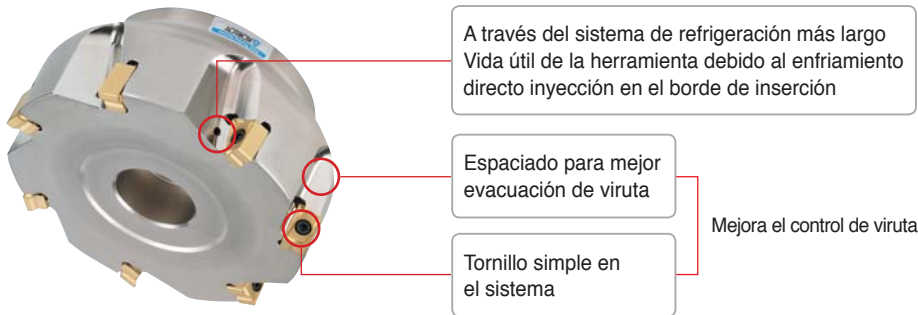
### Características

- 4 bordes de corte económicos utilizando inserto de doble cara
- RM4, como herramienta de fresado multifuncional, ofrece 4 filos de corte económicos por utilizando un inserto innovador de doble cara
- El rompevirutas de diseño especial consiste en un alto ángulo de inclinación y un fuerte filo para disminuir la carga de corte
- RM4 es una herramienta multifuncional que puede cubrir caras, cortes laterales, Ranurado, ramping y corte helicoidal.
- La combinación óptima de la geometría especial de vanguardia con una variedad de nuevos grados proporciona Consistencia y larga vida útil de la plaquita.



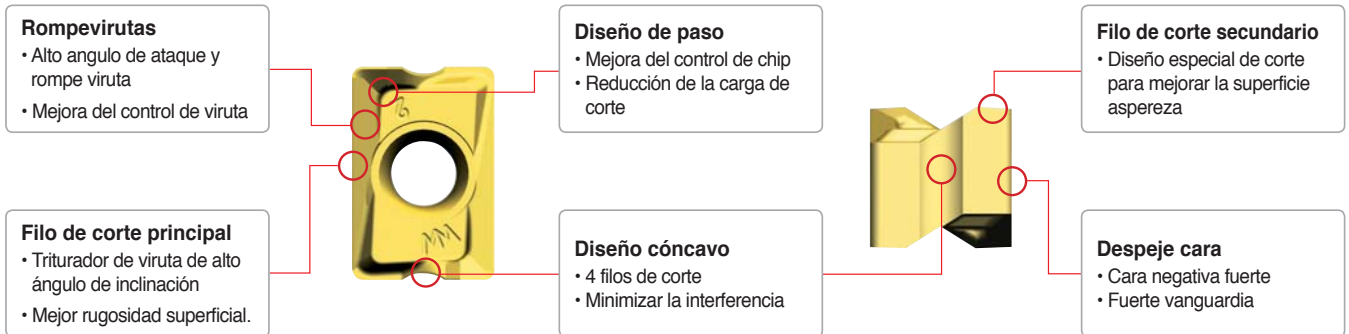
### Características de la fresa

- Se pueden usar 4 filos de corte usando un inserto de doble cara
- El rompevirutas y el borde de corte de alto ángulo de inclinación pueden hacer un corte suave con una carga de corte baja
- Inserción negativa fuerte
- Herramienta de alta eficiencia, económica y multifuncional.



### Característica del inserto

- Inserción de doble cara con 4 filos de corte.
- Triturador de viruta de alto ángulo de inclinación, vanguardia
- Flexibilidad del producto.
- Herramienta de alta eficiencia, económica y multifuncional.
- El inserto negativo tiene un filo fuerte









### Usos

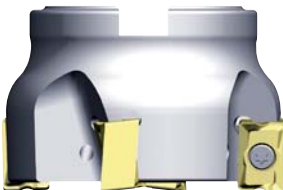
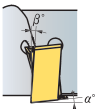
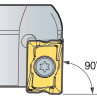


## Rich Mill RM4

### Características de los rompevirutas

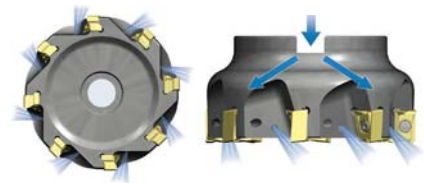
| Insertos   | Filo de corte   | Usos                       | Características  |
|--|---|----------------------------|--|
| <b>MA</b><br> |  | Aluminio, maquinado ligero | Con la aplicación de borde afilado, se ha logrado la mejor productividad, Especial para aluminio o corte de baja fuerza. |
| <b>MF</b><br> |  | Corte ligero               | Debido a la baja carga de corte, es bueno para corte ligero y material difícil de cortar                                 |
| <b>MM</b><br> |  | Corte general              | Diseño para fresado general  |

### Configuración del ensamblaje

| Forma   | Configuración del inserto en el cortador  | Características   |
|---|---|---|
|  |  | Rompe virutas con alto ángulo de ataque y ángulo de ajuste positivo para una carga de corte baja<br>→ Mejora de la maquinabilidad |
|   |  | Múltiples aplicaciones para el revestimiento, al hombro, Ranurado, ramping, corte helicoidal, etc                                 |

### Sistema lubricación interno

- Utilizando un perno de refrigerante exclusivo (perno de casquillo hexagonal) Se puede adquirir un potente enfriamiento y una mejor evacuación de viruta
- Para obtener un control óptimo de viruta, la dirección de inyección de refrigerante Ha sido diseñado para llegar a cada vanguardia directamente (a través del eje de refrigerante es obligatorio)

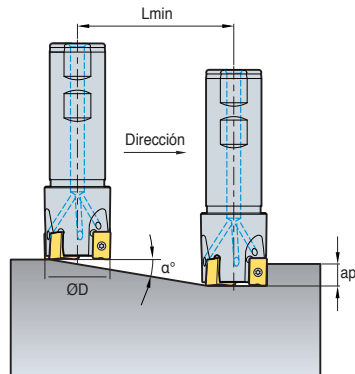


A través del sistema de refrigeración para disminuir el calor de corte y buena evacuación de viruta

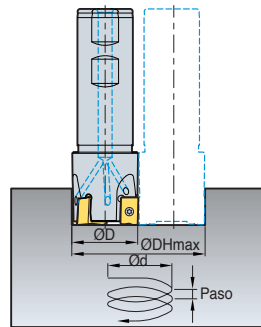
## Rich Mill RM4

### Rampeado lineal y circular

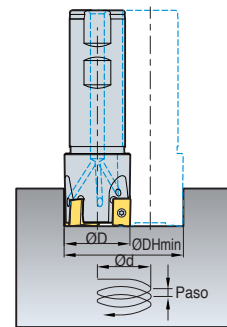
1. Rampeado lineal



2. Rampeado circular para agujero ciego



3. Rampeado circular para agujero pasante



(mm)

| Tipo           | Diámetro de herramienta ØD | ap | 1. Rampeado lineal |      | 2. Rampeado circular para agujero ciego |             |                         |             | 3. Rampeado circular para agujero pasante |             |
|----------------|----------------------------|----|--------------------|------|---|-------------|-------------------------|-------------|---|-------------|
|                |                            |    | α°                 | Lmin | Diámetro mínimo de agujero              | Paso máximo | Diámetro agujero máximo | Paso máximo | Diámetro mínimo de agujero                | Paso máximo |
| RM4PS3014HR    | 14                         | 9  | 4.5                | 125  | 25                                      | 2.7         | 27                      | 3.1         | 19  | 1.3         |
| RM4PS3016HR    | 16                         | 9  | 3.5                | 160  | 29                                      | 2.5         | 31                      | 2.7         | 23  | 1.4         |
| RM4PS3018HR    | 18                         | 9  | 3.0                | 185  | 33                                      | 2.4         | 35                      | 2.7         | 27  | 1.5         |
| RM4PS3020HR    | 20                         | 9  | 2.7                | 204  | 37                                      | 2.5         | 39                      | 2.7         | 31  | 1.6         |
| RM4PS3025HR    | 25                         | 9  | 1.8                | 301  | 47                                      | 2.1         | 49                      | 2.3         | 41  | 1.6         |
| RM4PS3032HR    | 32                         | 9  | 1.2                | 451  | 61                                      | 1.9         | 63                      | 2.0         | 55  | 1.5         |
| RM4PS3040HR    | 40                         | 9  | 0.9                | 616  | 77                                      | 1.8         | 79                      | 1.8         | 71  | 1.5         |
| RM4PS3050HR    | 50                         | 9  | 0.6                | 843  | 97                                      | 1.5         | 99                      | 1.5         | 91  | 1.3         |
| RM4PC(M)3040HR | 40                         | 9  | 0.9                | 616  | 77                                      | 1.8         | 79                      | 1.8         | 71  | 1.5         |
| RM4PC(M)3050HR | 50                         | 9  | 0.6                | 843  | 97                                      | 1.5         | 99                      | 1.5         | 91  | 1.3         |
| RM4PC(M)3063HR | 63                         | 9  | 0.5                | 1123 | 123                                     | 1.6         | 125                     | 1.6         | 117                                       | 1.4         |
| RM4PC(M)3080HR | 80                         | 9  | 0.3                | 1508 | 157                                     | 1.2         | 159                     | 1.2         | 151                                       | 1.1         |
| RM4PC(M)3100HR | 100                        | 9  | 0.2                | 1910 | 197                                     | 1.0         | 199                     | 1.0         | 191                                       | 0.9         |
| RM4PS4032HR    | 32                         | 14 | 2.5                | 229  | 59.5                                    | 3.0         | 62                      | 4           | 49  | 2.0         |
| RM4PS4040HR    | 40                         | 14 | 2.0                | 286  | 75.5                                    | 3.0         | 78                      | 4           | 65  | 2.0         |
| RM4PS4050HR    | 50                         | 14 | 2.0                | 286  | 95.5                                    | 4.0         | 98                      | 5           | 85  | 3.5         |
| RM4PS4063HR    | 63                         | 14 | 2.0                | 286  | 121.5                                   | 5.0         | 124                     | 5           | 111                                       | 5.0         |
| RM4PC(M)4050HR | 50                         | 14 | 2.0                | 286  | 95.5                                    | 4.0         | 98                      | 5           | 85  | 3.5         |
| RM4PC(M)4063HR | 63                         | 14 | 2.0                | 286  | 121.5                                   | 5.0         | 124                     | 5           | 111                                       | 5.0         |
| RM4PC(M)4080HR | 80                         | 14 | 1.5                | 382  | 155.5                                   | 5.0         | 158                     | 5           | 145                                       | 5.0         |
| RM4PC(M)4100HR | 100                        | 14 | 1.0                | 573  | 195.5                                   | 4.5         | 198                     | 5           | 185                                       | 4.0         |
| RM4PC(M)4125HR | 125                        | 14 | 1.0                | 573  | 245.5                                   | 5.0         | 248                     | 5           | 235                                       | 5.0         |
| RM4PC(M)4160R  | 160                        | 14 | 0.5                | 1146 | 315.5                                   | 3.5         | 318                     | 4           | 305                                       | 3.5         |

\* Por favor use lubricación o aire para cualquier tipo de maquinado en rampa  
 $Lmin = ap / \tan(\alpha^\circ)$

### Condiciones de corte recomendadas

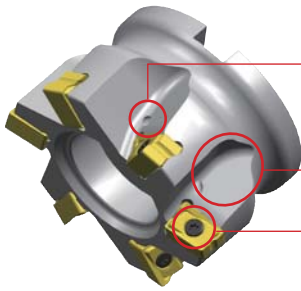
| ISO | Calidades | LNM(E)X100605PNR-MF |                |         | LNM(E)X100605PNR-MM |                |           | LNEX100605PNR-MA |                |         | Max-ap (mm) |      |           |         |           |
|-----|-----------|---------------------|----------------|---------|---------------------|----------------|-----------|------------------|----------------|---------|-------------|------|-----------|---------|-----------|
|     |           | vc (m/min)          | fz (mm/diente) |         | vc (m/min)          | fz (mm/diente) |           | vc (m/min)       | fz (mm/diente) |         |             |      |           |         |           |
| P   | NCM325    | -                   | -              | -       | -                   | -              | -         | -                | -              | -       | 9.0         | 14.0 |           |         |           |
|     | PC3500    | 150~300             | 0.05~0.25      | 120~300 | 0.05~0.30           | 150~300        | 0.03~0.20 | 150~300          | 0.05~0.30      | 120~300 |             |      | 0.05~0.35 | 150~300 | 0.03~0.20 |
| M   | PC5300    | 120~180             | 0.05~0.25      | 100~180 | 0.05~0.30           | 120~200        | 0.03~0.20 | 120~180          | 0.05~0.30      | 100~180 |             |      | 0.05~0.3  | 120~200 | 0.03~0.20 |
| K   | PC6510    | 150~300             | 0.08~0.30      | 120~300 | 0.08~0.35           | -              | -         | 150~300          | 0.08~0.35      | 120~300 |             |      | 0.08~0.35 | -       | -         |



## Rich Mill RM4Z

### Características

- La serie de molinos ricos RM4Z es un molino de inmersión para mecanizado vertical de alta eficiencia, como ranurado y embolsado en aplicaciones de desbaste
- La serie de molinos ricos RM4Z es una herramienta de fresado altamente eficiente para hundir, remojar y enfrentar. Hace las operaciones más económicas con el uso de su inserto de doble esquina de 4 esquinas
- El mecanizado por inmersión reduce el tiempo de entrega para una alta productividad y un mecanizado de precisión
- Al hundir, la profundidad máxima del tipo RM4Z 3000 es de 9,0 mm y la del tipo RM4Z 4000 de 14,0 mm



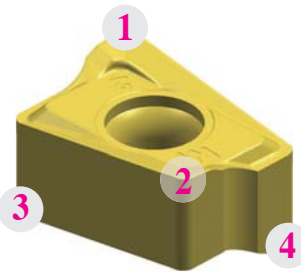
**A través del sistema de refrigeración**

- Mejora del control de chip.
- La refrigeración aumenta la vida útil de la herramienta.

**Espaciado ancho**

Facilita evacuación de viruta

**Amarre con tornillo**



- Inserto de doble cara 4 esquinas disponibles
- Rompe viruta de alto ángulo de ataque e incidencia
- Varios tipos de mecanizado disponibles.
- Inserto de alta eficiencia y económico.
- Inserto de tipo negativo - Fuerte filo

### Característica del inserto

**Filo de corte principal**

- Triturador de viruta de alto ángulo de inclinación
- Mejor rugosidad superficial.

**Diseño de paso**

- Mejora del control de chip
- Reducción de la carga de corte

**Filo de corte secundario**

- Diseño especial de corte para mejorar la superficie aspereza

**Rompevirutas**

- Alto ángulo de ataque y rompe viruta
- Mejora del control de viruta

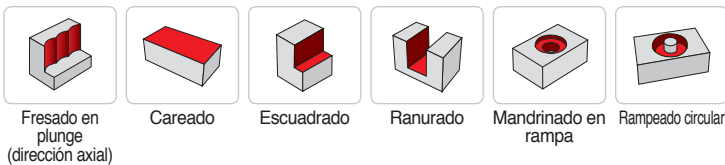
**Diseño cóncavo**

- 4 filos de corte
- Minimizar la interferencia

**Despeje cara**

- Cara negativa fuerte
- Fuerte vanguardia

### Usos

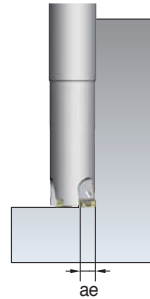
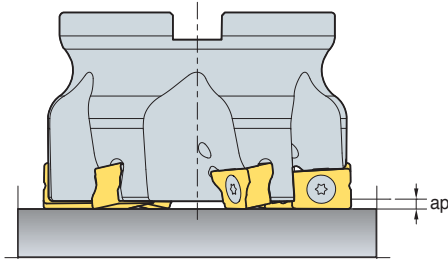


## Rich Mill RM4Z

### Profundidad de corte según tipo de maquinado

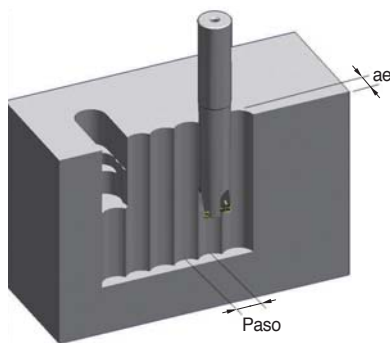
• En maquinado horizontal, profundidad de corte =  $ap$  (mm)

• En maquinado vertical, plunging, profundidad de corte =  $ae$  (mm)



| RM4Z      | Horizontal    | Vertical      |        |
|-----------|---------------|---------------|--------|
|           | max $ap$ (mm) | max $ae$ (mm) | Paso   |
| RM4Z 3000 | 1.5           | 9             | < 0.7D |
| RM4Z 4000 | 2.5           | 14            | < 0.7D |

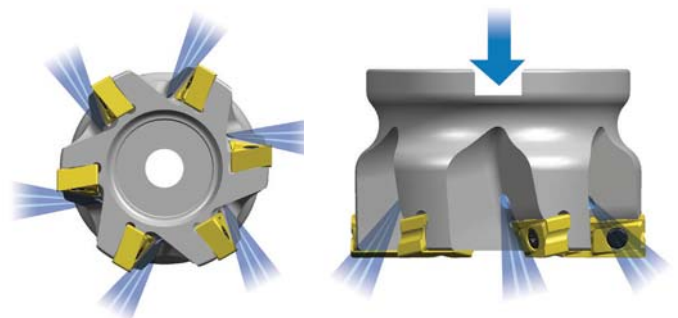
### Paso máximo en plunging



| ae | Diámetro de fresa (mm) |      |      |      |      |      |      |      |      |
|----|------------------------|------|------|------|------|------|------|------|------|
|    | 25                     | 32   | 40   | 50   | 52   | 63   | 66   | 80   | 100  |
|    | Paso máximo (mm)       |      |      |      |      |      |      |      |      |
| 1  | 9.7                    | 11.1 | 12.4 | 14   | 14.2 | 15.7 | 16.1 | 17.7 | 19.9 |
| 2  | 13.5                   | 15.4 | 17.4 | 19.5 | 20   | 22   | 22.6 | 24.9 | 28   |
| 3  | 16.2                   | 18.6 | 21   | 23.7 | 24.2 | 26.8 | 27.4 | 30.3 | 34.1 |
| 4  | 18.3                   | 21.1 | 24   | 27.1 | 27.7 | 30.7 | 31.4 | 34.8 | 39.1 |
| 5  | 20                     | 23.2 | 26.4 | 30   | 30.6 | 34   | 34.9 | 38.7 | 43.5 |
| 6  | 21.3                   | 24.9 | 28.5 | 32.4 | 33.2 | 36.9 | 37.9 | 42.1 | 47.4 |
| 7  | 22.4                   | 26.4 | 30.3 | 34.6 | 35.4 | 39.5 | 40.6 | 45.2 | 51   |
| 8  | 23.3                   | 27.7 | 32   | 36.6 | 37.5 | 41.9 | 43   | 48   | 54.2 |
| 9  | 24                     | 28.7 | 33.4 | 38.4 | 39.3 | 44   | 45.2 | 50.5 | 57.2 |
| 10 | -                      | -    | -    | -    | -    | 46   | 47.3 | 52.9 | 60   |
| 11 | -                      | -    | -    | -    | -    | 47.8 | 49.1 | 55.1 | 62.5 |
| 12 | -                      | -    | -    | -    | -    | 49.4 | 50.9 | 57.1 | 64.9 |
| 13 | -                      | -    | -    | -    | -    | 50.9 | 52.4 | 59   | 67.2 |
| 14 | -                      | -    | -    | -    | -    | 52.3 | 53.9 | 60.7 | 69.3 |

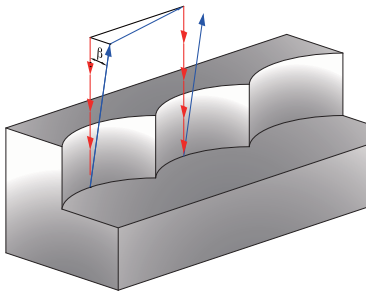
### Sistema de refrigeración interno

- El tornillo hexagonal refrigerante proporciona excelente refrigeración y evacuación de viruta.
  - Mejora la inyección directa de refrigerante al filo de corte proporcionando un enfriamiento efectivo
  - Debe emplearse un adaptador especial para refrigeración
- \*Tornillo refrigerante no incluido; disponible para venta



## Rich Mill RM4Z

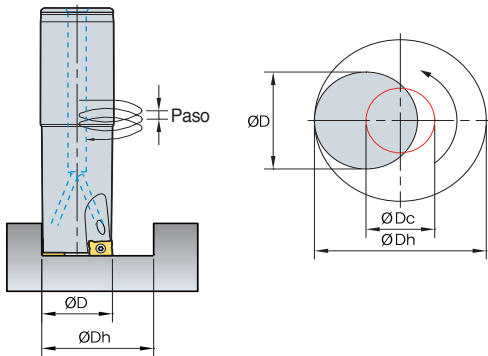
### Consejo de programación



- - - - - Dirección de avance en plunging
- Escape/salida de herramienta
- $\beta$  Ángulo de escape/salida ( $\beta \geq 1^\circ$ )

- Cuando vaya a retroceder después del plunging, programe la salida con un ángulo de escape de más de  $1^\circ$

### Maquinado helicoidal



$$\text{ØDc} = \text{ØDh} - \text{ØD}$$

- ØDc = Paso punto central herramienta
- ØDh = Diámetro de agujero a maquinarse
- ØD = Diámetro herramienta

(mm)

| Codigo | Diámetro ØD | Datos corte helicoidal |             |                            |             |     |
|--------|-------------|------------------------|-------------|----------------------------|-------------|-----|
|        |             | ØDh max                | Paso máximo | Datos maquinado helicoidal | Paso máximo |     |
| RM4ZS  | 3025HR-L25  | 25                     | 30          | 0.4                        | 48          | 1.8 |
|        | 3032HR-L32  | 32                     | 43          | 0.3                        | 62          | 0.9 |
|        | 3040HR-L32  | 40                     | 59          | 0.3                        | 78          | 0.6 |
| RM4ZC  | M3040HR     | 40                     | 59          | 0.3                        | 78          | 0.6 |
|        | M3050HR     | 50                     | 79          | 0.3                        | 98          | 0.5 |
|        | M3052HR     | 52                     | 83          | 0.3                        | 102         | 0.5 |
| RM4ZM  | 3025HR-M12  | 25                     | 30          | 0.4                        | 48          | 1.8 |
|        | 3032HR-M16  | 32                     | 43          | 0.3                        | 62          | 0.9 |
|        | 3040HR-M16  | 40                     | 59          | 0.3                        | 78          | 0.6 |
| RM4ZC  | M4063HR     | 63                     | 95          | 0.5                        | 124         | 1.0 |
|        | M4066HR     | 66                     | 101         | 0.5                        | 130         | 1.0 |
|        | M4080HR     | 80                     | 129         | 0.5                        | 158         | 0.8 |
|        | M4100HR     | 100                    | 169         | 0.3                        | 198         | 0.5 |

### Condiciones de corte recomendadas

| ISO | Calidades | LNM(E)X100605PNL-MM |                |               |                | LNM(E)X151008PNL-MM |                |               |                |
|-----|-----------|---------------------|----------------|---------------|----------------|---------------------|----------------|---------------|----------------|
|     |           | vc (m/min)          | fz (mm/diente) | * max ae (mm) | ** max ap (mm) | vc (m/min)          | fz (mm/diente) | * max ae (mm) | ** max ap (mm) |
| P   | PC3500    | 100~250             | 0.05~0.25      | 9             | 1.5            | 120~250             | 0.05~0.25      | 14            | 2.5            |
| M   | PC5300    | 100~250             | 0.08~0.30      |               |                | 120~250             | 0.08~0.30      |               |                |
| K   | PC6510    | 80~180              | 0.05~0.20      |               |                | 100~180             | 0.05~0.20      |               |                |

\* max ae (mm): (plunging) max. profundidad de corte radial    \*\* máx. ap (mm): (Ecuadrado / careado) Profundidad máxima de corte



## Rich Mill RM6

### Características

- Sujeción estable: 3 superficies de sujeción laterales y tornillos de sujeción fuertes.  
→ Mejora la estabilidad de corte.
- Resultados de alta calidad: alta precisión, excelente perpendicularidad, excelente acabado superficial en el flanco, tolerancia precisa
- Alta productividad: alto ángulo de inclinación y bordes afilados para una menor resistencia de corte  
→ Ideal para mecanizado de alta velocidad y alto avance.

### Característica del inserto

#### Mayor estabilidad de sujeción

- Amplias zonas de sujeción y fuerte Tornillos de sujeción para sujeción rígida

#### Ángulo de ataque muy positivo y rompe virutas

- Mantiene una sujeción estable.
- Induce un flujo de viruta suave  
→ Incrementa la vida del inserto

#### Filo de corte secundario ancho

- Mejor acabado superficial.
- Mecanizado multiusos, incluyendo plunging

#### Filo de corte con ángulo de ataque positivo

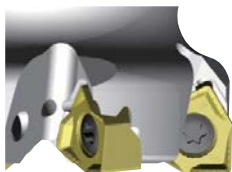
- Mejora de la maquinabilidad y reduce la resistencia al corte

MAX. ap  
WNGX08: 8.2 mm  
WNGX04: 4.3 mm

#### Superficie de incidencia en flanco de 3 niveles

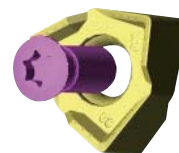
- Mejora la rigidez y permite una sujeción estable  
→ Mejora la estabilidad de corte

### Características de la fresa



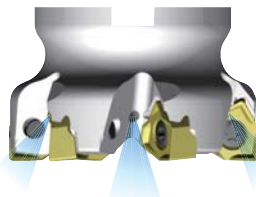
#### Diseño aerodinámico del soporte

- Mejora la evacuación de viruta en profundidad, asear y ranurar



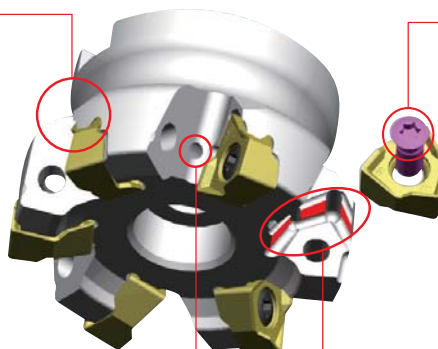
#### Tornillos de sujeción fuertes

- Tornillos de sujeción fuertes de mayor diámetro que permiten una sujeción rígida



#### Sistema refrigeración interior

- Mejora el flujo de viruta y la vida útil de la herramienta gracias al enfriamiento del inserto









#### Sistema de soporte de 3 lados

- Vida de herramienta estable



## Rich Mill RM6

### Características de los rompevirutas

| Insertos   | Filo de corte   | Usos          | Características   |
|--|---|---------------|---|
| MA  |  | Para aluminio | Filos de corte afilados para un excelente rendimiento de corte en el mecanizado de aluminio<br>Superficie pulida para un excelente flujo de viruta y resistencia de soldadura             |
| ML  |  | Corte ligero  | Diseño de rompevirutas de baja resistencia al corte, ideal para corte ligero y maquinado materiales difíciles de cortar<br>Excelente vida útil de la herramienta y resultados de calidad. |
| MM  |  | Corte general | Diseño de rompevirutas ideal para fresado general en escuadrado y la mayoría de las aplicaciones  |

### Guía aplicación para grados

| Pieza Trabajo |                          | P                | M            | K                | N         |                     |
|---------------|--------------------------|------------------|--------------|------------------|-----------|---------------------|
|               |                          | Acero al carbono | Acero aleado | Acero inoxidable | Fundición | Metales No-Ferrosos |
| Rompe virutas | Primera elección         | MM               | MM           | ML               | ML        | MA                  |
|               | Segunda elección         | ML               | ML           | -                | MM        | MA                  |
| Grados        | Maquinado alta velocidad | PC3600           | PC3600       | PC5300           | PC6510    | H01                 |
|               | Maquinado general        | PC5400           | PC5300       | PC5400           | PC5300    | H01                 |
|               | Interumpido              | PC5400           | PC5400       | PC5400           | PC5400    | H01                 |

### Condiciones de corte recomendadas

#### • WNGX04

| Pieza Trabajo         | Calidades | WNGX040304PNSR-MM |                |              | WNGX040304PNER-ML |                |              | WNGX040304PNFR-MA |                |              |
|-----------------------|-----------|-------------------|----------------|--------------|-------------------|----------------|--------------|-------------------|----------------|--------------|
|                       |           | vc (m/min)        | fz (mm/diente) | max. ap (mm) | vc (m/min)        | fz (mm/diente) | max. ap (mm) | vc (m/min)        | fz (mm/diente) | max. ap (mm) |
| P Acero               | PC3600    | 160~270           | 0.25~0.05      | 4.3          | 160~270           | 0.20~0.05      | 4.3          | -                 | -              | 4.3          |
|                       | PC5300    | 150~240           | 0.25~0.05      | 4.3          | 150~240           | 0.25~0.05      | 4.3          | -                 | -              | 4.3          |
|                       | PC5400    | 130~210           | 0.25~0.05      | 4.3          | 130~210           | 0.25~0.05      | 4.3          | -                 | -              | 4.3          |
| M Acero inoxidable    | PC5300    | 90~150            | 0.20~0.05      | 4.3          | 90~150            | 0.10~0.05      | 4.3          | -                 | -              | 4.3          |
|                       | PC5400    | 70~120            | 0.20~0.05      | 4.3          | 70~120            | 0.10~0.05      | 4.3          | -                 | -              | 4.3          |
| K Fundición           | PC6510    | 140~230           | 0.30~0.08      | 4.3          | 140~230           | 0.25~0.08      | 4.3          | -                 | -              | 4.3          |
|                       | PC5300    | 120~200           | 0.30~0.08      | 4.3          | 120~200           | 0.25~0.08      | 4.3          | -                 | -              | 4.3          |
| N Metales No-Ferrosos | H01       | -                 | -              | 4.3          | -                 | -              | 4.3          | 500~1000          | 0.2~0.05       | 4.3          |

\* Los datos anteriores se refieren a las condiciones generales de corte y pueden ajustarse hasta 300 m / min y 0.4 mm / t dependiendo del maquinado

#### • WNGX08

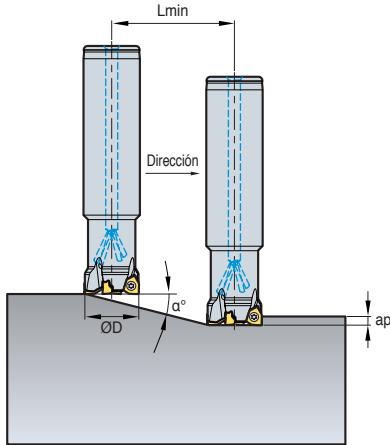
| Pieza Trabajo         | Calidades | WNGX080608PNSR-MM |                |              | WNGX080608PNER-ML |                |              | WNGX080608PNFR-MA |                |              |
|-----------------------|-----------|-------------------|----------------|--------------|-------------------|----------------|--------------|-------------------|----------------|--------------|
|                       |           | vc (m/min)        | fz (mm/diente) | max. ap (mm) | vc (m/min)        | fz (mm/diente) | max. ap (mm) | vc (m/min)        | fz (mm/diente) | max. ap (mm) |
| P Acero               | PC3600    | 160~270           | 0.25~0.05      | 8.2          | 160~270           | 0.20~0.05      | 8.2          | -                 | -              | 8.2          |
|                       | PC5300    | 150~240           | 0.25~0.05      | 8.2          | 150~240           | 0.25~0.05      | 8.2          | -                 | -              | 8.2          |
|                       | PC5400    | 130~210           | 0.25~0.05      | 8.2          | 130~210           | 0.25~0.05      | 8.2          | -                 | -              | 8.2          |
| M Acero inoxidable    | PC5300    | 90~150            | 0.20~0.05      | 8.2          | 90~150            | 0.10~0.05      | 8.2          | -                 | -              | 8.2          |
|                       | PC5400    | 70~120            | 0.20~0.05      | 8.2          | 70~120            | 0.10~0.05      | 8.2          | -                 | -              | 8.2          |
| K Fundición           | PC6510    | 140~230           | 0.30~0.08      | 8.2          | 140~230           | 0.25~0.08      | 8.2          | -                 | -              | 8.2          |
|                       | PC5300    | 120~200           | 0.30~0.08      | 8.2          | 120~200           | 0.25~0.08      | 8.2          | -                 | -              | 8.2          |
| N Metales No-Ferrosos | H01       | -                 | -              | 8.2          | -                 | -              | 8.2          | 500~1000          | 0.2~0.05       | 8.2          |

\* Los datos anteriores se refieren a las condiciones generales de corte y pueden ajustarse hasta 300 m / min y 0.4 mm / t dependiendo del maquinado

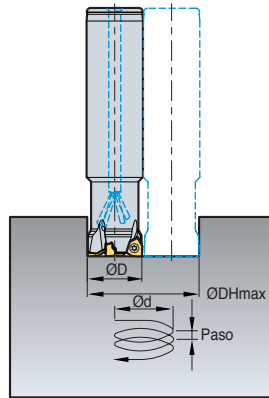
## Rich Mill RM6

### Rampeado lineal y circular

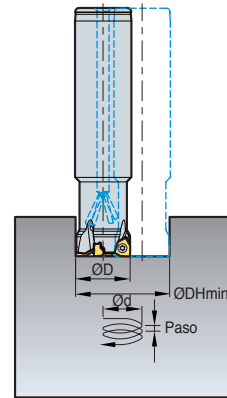
#### 1. Rampeado lineal



#### 2. Rampeado circular para agujero ciego



#### 3. Rampeado circular para agujero pasante



(mm)

| Codigo | Diámetro de herramienta ØD | Profundidad of cut ap | 1. Rampeado lineal         |      | 2. Rampeado circular para agujero ciego |                  |                                |                  | 3. Rampeado circular para agujero pasante      |                  |     |
|--------|----------------------------|-----------------------|----------------------------|------|---|------------------|--------------------------------|------------------|--|------------------|-----|
|        |                            |                       | Ángulo de ataque máximo α° | Lmin | Diámetro mínimo de agujero ØDHmin       | Paso máximo dmax | Diámetro agujero máximo ØDHmax | Paso máximo dmax | Corte helicoidal para agujeros pasantes ØDHmin | Paso máximo dmax |     |
| RM6PS  | 032R-2W32-120-WN08         | 32                    | 8                          | 0.8  | 572.9                                   | 54               | 0.96                           | 62               | 1.3  | 38.5             | 0.5 |
|        | 040R-3W32-120-WN08         | 40                    | 8                          | 0.5  | 916.7                                   | 70               | 0.82                           | 78               | 1.0  | 54.5             | 0.4 |
|        | 050R-4W32-120-WN08         | 50                    | 8                          | 0.3  | 1527.9                                  | 90               | 0.66                           | 98               | 0.8  | 74.5             | 0.3 |
| RM6PCM | 063R-22-6-WN08             | 63                    | 8                          | 0.2  | 2291.3                                  | 116              | 0.58                           | 124              | 0.6  | 100.5            | 0.3 |
|        | 080R-27-7-WN08             | 80                    | 8                          | 0.1  | 4583.7                                  | 150              | 0.38                           | 158              | 0.4  | 134.5            | 0.2 |
|        | 100R-32-8-WN08             | 100                   | 8                          | 0.1  | 4583.7                                  | 190              | 0.49                           | 198              | 0.5  | 174.5            | 0.3 |
|        | 125R-40-11-WN08            | 125                   | 8                          | 0.1  | 4583.7                                  | 240              | 0.63                           | 248              | 0.6  | 224.5            | 0.3 |

$Lmin = ap / \tan(\alpha^\circ)$

Lmin: Longitud de corte según ángulo de bajada

ap: profundidad de corte axial

α°: ángulo de bajada disponible para mecanizado en rampa



## Rich Mill RM8

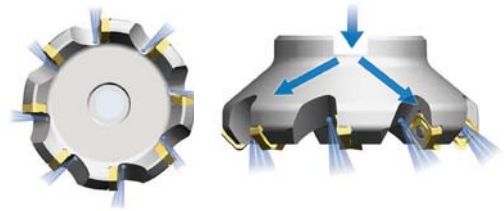
### Características

- Inserto innovador de doble lado, lo que hace posible utilizar los 8 filos, resultando mas economico y eficiente que el usat insertos convencionales Planeado simple.
- Geometría unica con gran ángulo de incidencia que garantiza un exelenteacabado, aplicable para varios tipos de materiales como Acero, Acero Inoxidable,Fundición y Aluminio.
- Exelente convinación de geometría innovadora y variedad de grados, garantizando durabilidad de la herramienta.
- Inserto disponible en varioas rompevirutas que pueden ser aplicadas a diversos tipos de maquinados
- Los cortadores Rich-Mill son muy ligeros, ideales para su uso en maquinado a altavelocidad, asi mismo en emaquinado de bajo poder.



### Sistema lubricación interno

- El perno de refrigerante exclusivo está adaptado para obtener una mejor evacuación de viruta y un enfriamiento más potente. Para obtener una evacuación óptima de las virutas, la dirección de inyección del refrigerante se ha diseñado para alcanzar cada uno de los filos de corte directamente. Se requiere adaptador con capacidad para refrigerante

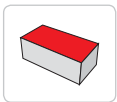


El sistema de refrigeracion ayuda a disminuir la temperatura en el cortador y mejorar la evacuacion de virutas

### Características de los rompevirutas

| Insertos | Filo de corte | Usos                                | Características  |
|----------|---------------|-------------------------------------|--|
| MA       |               | Para aluminio                       | Gracias a lo agudo del filo y lo pulido de la superflcie, garrantiza el buen flujo de la viruta, evitando la adhercion |
| ML       |               | Para materiales difíciles de cortar | El rompevirutas con baja carga de corte es óptimo para el mecanizado de materiales difíciles de cortar                 |
| MF       |               | Corte ligero                        | Debido a la baja carga de corte es recomendado para cortes ligeros y materiales difícil de cortar                      |
| MM       |               | Corte general                       | Recomendado para uso en general  |
| W        |               | Wiper                               | Diseño especializado borde puede ser adecuado para un funcionamiento excelente rugosidad de la superflcie              |

### Usos




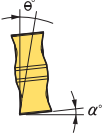
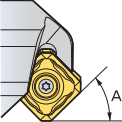
Careado

### Característica del inserto

| Insertos | Filo de Corte          | Características   |
|----------|------------------------|---|
|          | <b>Vista-A</b><br>     | La característica de la rompevirutay el angulo positivo, da resultado la baja carga de corte.                         |
|          | <b>Vista-B</b><br>     | Diseño con wipwer y menor filo de corte y el acabado superflcial  |
|          | <b>Rompeviruta</b><br> | Baja carga de corte gracias a lo positivo del inserto, diseño de la rompeviruta y la forma de sentarlo en el cortador |

## Rich Mill RM8

### Configuración del ensamblaje

| Forma   | Configuración del inserto en el cortador  | Características  |
|---|---|--|
|  |  | El gran angulo positivo de incidencia ayuda a tener una baja carga de corte                          |
|   |  | Recomendable para careado, planeo, y chaffaneo<br>• RM8A A = 45°<br>• RM8E A = 75°<br>• RM8Q A = 88° |

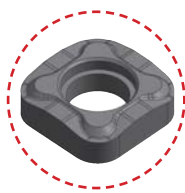
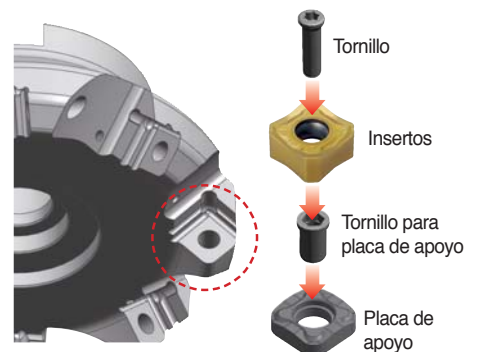
### Condiciones de corte recomendadas

| ISO | Calidades | SNM(E)X1206A(E)NN-MF |                | SNM(E)X1206A(E)NN-MM |                | SNEX1206A(E)NN-MA |                | Max-ap (mm)     | SNM(E)X1507A(E)NN-MF |                | SNM(E)X1507A(E)NN-MM |                | Max-ap         |
|-----|-----------|----------------------|----------------|----------------------|----------------|-------------------|----------------|-----------------|----------------------|----------------|----------------------|----------------|----------------|
|     |           | vc (m/min)           | fz (mm/diente) | vc (m/min)           | fz (mm/diente) | vc (m/min)        | fz (mm/diente) |                 | vc (m/min)           | fz (mm/diente) | vc (m/min)           | fz (mm/diente) |                |
| P   | NC5330    | -                    | -              | 150~300              | 0.10~0.35      | 150~300           | 0.10~0.35      | RM8A<br>6.0 mm  | -                    | -              | 150~300              | 0.10~0.35      | RM8A<br>7.5 mm |
|     | NCM325    | 200~300              | 0.05~0.30      | 150~300              | 0.10~0.35      | 150~300           | 0.10~0.35      |                 | 200~300              | 0.05~0.30      | 150~300              | 0.10~0.35      |                |
|     | PC3500    | 200~300              | 0.05~0.30      | 150~300              | 0.10~0.35      | 150~300           | 0.10~0.35      |                 | 200~300              | 0.05~0.30      | 150~300              | 0.10~0.35      |                |
| M   | PC9530    | 90~150               | 0.05~0.25      | 90~150               | 0.10~0.35      | -                 | -              | RM8E<br>9.0 mm  | 90~150               | 0.10~0.30      | 90~150               | 0.10~0.35      | RM8E<br>11 mm  |
|     | PC5300    | 90~150               | 0.05~0.25      | 90~150               | 0.10~0.35      | -                 | -              |                 | 90~150               | 0.10~0.30      | 90~150               | 0.10~0.35      |                |
| K   | PC6510    | 150~300              | 0.08~0.35      | 150~300              | 0.10~0.40      | 150~300           | 0.10~0.40      | RM8Q<br>11.5 mm | 150~300              | 0.08~0.35      | 150~300              | 0.10~0.40      |                |
|     | PC5300    | 150~300              | 0.08~0.35      | 150~300              | 0.10~0.40      | 150~300           | 0.10~0.40      |                 | 150~300              | 0.08~0.35      | 150~300              | 0.10~0.40      |                |

## Rich Mill RMH8

### Características

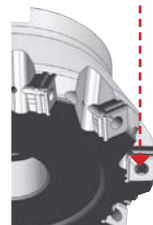
- Sistema de sujeción de tornillo
  - Sistema de sujeción adaptable y estables
- Rigidez reforzada y mayor poder de sujeción
  - Aplicando sistema con placa de apoyo, previene daños al cortador cuando el inserto se quiebra.
- Implementación de placa de apoyo
  - Usando varios tipos de cortador (Ángulo de acercamiento 45°, 75°, 80°)
  - Poder de sujeción estable con inserto



RMH8A  
(AA 45°)



RMH8E  
(AA 75°)



RMH8Q  
(AA 88°)

## Rich Mill RMT8

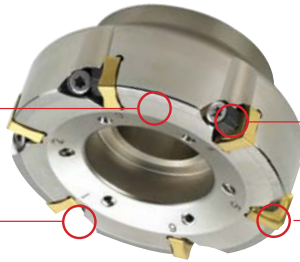
### Características

- Mejorado sistema de sujeción con abrazadera asegura una mejor fuerza de corte y gran avance, además de un cambio fácil de inserto
- Los nuevos grados con resistencia al rebabeo proporcionan un mejor control de las virutas y mayor vida a la herramienta
- Debido al rompevirutas especialmente diseñado, todas las operaciones son posibles
- RMT puede sustituir una herramienta convencional de fresado ISO.

### Características de la fresa

Alta rigidez del cuerpo del cortador para mayor durabilidad

El diseño 3-dimensional de la rompeviruta brinda un mejor control de virutas



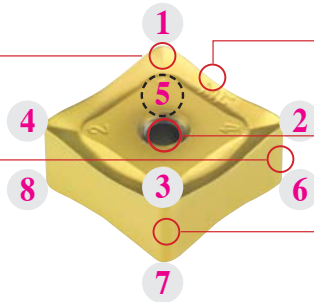
Mejorado sistema de sujeción con abrazadera asegura una mejor fuerza de corte y gran avance, además de un cambio fácil de inserto

Inserto de doble cara de 8filos, eficiencia en costo

### Característica del inserto (Der./Izq.)

8 filos de corte

Grados revestidos con resistencia a la fractura mejorada

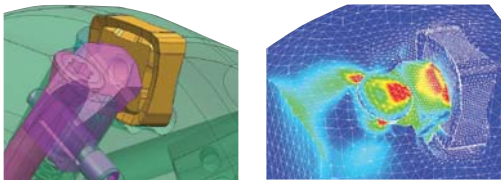


Baja carga de corte, debido al alto ángulo de la rompeviruta

La forma del compartimento brinda mejor fijación a la brida

Diseño óptimo del filo menor de corte para su uso der/izq y buena aspereza superficial de corte

### Análisis de fuerza de sujeción



### Características de los rompevirutas

|    | Insertos | Filo de corte | Usos             | Características   |
|----|----------|---------------|------------------|---|
| MF |          |               | Acanado fino     | Debido a su baja carga de corte es recomendado para corte ligero en laterales difíciles de cortar, HRSA |
| MM |          |               | Corte en general | Diseño recomendado para fresado en general  |

### Grados y Rompevirutas Recomendadas

| ISO | Calidades | MM | MF |
|-----|-----------|----|----|
| P   | NCM325    | ⊙  | ○  |
|     | PC5300    | ⊙  | ○  |
| M   | PC9530    | ○  | ⊙  |
| K   | PC6510    | ○  | ⊙  |

⊙: Optimo ○: Adecuado

### Condiciones de corte recomendadas

| ISO | Calidades | MM         |                | MF         |                |
|-----|-----------|------------|----------------|------------|----------------|
|     |           | vc (m/min) | fz (mm/diente) | vc (m/min) | fz (mm/diente) |
| P   | NC5330    | 190~310    | 0.10~0.35      | 190~310    | 0.05~0.30      |
|     | NCM325    | 160~270    | 0.10~0.35      | 160~270    | 0.05~0.30      |
|     | PC3500    | 130~210    | 0.10~0.35      | 130~210    | 0.05~0.30      |
| M   | PC9530    | 90~150     | 0.05~0.30      | 90~150     | 0.05~0.30      |
| K   | PC6510    | 140~230    | 0.10~0.40      | 140~230    | 0.08~0.35      |

## Rich Mill RM16

### Características

- Inserto económico de 16 filos
- Reducción del costo Inserto por Filo
- Los insertos Wipers pueden utilizarse para un mejor desbaste en superficies
- Haciendo juego con un óptimo diseño de corte especial y con la variedad de nuevos grados, se proporciona mejor consistencia de corte y se alarga la vida del inserto y de la herramienta.
- Cuando son utilizados los 16 filos, la profundidad máxima es de 5.5 mm pero si solo utiliza 8, la profundidad máxima será de 13 mm
- Los insertos wipers son colocados 0.05 mm más abajo en comparación a los insertos que son montados en el cortador.
- Cuando la alimentación es más grande que la longitud del filo (7 mm), 2 insertos wiper serán colocados en posición simétrica.

### Características del rompevirutas

| Insertos | Filo de corte | Usos                                | Características  |
|----------|---------------|-------------------------------------|--|
| MA       |               | Aluminio Corte Ligero               | Con esta rompeviruta se logra mayor productividad, especialmente para el corte de aluminio             |
| ML       |               | Para materiales difíciles de cortar | El rompevirutas con baja carga de corte es óptimo para el mecanizado de materiales difíciles de cortar |
| MF       |               | Corte ligero                        | Debido a su baja carga de corte, es recomendable para corte ligero y materiales difíciles de cortar    |
| MM       |               | Corte en General                    | Diseño recomendado para fresado en general   |
| W        |               | Wiper                               | Recomendado para un mejor desbaste en superficie que las rompevirutas MM y MF                          |

### Posición para insertos Wiper

| Mano de corte | Sentido Correcto | Sentido Incorrecto |   |   |   |
|---------------|------------------|--------------------|---|---|---|
| Derecha       |                  |                    |   |   |   |
| Ensamblaje    | ○                | ×                  | × | × | × |
| Izquierda     |                  |                    |   |   |   |
| Ensamblaje    | ○                | ×                  | × | × | × |

### Sistema lubricación interno

- Cavidad mejorada para un mejor desalojo de virutas
- A través del sistema de refrigeración, se elimina el calor del cortador y es evacuada con mayor facilidad la viruta



### Condiciones de corte recomendadas

(mm)

| ISO | Calidades | ONM(H)X060608-MM |                | ONM(H)X060608-MF |                | ONHX060608-W |                | ONM(H)X080608-MM |                | ONM(H)X080608-MF |                | ONHX080608-W |                |
|-----|-----------|------------------|----------------|------------------|----------------|--------------|----------------|------------------|----------------|------------------|----------------|--------------|----------------|
|     |           | vc (m/min)       | fz (mm/diente) | vc (m/min)       | fz (mm/diente) | vc (m/min)   | fz (mm/diente) | vc (m/min)       | fz (mm/diente) | vc (m/min)       | fz (mm/diente) | vc (m/min)   | fz (mm/diente) |
| P   | NCM325    | 150~300          | 0.10~0.35      | 200~300          | 0.05~0.30      | 200~300      | 0.05~0.20      | 150~300          | 0.10~0.40      | 200~300          | 0.05~0.35      | 200~300      | 0.05~0.25      |
|     | PC3500    | 150~300          | 0.10~0.35      | 200~300          | 0.05~0.30      | 200~300      | 0.05~0.20      | 150~300          | 0.10~0.40      | 200~300          | 0.05~0.35      | 200~300      | 0.05~0.25      |
| M   | PC9530    | 120~180          | 0.10~0.35      | 100~180          | 0.05~0.30      | 100~180      | 0.05~0.20      | 120~180          | 0.10~0.40      | 100~180          | 0.05~0.35      | 100~180      | 0.05~0.25      |
| K   | PC6510    | 150~300          | 0.10~0.40      | 150~300          | 0.08~0.35      | 150~300      | 0.05~0.25      | 150~300          | 0.10~0.45      | 150~300          | 0.08~0.40      | 150~300      | 0.05~0.30      |



**Cutters**

| Tipo | A.A | Codigo                   | Forma   | Diametro Cortador | Aplicación   |  | Características   | Pag.  |   |      |
|------|-----|--------------------------|---|-------------------|--|--|---|---|---|------|
| RM3  | 90° | RM3PC(M)3000 <b>new</b>  |    | Ø40~Ø80           | XNKT060405PNER-ML  | XNKT060405PNSR-MM  |    | E89   |   |      |
|      |     | RM3PC(M)4000 <b>new</b>  |   | Ø40~Ø125          | XNCT080508PNFR-MA<br>XNKT080508PNER-ML<br>XNKT080508PNSR-MM  | XNKT080512PNSR-MM<br>XNKT080516PNSR-MM<br>XNKT080520PNSR-MM  |   | E90   |   |      |
|      |     | RM3PC(M)5000 <b>new</b>  |   | Ø80~Ø125          | XNCT120608PNER-MA<br>XNKT120608PNER-ML<br>XNKT120612PNER-ML<br>XNKT120616PNER-ML<br>XNKT120620PNER-ML  | XNKT120608PNSR-MM<br>XNKT120612PNSR-MM<br>XNKT120616PNSR-MM<br>XNKT120620PNSR-MM   |   | E91   |   |      |
| RM4  | 90° | RM4PC(M)3000             |  | Ø40~Ø100          | LNEX100605PNR-MF<br>LNMX100605aPNR-MF<br>LNEX100605PNR-MM<br>LNMX100605PNR-MM<br>LNEX100608PNR-MF<br>LNMX100608PNR-MF  | LNEX100608PNR-MM<br>LNMX100608PNR-MM<br>LNEX100605PNR-MA<br>LNEX100605PNL-MM<br>LNMX100605PNL-MM   |  | E95   |   |      |
|      |     | RM4PC(M)4000             |   | Ø50~Ø160          | LNEX151004PNR-MF<br>LNMX151004PNR-MF<br>LNEX151004PNR-MM<br>LNMX151004PNR-MM<br>LNEX151008PNR-MF<br>LNMX151008PNR-MF<br>LNEX151008PNR-MM<br>LNMX151008PNR-MM | LNEX151016PNR-MF<br>LNMX151016PNR-MF<br>LNEX151016PNR-MM<br>LNMX151016PNR-MM<br>LNEX151004PNR-MA<br>LNEX151008PNR-MA<br>LNEX151008PNL-MM<br>LNMX151008PNL-MM |   |  | E96   |      |
|      |     | RM4ZCM3000               |   | Ø40~Ø52           | LNEX100605PNL-MM   | LNMX100605PNL-MM   |   |    | <ul style="list-style-type: none"> <li>Económico 4 esquinas</li> <li>Inserto óptimo solicitud de mecanizado vertical</li> </ul> | E108 |
|      |     | RM4ZC(M)4000             |   | Ø63~Ø100          | LNEX151008PNL-MM   | LNMX151008PNL-MM   |   |   |   | E110 |
| RM6  | 90° | RM6PCM-WN04 <b>new</b>   |  | Ø40~Ø63           | WNGX040304PNFR-MA<br>WNGX040308PNFR-MA<br>WNGX040312PNFR-MA<br>WNGX040316PNFR-MA<br>WNGX040304PNER-ML<br>WNGX040308PNER-ML                                   | WNGX040312PNER-ML<br>WNGX040316PNER-ML<br>WNGX040304PNSR-MM<br>WNGX040308PNSR-MM<br>WNGX040312PNSR-MM<br>WNGX040316PNSR-MM                                   |  | E110  |   |      |
|      |     | RM6PC(M)-WN08 <b>new</b> |   | Ø50~Ø125          | WNGX080604PNFR-MA<br>WNGX080608PNFR-MA<br>WNGX080612PNFR-MA<br>WNGX080620PNFR-MA<br>WNGX080604PNER-ML<br>WNGX080608PNER-ML<br>WNGX080612PNER-ML              | WNGX080616PNER-ML<br>WNGX080620PNER-ML<br>WNGX080604PNSR-MM<br>WNGX080608PNSR-MM<br>WNGX080612PNSR-MM<br>WNGX080616PNSR-MM<br>WNGX080620PNSR-MM              |   |  | E111  |      |

## Cutters

| Tipo | A.A | Codigo        | Forma   | Diametro Cortador | Aplicación   | Características  | Pag.  |   |
|------|-----|---------------|---|-------------------|--|--|---|---|
| RM8  | 45° | RM8AC(M)4000  |    | Ø50~Ø400          | SNEX1206ANN-MA<br>SNEX1206ANN-MF<br>SNMX1206ANN-MF<br>SNEX1206ANN-ML                                     | SNEX1206ANN-MM<br>SNMX1206ANN-MM<br>SNEX1206ANN-W  |    | E115  |
|      |     | RM8AC(M)5000  |   | Ø80~Ø400          | SNEX1507ANN-MF<br>SNMX1507ANN-MF<br>SNEX1507ANN-ML   | SNEX1507ANN-MM<br>SNMX1507ANN-MM   |   | E117  |
|      | 75° | RM8EC(M)4000  |    | Ø50~Ø400          | SNEX1206ENN-MA<br>SNEX1206ENN-MF<br>SNMX1206ENN-MF   | SNEX1206ENN-ML<br>SNEX1206ENN-MM<br>SNMX1206ENN-MM   |    | E119  |
|      |     | RM8EC(M)5000  |   | Ø80~Ø400          | SNEX1507ENN-MF<br>SNMX1507ENN-MF<br>SNEX1507ENN-ML   | SNEX1507ENN-MM<br>SNMX1507ENN-MM   |   | E121  |
|      | 88° | RM8QC(M)4000  |  | Ø63~Ø200          | SNEX1206QNN-MA<br>SNEX1206QNN-MF<br>SNMX1206QNN-MF<br>SNEX1206QNN-ML<br>SNEX1206QNN-MM<br>SNMX1206QNN-MM | SNEX120612-MA<br>SNEX120612-MF<br>SNMX120612-MF<br>SNEX120612-ML<br>SNEX120612-MM<br>SNMX120612-MM |  | E123  |
|      | 45° | RMH8AC(M)4000 |  | Ø50~Ø400          | SNEX1206ANN-MA<br>SNEX1206ANN-MF<br>SNMX1206ANN-MF   | SNEX1206ANN-ML<br>SNEX1206ANN-MM<br>SNMX1206ANN-MM<br>SNEX1206ANN-W                                |   |  |
|      |     | RMH8AC(M)5000 |   | Ø80~Ø400          | SNEX1507ANN-MF<br>SNMX1507ANN-MF<br>SNEX1507ANN-ML   | SNEX1507ANN-MM<br>SNMX1507ANN-MM   | E118  |   |
|      | 75° | RMH8EC(M)4000 |  | Ø50~Ø400          | SNEX1206ENN-MA<br>SNEX1206ENN-MF<br>SNMX1206ENN-MF   | SNEX1206ENN-ML<br>SNEX1206ENN-MM<br>SNMX1206ENN-MM   |  | E120  |
|      |     | RMH8EC(M)5000 |   | Ø80~Ø400          | SNEX1507ENN-MF<br>SNMX1507ENN-MF<br>SNEX1507ENN-ML   | SNEX1507ENN-MM<br>SNMX1507ENN-MM   |   | E122  |
|      | 88° | RMH8QC(M)4000 |  | Ø63~Ø200          | SNEX1206QNN-MA<br>SNEX1206QNN-MF<br>SNMX1206QNN-MF<br>SNEX1206QNN-ML<br>SNEX1206QNN-MM<br>SNMX1206QNN-MM | SNEX120612-MA<br>SNEX120612-MF<br>SNMX120612-MF<br>SNEX120612-ML<br>SNEX120612-MM<br>SNMX120612-MM |  | E124  |

- 8 esquinas de corte, económico
- Baja carga de corte y excelente corte suave





**Cutters**

| Tipo  | A.A | Codigo                 | Forma   | Diametro Cortador | Aplicación   |   | Características   | Pag.  |              |
|-------|-----|------------------------|---|-------------------|--|---|---|---|--------------|
| RMT8  | 45° | RMT8A(M)<br>4000/5000  |  | Ø80~Ø315          | SNCF1206ANN-MF<br>SNCF1507ANN-MF<br>SNMF1206ANN-MF<br>SNMF1507ANN-MF   | SNCF1206ANN-MM<br>SNCF1507ANN-MM<br>SNMF1206ANN-MM<br>SNMF1507ANN-MM  |  | <ul style="list-style-type: none"> <li>• 8 Filos económicos</li> <li>• Excelente vida de la herramienta y rugosidad de la superficie debido a la baja oposición al corte y la geometría del ángulo de ataque del filo.</li> </ul> | E125<br>E126 |
|       | 75° | RMT8E(M)<br>4000/5000  |  | Ø80~Ø315          | SNCF1206ENN-MF<br>SNCF1507ENN-MF<br>SNMF1206ENN-MF<br>SNMF1507ENN-MF   | SNCF1206ENN-MM<br>SNCF1507ENN-MM<br>SNMF1206ENN-MM<br>SNMF1507ENN-MM  |  | <ul style="list-style-type: none"> <li>• Buen rendimiento con el aumento de la resistencia al astillamiento</li> </ul>  | E127<br>E128 |
|       | 88° | RMT8Q(M)4000           |  | Ø80~Ø315          | SNCF1206QNN-MF   | SNMF1206QNN-MM  |  |   | E129         |
| RMT16 | 45° | RM16AC(M)<br>6000/8000 |  | Ø63~Ø400          | ONHX060608-MF<br>ONMX060608-MF<br>ONHX0606ANN-MF<br>ONMX0606ANN-MF<br>ONHX080608-MF<br>ONMX080608-MF<br>ONHX0806ANN-MF<br>ONMX0806ANN-MF<br>ONHX060608-ML<br>ONMX060608-ML<br>ONHX080608-ML<br>ONMX080608-ML | ONMX060608-MM<br>ONHX0606ANN-MM<br>ONMX0606ANN-MM<br>ONHX080608-MM<br>ONMX080608-MM<br>ONHX0806ANN-MM<br>ONMX0806ANN-MM<br>ONHX060608-MA<br>ONMX060608-W<br>ONHX080608-MA<br>ONMX080608-W |  | <ul style="list-style-type: none"> <li>• 16 Filos Económicos</li> <li>• Inserto wiper para menor aspereza de la superficie.</li> </ul>  | E130<br>E131 |

**Mango/Modulares**

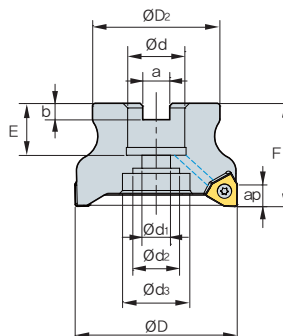
| Tipo | A.A | Codigo                        | Forma   | Diametro Cortador  | Aplicación   |  | Características   | Pag.   |      |
|------|-----|-------------------------------|---|--|--|--|---|--|------|
| RM3  | 90° | RM3PS3000 <b>new</b>          |  | Ø20~Ø40  | XNKT060405PNER-ML  | XNKT060405PNSR-MM  |  | <ul style="list-style-type: none"> <li>• Económico 3 esquinas</li> <li>• Perfecto perpendicular llevar a hombros operación multi herramienta de fresado</li> </ul> | E92  |
|      |     | RM3PS4000 <b>new</b>          |   | Ø32~Ø63  | XNKT080508PNER-ML<br>XNKT080508PNSR-MM<br>XNKT080512PNSR-MM  | XNKT080516PNSR-MM<br>XNKT080520PNSR-MM   |   |  | E93  |
|      |     | RM3PM <b>new</b><br>3000/4000 | Ø20~Ø50   | XNKT060405PNER-ML<br>XNKT060405PNSR-MM<br>XNKT060408PNER-ML<br>XNKT060408PNSR-MM<br>XNCT080504PNFR-MA<br>XNCT080508PNFR-MA<br>XNCT080512PNFR-MA<br>XNCT080520PNFR-MA | XNKT080508PNER-ML<br>XNKT080508PNSR-MM<br>XNKT080512PNER-ML<br>XNKT080512PNSR-MM<br>XNKT080516PNER-ML<br>XNKT080516PNSR-MM<br>XNKT080520PNER-ML<br>XNKT080520PNSR-MM | E94  |   |  |      |
| RM4  | 90° | RM4PS3000                     |  | Ø14~Ø50  | LNEX100605PNR-MF<br>LNMX100605PNR-MF<br>LNEX100605PNR-MM<br>LNMX100605PNR-MM<br>LNEX100608PNR-MF<br>LNMX100608PNR-MF   | LNEX100608PNR-MM<br>LNMX100608PNR-MM<br>LNEX100605PNR-MA<br>LNMX100605PNL-MM   |  | <ul style="list-style-type: none"> <li>• Económico 4 esquinas</li> <li>• Tornillo en tipo para Ranurado, careado, etc</li> </ul>                                   | E105 |
|      |     | RM4PS4000                     |   | Ø32~Ø63  | LNEX151004PNR-MF<br>LNMX151004PNR-MF<br>LNEX151004PNR-MM<br>LNMX151004PNR-MM<br>LNEX151008PNR-MF<br>LNMX151008PNR-MF<br>LNEX151008PNR-MM<br>LNMX151008PNR-MM         | LNEX151016PNR-MM<br>LNMX151016PNR-MM<br>LNEX151016PNR-MM<br>LNMX151016PNR-MM<br>LNEX151004PNR-MA<br>LNMX151004PNR-MA<br>LNEX151008PNR-MA<br>LNMX151008PNL-MM |   |  | E106 |

## Mango/Modulares

| Tipo | A.A | Codigo                | Forma   | Diametro Cortador  | Aplicación   |   | Características  | Pag. |
|------|-----|-----------------------|---|--|--|---|--|------|
| RM4  | 90° | RM4ZS3000             |    | Ø25~Ø40  | LNEX100605PNL-MM   | LNMX100605PNL-MM  | <ul style="list-style-type: none"> <li>• 4 esquinas economicas.</li> <li>• Inserto óptimo solicitud de mecanizado vertical</li> </ul>  | E109 |
|      |     | RM4PM3000             |    | Ø14~Ø50  | LNEX100605PNR-MF<br>LNMX100605PNR-MF<br>LNEX100605PNR-MM<br>LNMX100605PNR-MM<br>LNEX100608PNR-MF<br>LNMX100608PNR-MF   | LNEX100608PNR-MM<br>LNMX100608PNR-MM<br>LNEX100605PNR-MA<br>LNMX100605PNL-MM<br>LNEX100605PNL-MM<br>LNMX100605PNL-MM                            |  <ul style="list-style-type: none"> <li>• Económico 4 esquinas</li> <li>• Tornillo en tipo para Ranurado, careado</li> </ul>  | E107 |
|      |     | RM4ZM3000             |    | Ø25~Ø40  | LNEX100605PNL-MM   | LNMX100605PNL-MM  | <ul style="list-style-type: none"> <li>• 4 esquinas economicas</li> <li>• Inserto óptimo solicitud de mecanizado vertical</li> </ul>   | E109 |
| RM6  | 90° | RM6PS-WN04 <b>new</b> |  | Ø20~Ø32  | WNGX040304PNFR-MA<br>WNGX040308PNFR-MA<br>WNGX040312PNFR-MA<br>WNGX040316PNFR-MA<br>WNGX040304PNER-ML<br>WNGX040308PNER-ML   | WNGX040312PNER-ML<br>WNGX040316PNER-ML<br>WNGX040304PNSR-MM<br>WNGX040308PNSR-MM<br>WNGX040312PNSR-MM<br>WNGX040316PNSR-MM                      |  <ul style="list-style-type: none"> <li>• Mejorado productividad y alta calidad llevar a hombros a través de alta velocidad y alta alimentación mecanizado</li> </ul> | E112 |
|      |     | RM6PS-WN08 <b>new</b> |   | Ø32~Ø50  | WNGX080604PNFR-MA<br>WNGX080608PNFR-MA<br>WNGX080612PNFR-MA<br>WNGX080616PNFR-MA<br>WNGX080620PNFR-MA<br>WNGX080604PNER-ML<br>WNGX080608PNER-ML<br>WNGX080612PNER-ML | WNGX080616PNER-ML<br>WNGX080620PNER-ML<br>WNGX080604PNSR-MM<br>WNGX080608PNSR-MM<br>WNGX080612PNSR-MM<br>WNGX080616PNSR-MM<br>WNGX080620PNSR-MM |  | E113 |
|      |     | RM6PM-WN04 <b>new</b> | Ø20~Ø32   | WNGX040304PNFR-MA<br>WNGX040308PNFR-MA<br>WNGX040312PNFR-MA<br>WNGX040316PNFR-MA<br>WNGX040304PNER-ML<br>WNGX040308PNER-ML   | WNGX040312PNER-ML<br>WNGX040316PNER-ML<br>WNGX040304PNSR-MM<br>WNGX040308PNSR-MM<br>WNGX040312PNSR-MM<br>WNGX040316PNSR-MM   | E114  |  |      |
|      |     | RM6PM-WN08 <b>new</b> | Ø32~Ø40   | WNGX080604PNFR-MA<br>WNGX080608PNFR-MA<br>WNGX080612PNFR-MA<br>WNGX080616PNFR-MA<br>WNGX080620PNFR-MA<br>WNGX080604PNER-ML<br>WNGX080608PNER-ML<br>WNGX080612PNER-ML | WNGX080616PNER-ML<br>WNGX080620PNER-ML<br>WNGX080604PNSR-MM<br>WNGX080608PNSR-MM<br>WNGX080612PNSR-MM<br>WNGX080616PNSR-MM<br>WNGX080620PNSR-MM                      | E114  |  |      |



# RM3PC(M)3000 new



| Codigo            |          |    | ØD | ØD2 | Ød        | Ød1 | Ød2 | Ød3 | a          | b     | E       | F  | ap  |      |
|-------------------|----------|----|----|-----|-----------|-----|-----|-----|------------|-------|---------|----|-----|------|
| RM3PCM            | 3040HR   | 5  | 40 | 35  | 16        | 9   | 14  | -   | 8.4        | 5.6   | 16      | 40 | 5.5 | 0.2  |
|                   | 3040HR-M | 6  | 40 | 35  | 16        | 9   | 14  | -   | 8.4        | 5.6   | 16      | 40 | 5.5 | 0.2  |
|                   | 3050HR   | 6  | 50 | 41  | 22        | 11  | 18  | -   | 10.4       | 6.3   | 20      | 40 | 5.5 | 0.3  |
|                   | 3050HR-M | 7  | 50 | 41  | 22        | 11  | 18  | -   | 10.4       | 6.3   | 20      | 40 | 5.5 | 0.3  |
|                   | 3063HR   | 7  | 63 | 49  | 22        | 11  | 18  | -   | 10.4       | 6.3   | 20      | 40 | 5.5 | 0.49 |
|                   | 3063HR-M | 8  | 63 | 49  | 22        | 11  | 18  | -   | 10.4       | 6.3   | 20      | 40 | 5.5 | 0.49 |
| RM3PC<br>(RM3PCM) | 3080HR   | 8  | 80 | 57  | 25.4 (27) | 14  | 25  | 35  | 9.5 (12.4) | 6 (7) | 25 (23) | 50 | 5.5 | 0.87 |
|                   | 3080HR-M | 10 | 80 | 57  | 25.4 (27) | 14  | 25  | 35  | 9.5 (12.4) | 6 (7) | 25 (23) | 50 | 5.5 | 0.88 |

( ) Tamaño métrico

## ➤ Insertos disponibles

XNKT-ML XNKT-MM



| Codigo | Cermet        |      | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| XNKT   | 060405PNER-ML |      |            |        |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |       |      |     | E30 |
|        | 060405PNSR-MM |      |            |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●      | ●        |        |       |      |     |     |
|        | 060408PNER-ML |      |            |        |        |        |        | ●      | ●      | ●      |        | ●      | ●      | ●        |        |       |      |     |     |
|        | 060408PNSR-MM |      |            |        |        |        | ●      | ●      | ●      | ●      | ●      |        | ●      | ●        |        |       |      |     |     |

## ➤ Adaptadores disponibles

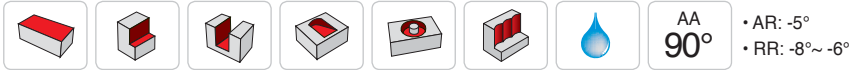
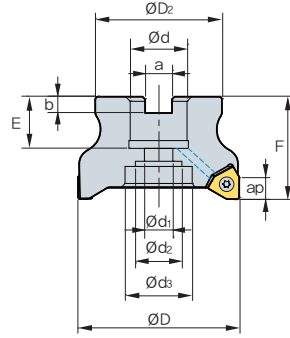
| Codigo   | Adaptadores disponibles |                 |
|----------|-------------------------|-----------------|
|          | RM3PC                   | RM3PCM          |
| RM3PC(M) | 3040HR                  | BT□□-FMC16-□□   |
|          | 3040HR-M                |                 |
|          | 3050HR                  | BT□□-FMC22-□□   |
|          | 3050HR-M                |                 |
|          | 3063HR                  | BT□□-FMA25.4-□□ |
|          | 3063HR-M                |                 |
|          | 3080HR                  | BT□□-FMC27-□□   |
|          | 3080HR-M                |                 |

## ➤ Partes

| Especificación |                   |             |
|----------------|-------------------|-------------|
| Ø40~Ø80        | Tornillo FTNA0306 | Llave TW09S |

➤ Insertos disponibles E30 ➤ Detalles del cortador E400~E402

# RM3PC(M)4000 new



| Codigo         | ØD       | ØD2 | Ød  | Ød1 | Ød2        | Ød3 | a  | b  | E           | F      | ap      | kg      |     |      |
|----------------|----------|-----|-----|-----|------------|-----|----|----|-------------|--------|---------|---------|-----|------|
| RM3PCM         | 4040HR   | 3   | 40  | 35  | 16         | 9   | 14 | -  | 8.4         | 5.6    | 19      | 40      | 8.0 | 0.19 |
|                | 4040HR-M | 4   | 40  | 35  | 16         | 9   | 14 | -  | 8.4         | 5.6    | 19      | 40      | 8.0 | 0.19 |
|                | 4050HR   | 4   | 50  | 42  | 22         | 11  | 18 | -  | 10.4        | 6.3    | 20      | 40      | 8.0 | 0.28 |
|                | 4050HR-M | 5   | 50  | 42  | 22         | 11  | 18 | -  | 10.4        | 6.3    | 20      | 40      | 8.0 | 0.29 |
|                | 4063HR   | 5   | 63  | 49  | 22         | 11  | 18 | -  | 10.4        | 6.3    | 20      | 40      | 8.0 | 0.54 |
|                | 4063HR-M | 6   | 63  | 49  | 22         | 11  | 18 | -  | 10.4        | 6.3    | 20      | 40      | 8.0 | 0.53 |
| RM3PC (RM3PCM) | 4080HR   | 5   | 80  | 57  | 25.4 (27)  | 14  | 20 | 35 | 9.5 (12.4)  | 6 (7)  | 25 (23) | 50      | 8.0 | 1.08 |
|                | 4080HR-M | 7   | 80  | 57  | 25.4 (27)  | 14  | 20 | 35 | 9.5 (12.4)  | 6 (7)  | 25 (23) | 50      | 8.0 | 1.06 |
|                | 4100HR   | 7   | 100 | 67  | 31.75 (32) | 18  | 26 | 42 | 12.7 (14.4) | 8 (8)  | 33 (25) | 63 (50) | 8.0 | 1.68 |
|                | 4100HR-M | 8   | 100 | 67  | 31.75 (32) | 18  | 26 | 42 | 12.7 (14.4) | 8 (8)  | 33 (25) | 63 (50) | 8.0 | 1.67 |
|                | 4125HR   | 8   | 125 | 90  | 38.1 (40)  | 22  | 32 | 52 | 15.9 (16.4) | 9 (10) | 38 (29) | 63      | 8.0 | 3.45 |
|                | 4125HR-M | 10  | 125 | 90  | 38.1 (40)  | 22  | 32 | 52 | 15.9 (16.4) | 9 (10) | 38 (29) | 63      | 8.0 | 3.45 |

## Insertos disponibles

( ) Tamaño métrico



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| XNCT   | 080504PNFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
|        | 080508PNFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
|        | 080512PNFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
|        | 080520PNFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
| XNKT   | 080504PNER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|        | 080504PNSR-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|        | 080508PNER-ML |      |            |        |        | ●      |        |        |        |        |        |        |        |          |        |       |      |     |     |
|        | 080508PNSR-MM |      |            |        |        | ●      |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |       |      |     |     |
|        | 080512PNER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|        | 080512PNSR-MM |      |            |        |        |        |        | ●      | ●      | ●      |        |        |        |          |        |       |      |     |     |
|        | 080516PNER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|        | 080516PNSR-MM |      |            |        |        |        |        | ●      | ●      | ●      |        |        |        |          |        |       |      |     |     |
|        | 080520PNER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|        | 080520PNSR-MM |      |            |        |        |        |        | ●      | ●      | ●      |        |        |        |          |        |       |      |     |     |

## Adaptadores disponibles

| Codigo          | Adaptadores disponibles |               |
|-----------------|-------------------------|---------------|
|                 | RM3PC                   | RM3PCM        |
| RM3PC(M) 4040HR | -                       | BT□□-FMC16-□□ |
| 4050HR          | -                       | BT□□-FMC22-□□ |
| 4063HR          |                         |               |
| 4080HR          | BT□□-FMA25.4-□□         | BT□□-FMC27-□□ |
| 4100HR          | BT□□-FMA31.75-□□        | BT□□-FMC32-□□ |
| 4125HR          | BT□□-FMA38.1-□□         | BT□□-FMC40-□□ |

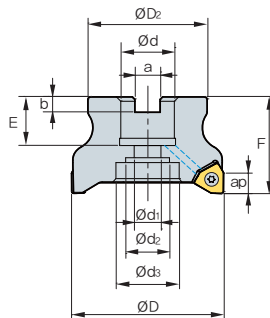
## Partes

| Especificación | Tornillo | Llave |
|----------------|----------|-------|
| Ø40~Ø125       | FTNA0408 | TW15S |

Insertos disponibles E29, E30 Detalles del cortador E400~E402



# RM3PC(M)5000 new



| Codigo            |          | ØD | ØD2 | Ød | Ød1        | Ød2 | Ød3 | a  | b           | E      | F       | ap | kg   |      |
|-------------------|----------|----|-----|----|------------|-----|-----|----|-------------|--------|---------|----|------|------|
| RM3PC<br>(RM3PCM) | 5080HR   | 5  | 80  | 57 | 25.4 (27)  | 14  | 20  | 35 | 9.5 (12.4)  | 6 (7)  | 24 (23) | 50 | 12.0 | 0.84 |
|                   | 5080HR-M | 7  | 80  | 57 | 25.4 (27)  | 14  | 20  | 35 | 9.5 (12.4)  | 6 (7)  | 24 (23) | 50 | 12.0 | 0.84 |
|                   | 5100HR   | 7  | 100 | 67 | 31.75 (32) | 18  | 28  | 45 | 12.7 (14.4) | 8 (8)  | 32 (25) | 63 | 12.0 | 1.76 |
|                   | 5100HR-M | 8  | 100 | 67 | 31.75 (32) | 18  | 28  | 45 | 12.7 (14.4) | 8 (8)  | 32 (25) | 63 | 12.0 | 1.76 |
|                   | 5125HR   | 8  | 125 | 90 | 38.1 (40)  | 22  | 32  | 52 | 15.9 (16.4) | 9 (10) | 38 (30) | 63 | 12.0 | 2.70 |
|                   | 5125HR-M | 10 | 125 | 90 | 38.1 (40)  | 22  | 32  | 52 | 15.9 (16.4) | 9 (10) | 38 (30) | 63 | 12.0 | 2.70 |

( ) Tamaño métrico

## Insertos disponibles



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |  |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|--|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |  |
| XNCT   | 120608PNFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |  |
| XNKT   | 120604PNSR-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |  |
|        | 120608PNER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |  |
|        | 120608PNSR-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |  |
|        | 120612PNER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |  |
|        | 120612PNSR-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |  |
|        | 120616PNER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |  |
|        | 120616PNSR-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |  |
|        | 120620PNER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |  |
|        | 120620PNSR-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |  |

## Adaptadores disponibles

| Codigo          | Adaptadores disponibles |                |
|-----------------|-------------------------|----------------|
|                 | RM3PC                   | RM3PCM         |
| RM3PC(M) 5080HR | BT□□ -FMA25.4-□□        | BT□□ -FMC27-□□ |
| 5100HR          | BT□□ -FMA31.75-□□       | BT□□ -FMC32-□□ |
| 5125HR          | BT□□ -FMA38.1-□□        | BT□□ -FMC40-□□ |

## Partes

| Especificación | Tornillo | Llave    |
|----------------|----------|----------|
| Ø80-Ø125       | FTNA0511 | TW20-100 |

Insertos disponibles E29, E30    Detalles del cortador E400-E402

# RM3PS3000 new

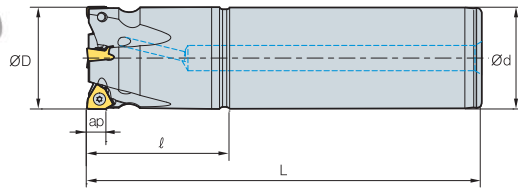


Fig. 1

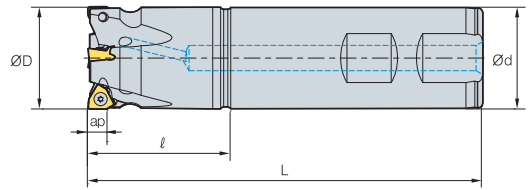
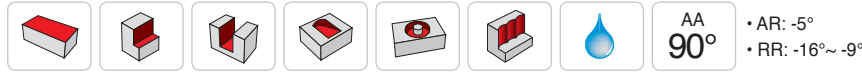


Fig. 2



AA  
90°

• AR: -5°  
• RR: -16°~ -9°

(mm)

| Codigo            |   | ØD | Ød | ℓ  | L   | ap  |      | Fig. |
|-------------------|---|----|----|----|-----|-----|------|------|
| RM3PS 3020HR-2S20 | 2 | 20 | 20 | 35 | 100 | 5.5 | 0.21 | 2    |
| 3020HR-2L20       | 2 | 20 | 20 | 35 | 200 | 5.5 | 0.43 | 1    |
| 3021HR-2S20       | 2 | 21 | 20 | 30 | 100 | 5.5 | 0.21 | 2    |
| 3021HR-2L20       | 2 | 21 | 20 | 30 | 200 | 5.5 | 0.43 | 1    |
| 3025HR-3S20       | 3 | 25 | 20 | 35 | 115 | 5.5 | 0.27 | 2    |
| 3025HR-3L20       | 3 | 25 | 20 | 35 | 200 | 5.5 | 0.46 | 1    |
| 3025HR-3S25       | 3 | 25 | 25 | 40 | 115 | 5.5 | 0.36 | 2    |
| 3025HR-3L25       | 3 | 25 | 25 | 40 | 200 | 5.5 | 0.66 | 1    |
| 3026HR-2S20       | 2 | 26 | 20 | 35 | 115 | 5.5 | 0.29 | 2    |
| 3026HR-2L20       | 2 | 26 | 20 | 35 | 200 | 5.5 | 0.47 | 1    |
| 3026HR-3S20       | 3 | 26 | 20 | 35 | 115 | 5.5 | 0.28 | 2    |
| 3026HR-3L20       | 3 | 26 | 20 | 35 | 200 | 5.5 | 0.47 | 1    |
| 3026HR-2S25       | 2 | 26 | 25 | 35 | 115 | 5.5 | 0.37 | 2    |
| 3026HR-2L25       | 2 | 26 | 25 | 35 | 200 | 5.5 | 0.68 | 1    |
| 3026HR-3S25       | 3 | 26 | 25 | 35 | 115 | 5.5 | 0.37 | 2    |
| 3026HR-3L25       | 3 | 26 | 25 | 35 | 200 | 5.5 | 0.68 | 1    |
| 3032HR-3S25       | 3 | 32 | 25 | 42 | 125 | 5.5 | 0.48 | 2    |
| 3032HR-3L25       | 3 | 32 | 25 | 42 | 200 | 5.5 | 0.74 | 1    |
| 3032HR-4S25       | 4 | 32 | 25 | 42 | 125 | 5.5 | 0.48 | 2    |
| 3032HR-4L25       | 4 | 32 | 25 | 42 | 200 | 5.5 | 0.74 | 1    |
| 3032HR-4S32       | 4 | 32 | 32 | 42 | 125 | 5.5 | 0.68 | 2    |
| 3032HR-4L32       | 4 | 32 | 32 | 42 | 200 | 5.5 | 1.13 | 1    |
| 3033HR-3S25       | 3 | 33 | 25 | 42 | 125 | 5.5 | 0.49 | 2    |
| 3033HR-3L25       | 3 | 33 | 25 | 42 | 200 | 5.5 | 0.75 | 1    |
| 3033HR-4S25       | 4 | 33 | 25 | 42 | 125 | 5.5 | 0.49 | 2    |
| 3033HR-4L25       | 4 | 33 | 25 | 42 | 200 | 5.5 | 0.75 | 1    |
| 3033HR-4S32       | 4 | 33 | 32 | 42 | 125 | 5.5 | 0.70 | 2    |
| 3033HR-4L32       | 4 | 33 | 32 | 42 | 200 | 5.5 | 1.14 | 1    |
| 3040HR-4S32       | 4 | 40 | 32 | 45 | 130 | 5.5 | 0.83 | 2    |
| 3040HR-4L32       | 4 | 40 | 32 | 45 | 200 | 5.5 | 1.24 | 1    |
| 3040HR-5S32       | 5 | 40 | 32 | 45 | 130 | 5.5 | 0.83 | 2    |
| 3040HR-5L32       | 5 | 40 | 32 | 45 | 200 | 5.5 | 1.24 | 1    |

( ) Tamaño métrico

## Insertos disponibles

XNKT-ML XNKT-MM



| Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |
|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|
|                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 |
| XNKT 060405PNER-ML |        |      |            |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |        |      |       |     |
| 060405PNSR-MM      |        |      |            |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |        |      |       |     |
| 060408PNER-ML      |        |      |            |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |        |      |       |     |
| 060408PNSR-MM      |        |      |            |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |        |      |       |     |

## Partes

| Especificación |                   |             |
|----------------|-------------------|-------------|
| Ø20~Ø40        | Tornillo FTNA0306 | Llave TW09S |

Insertos disponibles E30



# RM3PS4000 new

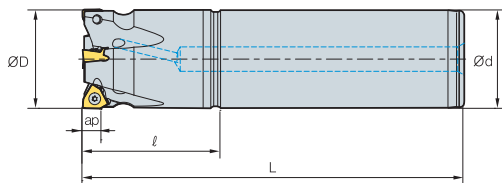


Fig. 1

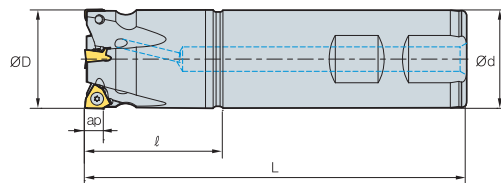


Fig. 2



(mm)

| Codigo            | Flutes | ØD | Ød | ℓ  | L   | ap | kg   | Fig. |
|-------------------|--------|----|----|----|-----|----|------|------|
| RM3PS 4032HR-3S32 | 3      | 32 | 32 | 42 | 125 | 8  | 0.67 | 2    |
| 4032HR-3L32       | 3      | 32 | 32 | 42 | 200 | 8  | 1.11 | 1    |
| 4033HR-3S32       | 3      | 33 | 32 | 42 | 125 | 8  | 0.68 | 2    |
| 4033HR-3L32       | 3      | 33 | 32 | 42 | 200 | 8  | 1.13 | 1    |
| 4040HR-3S32       | 3      | 40 | 32 | 42 | 130 | 8  | 0.8  | 2    |
| 4040HR-3L32       | 3      | 40 | 32 | 42 | 200 | 8  | 1.21 | 1    |
| 4040HR-4S32       | 4      | 40 | 32 | 42 | 130 | 8  | 0.81 | 2    |
| 4040HR-4L32       | 4      | 40 | 32 | 42 | 200 | 8  | 1.22 | 1    |
| 4050HR-4S32       | 4      | 50 | 32 | 42 | 135 | 8  | 0.99 | 2    |
| 4050HR-4L32       | 4      | 50 | 32 | 42 | 200 | 8  | 1.38 | 1    |
| 4050HR-4S40       | 4      | 50 | 40 | 42 | 135 | 8  | 1.32 | 2    |
| 4050HR-4L40       | 4      | 50 | 40 | 42 | 200 | 8  | 1.94 | 1    |
| 4050HR-5S32       | 5      | 50 | 32 | 42 | 135 | 8  | 1.02 | 2    |
| 4050HR-5L32       | 5      | 50 | 32 | 42 | 200 | 8  | 1.4  | 1    |
| 4050HR-5S40       | 5      | 50 | 40 | 42 | 135 | 8  | 1.35 | 2    |
| 4050HR-5L40       | 5      | 50 | 40 | 42 | 200 | 8  | 1.96 | 1    |
| 4063HR-5S32       | 5      | 63 | 32 | 42 | 135 | 8  | 1.31 | 2    |
| 4063HR-5L32       | 5      | 63 | 32 | 42 | 200 | 8  | 1.7  | 1    |
| 4063HR-5S40       | 5      | 63 | 40 | 42 | 135 | 8  | 1.64 | 2    |
| 4063HR-5L40       | 5      | 63 | 40 | 42 | 200 | 8  | 2.25 | 1    |
| 4063HR-6S32       | 6      | 63 | 32 | 42 | 135 | 8  | 1.31 | 2    |
| 4063HR-6L32       | 6      | 63 | 32 | 42 | 200 | 8  | 1.7  | 1    |
| 4063HR-6S40       | 6      | 63 | 40 | 42 | 135 | 8  | 1.64 | 2    |
| 4063HR-6L40       | 6      | 63 | 40 | 42 | 200 | 8  | 2.26 | 1    |

## Insertos disponibles



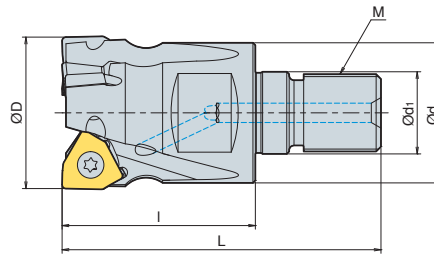
| Codigo             | Cermet |      | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |            |
|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|------------|
|                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01        |
| XNCT 080504PNFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   | E29<br>E30 |
| 080508PNFR-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |            |
| 080512PNFR-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |            |
| 080520PNFR-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |            |
| XNKT 080504PNER-ML |        |      |            |        |        |        |        |        |        | ●      |        |        |        | ●        | ●      |       |      |     |            |
| 080504PNSR-MM      |        |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |            |
| 080508PNER-ML      |        |      |            |        | ●      |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |            |
| 080508PNSR-MM      |        |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |            |
| 080512PNER-ML      |        |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |            |
| 080512PNSR-MM      |        |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |            |
| 080516PNER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |            |
| 080516PNSR-MM      |        |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |            |
| 080520PNER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |            |
| 080520PNSR-MM      |        |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |            |

## Partes

| Especificación |                   |             |
|----------------|-------------------|-------------|
| Ø32~Ø63        | Tornillo FTNA0408 | Llave TW15S |

Insertos disponibles E29, E30

# RM3PM3000/4000 new



AA **90°**  
 • AR: -5°  
 • RR: -16°~ -7°

(mm)

| Codigo | 🌀            | ØD | Ød | Ød1 | I    | L  | M  | ap  | 📊   |      |
|--------|--------------|----|----|-----|------|----|----|-----|-----|------|
| RM3PM  | 3020HR-2-M10 | 2  | 20 | 18  | 10.5 | 30 | 50 | M10 | 5.5 | 0.06 |
|        | 3025HR-3-M12 | 3  | 25 | 21  | 12.5 | 35 | 58 | M12 | 5.5 | 0.1  |
|        | 3032HR-4-M16 | 4  | 32 | 29  | 17   | 40 | 66 | M16 | 5.5 | 0.21 |
|        | 3040HR-5-M16 | 5  | 40 | 29  | 17   | 40 | 66 | M16 | 5.5 | 0.26 |
| RM3PM  | 4032HR-3-M16 | 3  | 32 | 29  | 17   | 40 | 66 | M16 | 8   | 0.21 |
|        | 4040HR-4-M16 | 4  | 40 | 29  | 17   | 50 | 76 | M16 | 8   | 0.33 |
|        | 4050HR-5-M16 | 5  | 50 | 29  | 17   | 55 | 81 | M16 | 8   | 0.49 |

## 🔗 Insertos disponibles



| Codigo    | Cermet        |               | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |
|-----------|---------------|---------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|
|           | CN2000        | CN30          | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 |
| 3000 tipo | XNKT          | 060405PNER-ML |            |        |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |       |      |     |
|           |               | 060405PNSR-MM |            |        |        |        | ●      | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |       |      |     |
|           |               | 060408PNER-ML |            |        |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |
|           |               | 060408PNSR-MM |            |        |        |        | ●      | ●      | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |
| 4000 tipo | XNCT          | 080504PNFR-MA |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |
|           |               | 080508PNFR-MA |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |
|           |               | 080512PNFR-MA |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |
|           |               | 080520PNFR-MA |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |
|           | XNKT          | 080504PNER-ML |            |        |        |        |        |        | ●      |        |        |        |        | ●        | ●      |       |      |     |
|           |               | 080504PNSR-MM |            |        |        |        |        |        |        | ●      |        |        |        | ●        | ●      |       |      |     |
|           |               | 080508PNER-ML |            |        |        | ●      |        |        | ●      | ●      | ●      |        | ●      | ●        | ●      |       |      |     |
|           |               | 080508PNSR-MM |            |        |        | ●      |        |        | ●      | ●      | ●      |        | ●      | ●        | ●      |       |      |     |
|           |               | 080512PNER-ML |            |        |        |        |        |        |        |        |        |        |        |          | ●      | ●     |      |     |
|           |               | 080512PNSR-MM |            |        |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |
|           |               | 080516PNER-ML |            |        |        |        |        |        |        |        |        |        |        |          | ●      | ●     |      |     |
|           |               | 080516PNSR-MM |            |        |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |
|           | 080520PNER-ML |               |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |
|           | 080520PNSR-MM |               |            |        |        |        |        | ●      | ●      | ●      |        |        | ●      | ●        |        |       |      |     |

## 🔗 Adaptador modular disponible

| Codigo | Adaptador modular disponible |         |
|--------|------------------------------|---------|
| RM3PM  | 3020HR-2-M10                 | MAT-M10 |
|        | 3025HR-3-M12                 | MAT-M12 |
|        | 3032HR-4-M16                 | MAT-M16 |
|        | 3040HR-5-M16                 | MAT-M16 |
| RM3PM  | 4032HR-3-M16                 | MAT-M16 |
|        | 4040HR-4-M16                 | MAT-M16 |
|        | 4050HR-5-M16                 | MAT-M16 |

Designación: RM3PM4032HR-M16  
 Tamaño de medida de roscado de cabeza modular (M16)

II

Especificación del adaptador: MAT-M16-035-S32S  
 Medida de roscado del adaptador (M16)

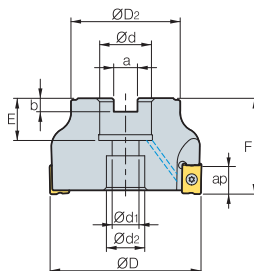
## 🔗 Partes

| Especificación      | 🔩 Tornillo | 🔑 Llave |
|---------------------|------------|---------|
| Ø20~Ø40 (3000 tipo) | FTNA0306   | TW09S   |
| Ø32~Ø50 (4000 tipo) | FTNA0408   | TW15S   |





# RM4PC(M)3000



• AR: -6°  
• RR: -19°~-13°

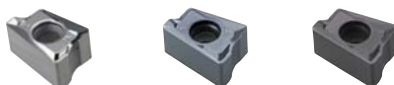
(mm)

| Codigo         | ØD       | ØD2 | Ød  | Ød1 | Ød2        | a  | b  | E           | F         | ap      | kg      | Bolt |             |        |
|----------------|----------|-----|-----|-----|------------|----|----|-------------|-----------|---------|---------|------|-------------|--------|
| RM4PCM         | 3040HR   | 4   | 40  | 35  | 16         | 9  | 14 | 8.4         | 5.6       | 19      | 40      | 9.0  | 0.24        | SB0825 |
|                | 3040HR-M | 5   | 40  | 35  | 16         | 9  | 14 | 8.4         | 5.6       | 19      | 40      | 9.0  | 0.23        | SB0825 |
|                | 3050HR   | 5   | 50  | 42  | 22         | 11 | 18 | 10.4        | 6.3       | 20      | 40      | 9.0  | 0.36        | SB1025 |
|                | 3050HR-M | 7   | 50  | 42  | 22         | 11 | 18 | 10.4        | 6.3       | 20      | 40      | 9.0  | 0.35        | SB1025 |
|                | 3063HR   | 7   | 63  | 49  | 22         | 11 | 18 | 10.4        | 6.3       | 20      | 40      | 9.0  | 0.61        | SB1025 |
|                | 3063HR-M | 9   | 63  | 49  | 22         | 11 | 18 | 10.4        | 6.3       | 20      | 40      | 9.0  | 0.6         | SB1025 |
| RM4PC (RM4PCM) | 3080HR   | 8   | 80  | 57  | 25.4 (27)  | 14 | 20 | 9.5 (12.4)  | 6.0 (7.0) | 25 (23) | 50      | 9.0  | 1.25 (1.24) | SB1230 |
|                | 3080HR-M | 10  | 80  | 57  | 25.4 (27)  | 14 | 20 | 9.5 (12.4)  | 6.0 (7.0) | 25 (23) | 50      | 9.0  | 1.24 (1.23) | SB1230 |
|                | 3100HR   | 9   | 100 | 67  | 31.75(32)  | 18 | 26 | 12.7 (14.4) | 8.0 (8.0) | 33 (25) | 63 (50) | 9.0  | 2.46 (1.94) | SB1630 |
|                | 3100HR-M | 12  | 100 | 67  | 31.75 (32) | 18 | 26 | 12.7 (14.4) | 8.0 (8.0) | 33 (25) | 63 (50) | 9.0  | 2.44 (1.93) | SB1630 |

( ) Tamaño métrico

## Insertos disponibles

LNEX-MA LNM(E)X-MF LNM(E)X-MM



| Codigo | Cermet       |      | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC8510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| LNEX   | 100605PNR-MF |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|        | 100605PNR-MM |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 100605PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
|        | 100608PNR-MF |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 100608PNR-MM |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |     |
| LNMX   | 100605PNR-MF |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |       |      |     |     |
|        | 100605PNR-MM |      |            |        |        |        |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      |       |      |     |     |
|        | 100608PNR-MF |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |       |      |     |     |
|        | 100608PNR-MM |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |       |      |     |     |

E11

## Adaptadores disponibles

| Codigo   | Adaptadores disponibles |        |               |
|----------|-------------------------|--------|---------------|
|          | RM4PC                   | RM4PCM |               |
| RM4PC(M) | 3040HR                  | -      | BT□□-FMC16-□□ |
|          | 3040HR-M                |        |               |
|          | 3050HR                  | -      | BT□□-FMC22-□□ |
|          | 3050HR-M                |        |               |
|          | 3063HR                  |        |               |
|          | 3063HR-M                |        |               |

| Codigo   | Adaptadores disponibles |                  |               |
|----------|-------------------------|------------------|---------------|
|          | RM4PC                   | RM4PCM           |               |
| RM4PC(M) | 3080HR                  | BT□□-FMA25.4-□□  | BT□□-FMC27-□□ |
|          | 3080HR-M                |                  |               |
|          | 3100HR                  | BT□□-FMA31.75-□□ | BT□□-FMC32-□□ |
|          | 3100HR-M                |                  |               |

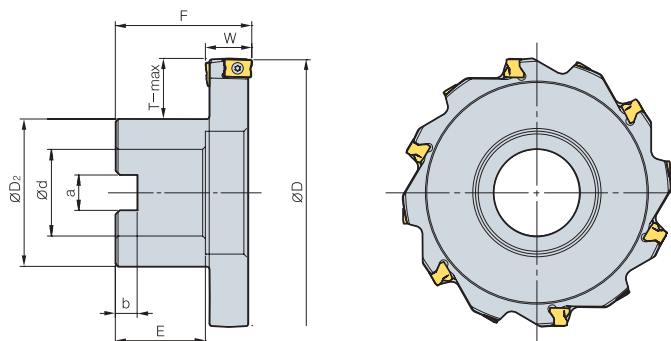
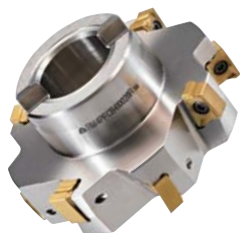
## Partes

| Especificación |  Tornillo |  Llave |
|----------------|--|---|
| Ø40-Ø100       | FTKA0307   | TW09S   |

Insertos disponibles E11 Detalles del cortador E400~E402



# RM4PFCB3000



(mm)

| Codigo          |    | ØD  | ØD <sub>2</sub> | Ød    | a    | b  | E  | F  | W  | T-max |
|-----------------|----|-----|-----------------|-------|------|----|----|----|----|-------|
| RM4PFCB 308015R | 10 | 80  | 40              | 25.4  | 9.5  | 6  | 25 | 50 | 15 | 19    |
|                 | 10 | 80  | 40              | 25.4  | 9.5  | 6  | 25 | 50 | 17 | 19    |
| 310015R         | 12 | 100 | 54              | 31.75 | 12.7 | 8  | 32 | 50 | 15 | 22    |
| 310017R         | 12 | 100 | 54              | 31.75 | 12.7 | 8  | 32 | 50 | 17 | 22    |
| 312515R         | 14 | 125 | 70              | 38.1  | 15.9 | 10 | 38 | 60 | 15 | 26    |
| 312517R         | 14 | 125 | 70              | 38.1  | 15.9 | 10 | 38 | 60 | 17 | 26    |
| 316015R         | 16 | 160 | 70              | 38.1  | 15.9 | 10 | 38 | 60 | 15 | 44    |
| 316017R         | 16 | 160 | 70              | 38.1  | 15.9 | 10 | 38 | 60 | 17 | 44    |

## Insertos disponibles

LNM(E)X-MM



| Codigo            | Cermet       |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|-------------------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|                   | CN2000       | CN30 | NCM925     | NC5330 | NCM635 | NCM645 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| LNEX 100605PNR-MM |              |      |            |        |        |        |        |        | ●      | ●      |        |        |          | ●      | ●      |      |       |     | E11 |
|                   | 100605PNL-MM |      |            |        |        |        |        |        |        | ●      |        |        |          | ●      | ●      |      |       |     |     |
| LNMX 100605PNR-MM |              |      |            |        |        |        |        | ●      | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |     |
|                   | 100605PNL-MM |      |            |        |        |        |        | ●      | ●      | ●      |        |        |          | ●      | ●      |      |       |     |     |

## Adaptadores disponibles

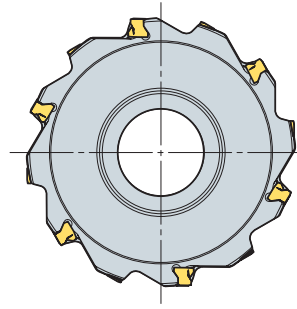
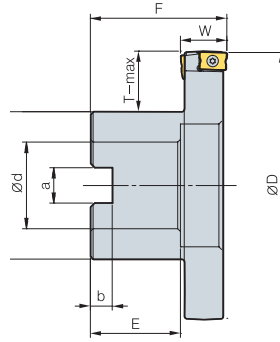
| Codigo          | Adaptadores disponibles |
|-----------------|-------------------------|
| RM4PFCB 308015R | BT□□ -FMA25.4-□□        |
|                 |                         |
| 310015R         | BT□□ -FMA31.75-□□       |
| 310017R         |                         |
| 312515R         | BT□□ -FMA38.1-□□        |
| 312517R         |                         |
| 316015R         |                         |
| 316017R         |                         |

## Partes

| Especificación |          |       |
|----------------|----------|-------|
| Ø80-Ø160       | FTKA0307 | TW09S |

Insertos disponibles E11    Detalles del cortador E400~E402

# RM4PFCB4000



(mm)

| Codigo  |         | ØD | ØD <sub>2</sub> | Ød | a     | b    | E  | F  | W  | T-max |    |
|---------|---------|----|-----------------|----|-------|------|----|----|----|-------|----|
| RM4PFCB | 408022R | 6  | 80              | 40 | 25.4  | 9.5  | 6  | 25 | 50 | 22    | 19 |
|         | 408024R | 6  | 80              | 40 | 25.4  | 9.5  | 6  | 25 | 50 | 24    | 19 |
|         | 408026R | 6  | 80              | 40 | 25.4  | 9.5  | 6  | 25 | 50 | 26    | 19 |
|         | 408028R | 6  | 80              | 40 | 25.4  | 9.5  | 6  | 25 | 50 | 28    | 19 |
|         | 410022R | 8  | 100             | 54 | 31.75 | 12.7 | 8  | 32 | 50 | 22    | 22 |
|         | 410024R | 8  | 100             | 54 | 31.75 | 12.7 | 8  | 32 | 50 | 24    | 22 |
|         | 410026R | 8  | 100             | 54 | 31.75 | 12.7 | 8  | 32 | 50 | 26    | 22 |
|         | 410028R | 8  | 100             | 54 | 31.75 | 12.7 | 8  | 32 | 50 | 28    | 22 |
|         | 412522R | 10 | 125             | 70 | 38.1  | 15.9 | 10 | 38 | 60 | 22    | 26 |
|         | 412524R | 10 | 125             | 70 | 38.1  | 15.9 | 10 | 38 | 60 | 24    | 26 |
|         | 412526R | 10 | 125             | 70 | 38.1  | 15.9 | 10 | 38 | 60 | 26    | 26 |
|         | 412528R | 10 | 125             | 70 | 38.1  | 15.9 | 10 | 38 | 60 | 28    | 26 |
|         | 416022R | 12 | 160             | 70 | 38.1  | 15.9 | 10 | 38 | 60 | 22    | 44 |
|         | 416024R | 12 | 160             | 70 | 38.1  | 15.9 | 10 | 38 | 60 | 24    | 44 |
|         | 416026R | 12 | 160             | 70 | 38.1  | 15.9 | 10 | 38 | 60 | 26    | 44 |
|         | 416028R | 12 | 160             | 70 | 38.1  | 15.9 | 10 | 38 | 60 | 28    | 44 |

## Insertos disponibles

LNM(E)X-MM



| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| LNEX   | 151008PNR-MM |      |            |        |        |        |        |        | ●      | ●      |        |        |          | ●      | ●      |      |       |     | E11 |
|        | 151008PNL-MM |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |     |
| LNMX   | 151008PNR-MM |      |            |        | ●      |        |        |        | ●      | ●      | ●      | ●      |          | ●      | ●      |      |       |     |     |
|        | 151008PNL-MM |      |            |        |        |        |        |        | ●      |        |        |        |          | ●      | ●      |      |       |     |     |

## Adaptadores disponibles

| Codigo  | Adaptadores disponibles | Codigo  | Adaptadores disponibles |
|---------|-------------------------|---------|-------------------------|
| RM4PFCB | 408022R                 | RM4PFCB | 412522R                 |
|         | 408024R                 |         | 412524R                 |
|         | 408026R                 |         | 412526R                 |
|         | 408028R                 |         | 412528R                 |
|         | 410022R                 |         | 416022R                 |
|         | 410024R                 |         | 416024R                 |
|         | 410026R                 |         | 416026R                 |
|         | 410028R                 |         | 416028R                 |
|         | BT□□-FMA25.4-□□         |         | BT□□-FMA38.1-□□         |
|         | BT□□-FMA31.75-□□        |         |                         |

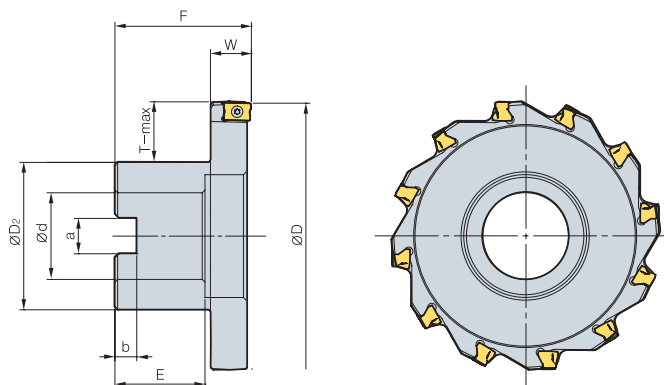
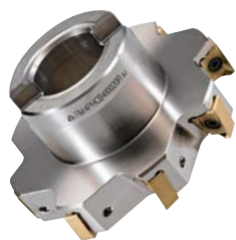
## Partes

| Especificación |                       |                |
|----------------|-----------------------|----------------|
| Ø80~Ø160       | Tornillo<br>FTKA0412B | Llave<br>TW15S |

Insertos disponibles E11 Detalles del cortador E400~E402



# RM4PHCB3000

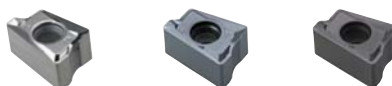


(mm)

| Codigo          |    | ØD  | ØD2 | Ød    | a    | b  | E  | F  | W  | T-max |
|-----------------|----|-----|-----|-------|------|----|----|----|----|-------|
| RM4PHCB 308015R | 10 | 80  | 40  | 25.4  | 9.5  | 6  | 25 | 50 | 15 | 19    |
| 310015R         | 12 | 100 | 54  | 31.75 | 12.7 | 8  | 32 | 50 | 15 | 22    |
| 312515R         | 14 | 125 | 70  | 38.1  | 15.9 | 10 | 38 | 60 | 15 | 26    |
| 316015R         | 16 | 160 | 70  | 38.1  | 15.9 | 10 | 38 | 60 | 15 | 44    |

## Insertos disponibles

LNEX-MA LNM(E)X-MF LNM(E)X-MM



| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|
|        | CN2000       | CN30 | NCM825     | NC5330 | NCM635 | NCM645 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 |
| LNEX   | 100605PNR-MF |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |
|        | 100605PNR-MM |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |
|        | 100605PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |
|        | 100608PNR-MF |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |
|        | 100608PNR-MM |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |
| LNMX   | 100605PNR-MF |      |            |        |        |        |        | ●      |        |        | ●      |        |        | ●        | ●      |       |      |     |
|        | 100605PNR-MM |      |            |        |        |        |        | ●      | ●      |        | ●      | ●      |        | ●        | ●      |       |      |     |
|        | 100608PNR-MF |      |            |        |        |        |        | ●      |        | ●      |        |        |        | ●        | ●      |       |      |     |
|        | 100608PNR-MM |      |            |        |        |        |        | ●      | ●      |        |        |        |        | ●        | ●      |       |      |     |

## Adaptadores disponibles

| Codigo          | Adaptadores disponibles |
|-----------------|-------------------------|
| RM4PHCB 308015R | BT□□ -FMA25.4-□□        |
| 310015R         | BT□□ -FMA31.75-□□       |
| 312515R         | BT□□ -FMA38.1-□□        |
| 316015R         |                         |

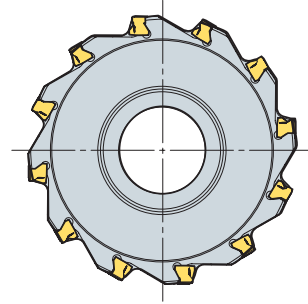
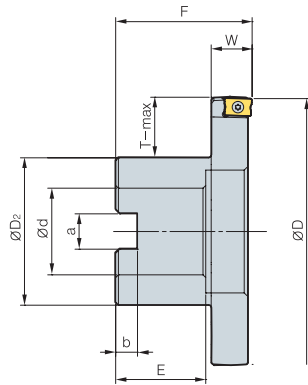
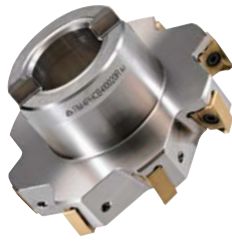
## Partes

| Especificación |                      |                |
|----------------|----------------------|----------------|
| Ø80-Ø160       | Tornillo<br>FTKA0307 | Llave<br>TW09S |

Insertos disponibles E11 Detalles del cortador E400~E402



# RM4PHCB4000

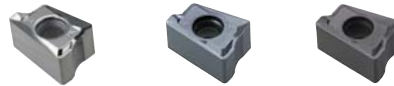


(mm)

| Codigo  |         | ØD | ØD2 | Ød | a     | b    | E  | F  | W  | T-max |    |
|---------|---------|----|-----|----|-------|------|----|----|----|-------|----|
| RM4PHCB | 408020R | 6  | 80  | 40 | 25.4  | 9.5  | 6  | 25 | 50 | 20    | 19 |
|         | 410020R | 8  | 100 | 54 | 31.75 | 12.7 | 8  | 32 | 50 | 20    | 22 |
|         | 412520R | 10 | 125 | 70 | 38.1  | 15.9 | 10 | 38 | 60 | 20    | 26 |
|         | 416020R | 12 | 160 | 70 | 38.1  | 15.9 | 10 | 38 | 60 | 20    | 44 |

## Insertos disponibles

LNEX-MA      LNM(E)X-MF      LNM(E)X-MM



| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| LNEX   | 151004PNR-MF |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     | E11 |
|        | 151004PNR-MM |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151004PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |     |
|        | 151008PNR-MF |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151008PNR-MM |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151008PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |     |
|        | 151016PNR-MF |      |            |        |        |        |        |        |        |        |        | ●      |        |          | ●      | ●     |      |     |     |
|        | 151016PNR-MM |      |            |        |        |        |        |        |        |        |        | ●      |        |          | ●      | ●     |      |     |     |
| LNMX   | 151004PNR-MF |      |            |        |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151004PNR-MM |      |            |        |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151008PNR-MF |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151008PNR-MM |      |            |        | ●      |        |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      |       |      |     |     |
|        | 151016PNR-MF |      |            |        |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151016PNR-MM |      |            |        |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |

## Adaptadores disponibles

| Codigo          | Adaptadores disponibles |
|-----------------|-------------------------|
| RM4PHCB 408020R | BT□□ -FMA25.4-□□        |
| 410020R         | BT□□ -FMA31.75-□□       |
| 412520R         | BT□□ -FMA38.1-□□        |
| 416020R         |                         |

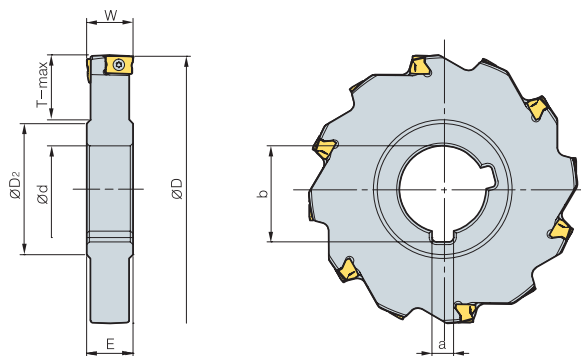
## Partes

| Especificación |                       |                |
|----------------|-----------------------|----------------|
| Ø80~Ø160       | Tornillo<br>FTKA0412B | Llave<br>TW15S |

Insertos disponibles E11      Detalles del cortador E400~E402



# RM4PFCP3000



(mm)

| Codigo  |         | ØD | ØD2 | Ød   | a     | b    | E    | W  | T-max |
|---------|---------|----|-----|------|-------|------|------|----|-------|
| RM4PFCP | 308015R | 10 | 80  | 41.5 | 25.4  | 6.35 | 28   | 15 | 17    |
|         | 308017R | 10 | 80  | 41.5 | 25.4  | 6.35 | 28   | 17 | 17    |
|         | 310015R | 12 | 100 | 48   | 31.75 | 7.94 | 35.2 | 15 | 24    |
|         | 310017R | 12 | 100 | 48   | 31.75 | 7.94 | 35.2 | 17 | 24    |
|         | 312515R | 14 | 125 | 58   | 38.1  | 9.53 | 42.3 | 15 | 32    |
|         | 312517R | 14 | 125 | 58   | 38.1  | 9.53 | 42.3 | 17 | 32    |
|         | 316015R | 16 | 160 | 58   | 38.1  | 9.53 | 42.3 | 15 | 49    |
|         | 316017R | 16 | 160 | 58   | 38.1  | 9.53 | 42.3 | 17 | 49    |

## Insertos disponibles

LN(E)X-MM



| Codigo | Cermet       |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 |
| LNEX   | 100605PNR-MM |      |            |        |        |        |        |        | ●      | ●      |        |        |          | ●      | ●      |      |       |     |
|        | 100605PNL-MM |      |            |        |        |        |        |        |        | ●      |        |        |          | ●      | ●      |      |       |     |
| LNMX   | 100605PNR-MM |      |            |        |        |        |        | ●      | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |
|        | 100605PNL-MM |      |            |        |        |        |        | ●      | ●      | ●      |        |        |          | ●      | ●      |      |       |     |

## Adaptadores disponibles

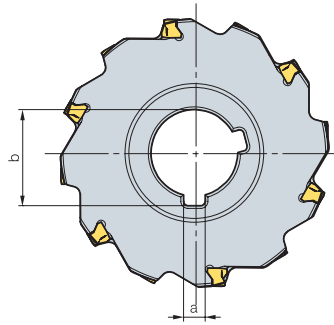
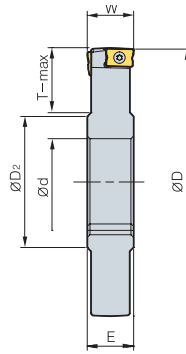
| Codigo  | Adaptadores disponibles |                  |
|---------|-------------------------|------------------|
| RM4PFCP | 308015R                 | BT□□-SCA25.4-□□  |
|         | 308017R                 |                  |
|         | 310015R                 |                  |
|         | 310017R                 | BT□□-SCA31.75-□□ |
|         | 312515R                 |                  |
|         | 312517R                 | BT□□-SCA38.1-□□  |
| 316015R |                         |                  |
| 316017R |                         |                  |

## Partes

| Especificación |          |       |
|----------------|----------|-------|
| Ø80-Ø160       | FTKA0307 | TW09S |

Insertos disponibles E11    Detalles del cortador E400~E402

# RM4PFCP4000



(mm)

| Codigo          | ⊙  | ØD  | ØD2  | Ød    | a    | b    | E  | W  | T-max |
|-----------------|----|-----|------|-------|------|------|----|----|-------|
| RM4PFCP 408022R | 6  | 80  | 41.5 | 25.4  | 6.35 | 28   | 22 | 22 | 17    |
| 408024R         | 6  | 80  | 41.5 | 25.4  | 6.35 | 28   | 24 | 24 | 17    |
| 408026R         | 6  | 80  | 41.5 | 25.4  | 6.35 | 28   | 26 | 26 | 17    |
| 408028R         | 6  | 80  | 41.5 | 25.4  | 6.35 | 28   | 28 | 28 | 17    |
| 410022R         | 8  | 100 | 48   | 31.75 | 7.94 | 35.2 | 22 | 22 | 24    |
| 410024R         | 8  | 100 | 48   | 31.75 | 7.94 | 35.2 | 24 | 24 | 24    |
| 410026R         | 8  | 100 | 48   | 31.75 | 7.94 | 35.2 | 26 | 26 | 24    |
| 410028R         | 8  | 100 | 48   | 31.75 | 7.94 | 35.2 | 28 | 28 | 24    |
| 412522R         | 10 | 125 | 58   | 38.1  | 9.53 | 42.3 | 22 | 22 | 32    |
| 412524R         | 10 | 125 | 58   | 38.1  | 9.53 | 42.3 | 24 | 24 | 32    |
| 412526R         | 10 | 125 | 58   | 38.1  | 9.53 | 42.3 | 26 | 26 | 32    |
| 412528R         | 10 | 125 | 58   | 38.1  | 9.53 | 42.3 | 28 | 28 | 32    |
| 416022R         | 12 | 160 | 58   | 38.1  | 9.53 | 42.3 | 22 | 22 | 49    |
| 416024R         | 12 | 160 | 58   | 38.1  | 9.53 | 42.3 | 24 | 24 | 49    |
| 416026R         | 12 | 160 | 58   | 38.1  | 9.53 | 42.3 | 26 | 26 | 49    |
| 416028R         | 12 | 160 | 58   | 38.1  | 9.53 | 42.3 | 28 | 28 | 49    |

## ➤ Insertos disponibles

LN(M)E(X)-MM



| Codigo            | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |
|-------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|
|                   | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 |
| LNEX 151008PNR-MM |        |      |            |        |        |        |        |        | ●      | ●      |        |        |          | ●      | ●      |      |       |     |
| 151008PNL-MM      |        |      |            |        |        |        |        |        |        | ●      |        |        |          | ●      | ●      |      |       |     |
| LNMX 151008PNR-MM |        |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |
| 151008PNL-MM      |        |      |            |        |        |        |        | ●      |        |        |        |        |          | ●      | ●      |      |       |     |

## ➤ Adaptadores disponibles

| Codigo          | Adaptadores disponibles | Codigo          | Adaptadores disponibles |
|-----------------|-------------------------|-----------------|-------------------------|
| RM4PFCP 408022R | BT□□-SCA25.4-□□         | RM4PFCP 412522R | BT□□-SCA38.1-□□         |
| 408024R         |                         | 412524R         |                         |
| 408026R         |                         | 412526R         |                         |
| 408028R         |                         | 412528R         |                         |
| 410022R         | BT□□-SCA31.75-□□        | 416022R         |                         |
| 410024R         |                         | 416024R         |                         |
| 410026R         |                         | 416026R         |                         |
| 410028R         |                         | 416028R         |                         |

## ➤ Partes

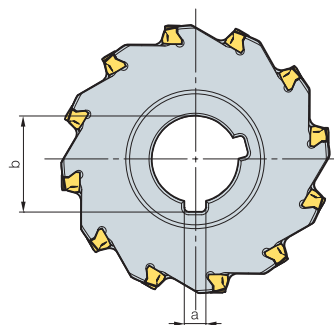
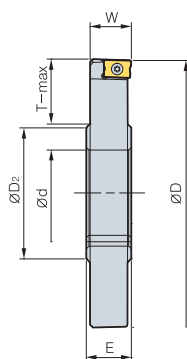
| Especificación |  Tornillo |  Llave |
|----------------|--|---|
| Ø80~Ø160       | FTKA0412B  | TW15S   |

➤ Insertos disponibles E11 ➤ Detalles del cortador E400~E402





# RM4PHCP3000

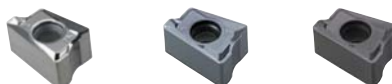


(mm)

| Codigo  |         | ØD | ØD <sub>2</sub> | Ød   | a     | b    | E    | W    | T-max |    |
|---------|---------|----|-----------------|------|-------|------|------|------|-------|----|
| RM4PHCP | 308015R | 10 | 80              | 41.5 | 25.4  | 6.35 | 28   | 16.5 | 15.1  | 17 |
|         | 310015R | 12 | 100             | 48   | 31.75 | 7.94 | 35.2 | 16.5 | 15.1  | 24 |
|         | 312515R | 14 | 125             | 58   | 38.1  | 9.52 | 42.3 | 16.5 | 15.1  | 32 |
|         | 316015R | 16 | 160             | 58   | 38.1  | 9.52 | 42.3 | 16.5 | 15.1  | 49 |

## Insertos disponibles

LNEX-MA      LNM(E)X-MF      LNM(E)X-MM



| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 |
| LNEX   | 100605PNR-MF |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |
|        | 100605PNR-MM |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |
|        | 100605PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |
|        | 100608PNR-MF |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |
|        | 100608PNR-MM |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |
| LNMX   | 100605PNR-MF |      |            |        |        |        |        | ●      |        | ●      |        |        |        | ●        | ●      |       |      |     |
|        | 100605PNR-MM |      |            |        |        |        |        | ●      | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |
|        | 100608PNR-MF |      |            |        |        |        |        | ●      |        | ●      |        |        |        | ●        | ●      |       |      |     |
|        | 100608PNR-MM |      |            |        |        |        |        | ●      | ●      |        |        |        |        | ●        | ●      |       |      |     |

## Adaptadores disponibles

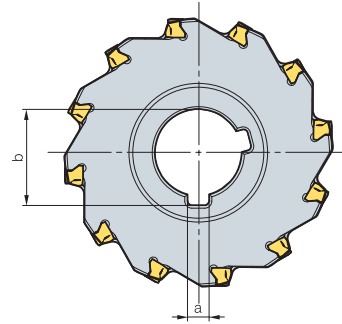
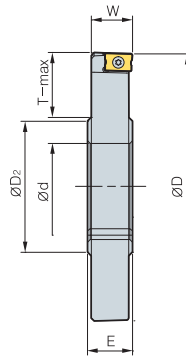
| Codigo          | Adaptadores disponibles |
|-----------------|-------------------------|
| RM4PHCP 308015R | BT□□-SCA25.4-□□         |
| 310015R         | BT□□-SCA31.75-□□        |
| 312515R         | BT□□-SCA38.1-□□         |
| 316015R         |                         |

## Partes

| Especificación |                      |                |
|----------------|----------------------|----------------|
| Ø80~Ø160       | Tornillo<br>FTKA0307 | Llave<br>TW09S |

Insertos disponibles E11      Detalles del cortador E400~E402

# RM4PHCP4000

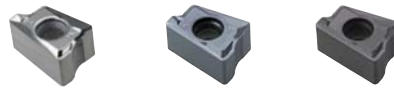


(mm)

| Codigo  |         | ØD | ØD <sub>2</sub> | Ød   | a     | b    | E    | W  | T-max |    |
|---------|---------|----|-----------------|------|-------|------|------|----|-------|----|
| RM4PHCP | 408020R | 6  | 80              | 41.5 | 25.4  | 6.35 | 28   | 22 | 19.8  | 17 |
|         | 410020R | 8  | 100             | 48   | 31.75 | 7.94 | 35.2 | 22 | 19.8  | 24 |
|         | 412520R | 10 | 125             | 58   | 38.1  | 9.53 | 42.3 | 22 | 19.8  | 32 |
|         | 416020R | 12 | 160             | 58   | 38.1  | 9.53 | 42.3 | 22 | 19.8  | 49 |

## Insertos disponibles

LNEX-MA      LNM(E)X-MF      LNM(E)X-MM



| Codigo       | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|              | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| LNEX         | 151004PNR-MF |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     | E11 |
|              | 151004PNR-MM |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     |     |
|              | 151004PNR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|              | 151008PNR-MF |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     |     |
|              | 151008PNR-MM |      |            |        |        |        |        |        |        |        | ●      | ●      |          | ●      | ●      |      |       |     |     |
|              | 151008PNR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|              | 151016PNR-MF |      |            |        |        |        |        |        |        |        |        | ●      |          |        | ●      | ●    |       |     |     |
| 151016PNR-MM |              |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     |     |
| LNMX         | 151004PNR-MF |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |     |
|              | 151004PNR-MM |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |     |
|              | 151008PNR-MF |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |     |
|              | 151008PNR-MM |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |     |
|              | 151016PNR-MF |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |     |
| 151016PNR-MM |              |      |            |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |        |      |       |     |     |

## Adaptadores disponibles

| Codigo          | Adaptadores disponibles |
|-----------------|-------------------------|
| RM4PHCP 408020R | BT□□ -SCA25.4-□□        |
| 410020R         | BT□□ -SCA31.75-□□       |
| 412520R         |                         |
| 416020R         | BT□□ -SCA38.1-□□        |

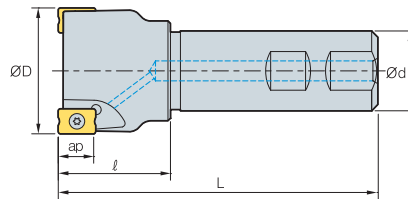
## Partes

| Especificación |                       |                |
|----------------|-----------------------|----------------|
| Ø80~Ø160       | Tornillo<br>FTKA0412B | Llave<br>TW15S |

Insertos disponibles E11      Detalles del cortador E400~E402



# RM4PS3000



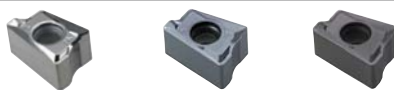
• AR: -6°  
• RR: -39°~-16°

(mm)

| Codigo      |             | ØD | Ød | l  | L   | ap   |      |
|-------------|-------------|----|----|----|-----|------|------|
| RM4PS       | 3014HR-S16  | 1  | 14 | 16 | 23  | 90   | 0.11 |
|             | 3016HR-S16  | 1  | 16 | 16 | 25  | 90   | 0.11 |
|             | 3018HR-S16  | 2  | 18 | 16 | 23  | 90   | 0.12 |
|             | 3020HR-S20  | 2  | 20 | 20 | 30  | 100  | 0.21 |
|             | 3020HR-S20M | 3  | 20 | 20 | 30  | 100  | 0.21 |
|             | 3025HR-S25  | 2  | 25 | 25 | 35  | 115  | 0.38 |
|             | 3025HR-S25M | 3  | 25 | 25 | 35  | 115  | 0.38 |
|             | 3032HR-S32  | 3  | 32 | 32 | 40  | 125  | 0.69 |
|             | 3032HR-S32M | 4  | 32 | 32 | 40  | 125  | 0.7  |
|             | 3040HR-S32  | 4  | 40 | 32 | 42  | 130  | 0.86 |
|             | 3040HR-S32M | 5  | 40 | 32 | 42  | 130  | 0.85 |
|             | 3040HR-S40  | 4  | 40 | 40 | 42  | 130  | 1.17 |
|             | 3040HR-S40M | 5  | 40 | 40 | 42  | 130  | 1.17 |
|             | 3040HR-S42  | 4  | 40 | 42 | 42  | 130  | 1.26 |
|             | 3040HR-S42M | 5  | 40 | 42 | 42  | 130  | 1.25 |
|             | 3050HR-S32  | 5  | 50 | 32 | 45  | 135  | 1.06 |
|             | 3050HR-S32M | 7  | 50 | 32 | 45  | 135  | 1.05 |
|             | 3050HR-S40  | 5  | 50 | 40 | 45  | 135  | 1.38 |
|             | 3050HR-S40M | 7  | 50 | 40 | 45  | 135  | 1.37 |
|             | 3050HR-S42  | 5  | 50 | 42 | 45  | 135  | 1.48 |
| 3050HR-S42M | 7           | 50 | 42 | 45 | 135 | 1.48 |      |

## Insertos disponibles

LNEX-MA LNM(E)X-MF LNM(E)X-MM



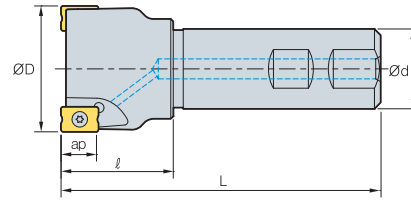
| Codigo       | Cermet       |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |
|--------------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|
|              | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 |
| LNEX         | 100605PNR-MF |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      |        |      |       |     |
|              | 100605PNR-MM |      |            |        |        |        |        |        |        | ●      | ●      |        |          | ●      | ●      |      |       |     |
|              | 100605PNR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       | ●   |
|              | 100605PNL-MM |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     |
|              | 100608PNR-MF |      |            |        |        |        |        |        |        | ●      | ●      |        |          | ●      | ●      |      |       |     |
| 100608PNR-MM |              |      |            |        |        |        |        |        |        | ●      | ●      |        | ●        | ●      |        |      |       |     |
| LNMX         | 100605PNR-MF |      |            |        |        |        |        | ●      |        | ●      |        |        |          | ●      | ●      |      |       |     |
|              | 100605PNR-MM |      |            |        |        |        |        | ●      | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |
|              | 100608PNR-MF |      |            |        |        |        |        | ●      |        | ●      |        |        |          | ●      | ●      |      |       |     |
|              | 100608PNR-MM |      |            |        |        |        |        | ●      | ●      | ●      |        |        |          | ●      | ●      |      |       |     |

## Partes

| Especificación |                      |                |
|----------------|----------------------|----------------|
| Ø14~Ø50        | Tornillo<br>FTKA0307 | Llave<br>TW09S |

Insertos disponibles E11

# RM4PS4000



AA  
90°  
• AR: -6°  
• RR: -24°~-14°

(mm)

| Codigo      |             | ØD | Ød | ℓ  | L   | ap   |      |
|-------------|-------------|----|----|----|-----|------|------|
| RM4PS       | 4032HR-S32  | 2  | 32 | 32 | 40  | 125  | 0.68 |
|             | 4032HR-S32M | 3  | 32 | 32 | 40  | 125  | 0.69 |
|             | 4040HR-S32  | 3  | 40 | 32 | 42  | 125  | 0.83 |
|             | 4040HR-S32M | 4  | 40 | 32 | 42  | 125  | 0.83 |
|             | 4040HR-S40  | 3  | 40 | 40 | 42  | 125  | 1.14 |
|             | 4040HR-S42  | 3  | 40 | 42 | 42  | 125  | 1.23 |
|             | 4050HR-S32  | 3  | 50 | 32 | 45  | 125  | 1.02 |
|             | 4050HR-S32M | 4  | 50 | 32 | 45  | 125  | 1.02 |
|             | 4050HR-S40  | 3  | 50 | 40 | 45  | 125  | 1.35 |
|             | 4050HR-S40M | 4  | 50 | 40 | 45  | 125  | 1.34 |
|             | 4050HR-S42  | 3  | 50 | 42 | 45  | 125  | 1.45 |
|             | 4050HR-S42M | 4  | 50 | 42 | 45  | 125  | 1.45 |
|             | 4063HR-S32  | 4  | 63 | 32 | 45  | 125  | 1.25 |
|             | 4063HR-S32M | 6  | 63 | 32 | 45  | 125  | 1.24 |
|             | 4063HR-S40  | 4  | 63 | 40 | 45  | 125  | 1.62 |
|             | 4063HR-S40M | 6  | 63 | 40 | 45  | 125  | 1.61 |
| 4063HR-S42  | 4           | 63 | 42 | 45 | 125 | 1.71 |      |
| 4063HR-S42M | 6           | 63 | 42 | 45 | 125 | 1.7  |      |

## Insertos disponibles

LNEX-MA LNM(E)X-MF LNM(E)X-MM



| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| LNEX   | 151004PNR-MF |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151004PNR-MM |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151004PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |     |
|        | 151008PNR-MF |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151008PNR-MM |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151008PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
|        | 151016PNR-MF |      |            |        |        |        |        |        |        |        |        | ●      |        |          | ●      | ●     |      |     |     |
|        | 151016PNR-MM |      |            |        |        |        |        |        |        |        |        | ●      |        |          | ●      | ●     |      |     |     |
| LNMX   | 151004PNR-MF |      |            |        |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151004PNR-MM |      |            |        |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151008PNR-MF |      |            |        |        | ●      |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151008PNR-MM |      |            |        |        | ●      |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 151016PNR-MF |      |            |        |        |        |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      |       |      |     |     |
|        | 151016PNR-MM |      |            |        |        |        |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      |       |      |     |     |

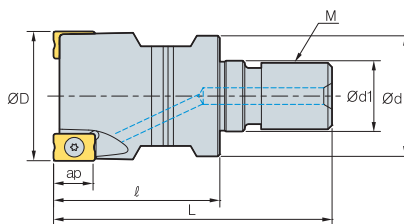
## Partes

| Especificación |           |       |
|----------------|-----------|-------|
| Ø32-Ø63        | FTKA0412B | TW15S |

Insertos disponibles E11



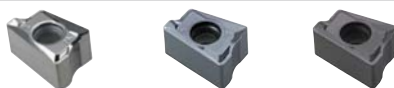
# RM4PM3000



| Codigo           | ØD | Ød   | Ød1  | l  | L  | M   | ap  | kg   |
|------------------|----|------|------|----|----|-----|-----|------|
| RM4PM 3014HR-M06 | 14 | 12   | 6.5  | 25 | 40 | M06 | 9.0 | 0.02 |
| 3016HR-M08       | 16 | 14.5 | 8.5  | 25 | 42 | M08 | 9.0 | 0.02 |
| 3018HR-M08       | 18 | 14.5 | 8.5  | 25 | 42 | M08 | 9.0 | 0.03 |
| 3020HR-M10       | 20 | 18   | 10.5 | 30 | 51 | M10 | 9.0 | 0.06 |
| 3025HR-M12       | 25 | 23   | 12.5 | 35 | 59 | M12 | 9.0 | 0.11 |
| 3032HR-M16       | 32 | 28   | 17   | 40 | 67 | M16 | 9.0 | 0.21 |
| 3040HR-M16       | 40 | 28   | 17   | 40 | 67 | M16 | 9.0 | 0.26 |
| 3050HR-M16       | 50 | 30   | 17   | 45 | 72 | M16 | 9.0 | 0.41 |

## Insertos disponibles

LNEX-MA LNM(E)X-MF LNM(E)X-MM



| Codigo            | Cermet |      | Recubierto |       |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |
|-------------------|--------|------|------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|
|                   | CN2000 | CN30 | NCM325     | NC530 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 |
| LNEX 100605PNR-MF |        |      |            |       |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |
| 100605PNR-MM      |        |      |            |       |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |
| 100605PNR-MA      |        |      |            |       |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |
| 100608PNR-MF      |        |      |            |       |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |       |      |     |
| 100608PNR-MM      |        |      |            |       |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |
| LNMX 100605PNR-MF |        |      |            |       |        |        |        |        | ●      |        | ●      |        |        | ●        | ●      |       |      |     |
| 100605PNR-MM      |        |      |            |       |        |        |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      |       |      |     |
| 100608PNR-MF      |        |      |            |       |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |
| 100608PNR-MM      |        |      |            |       |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |

## Adaptador modular disponible

| Codigo           | Adaptador modular disponible |
|------------------|------------------------------|
| RM4PM 3014HR-M06 | MAT-M06                      |
| 3016HR-M08       |                              |
| 3018HR-M08       | MAT-M08                      |
| 3020HR-M10       | MAT-M10                      |
| 3025HR-M12       | MAT-M12                      |
| 3032HR-M16       |                              |
| 3040HR-M16       | MAT-M16                      |
| 3050HR-M16       |                              |

Designación: RM4PM3032HR-M16  
 Tamaño de medida de roscado de cabeza modular (M16)

II

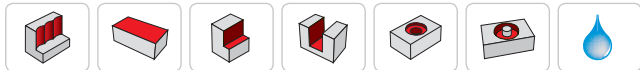
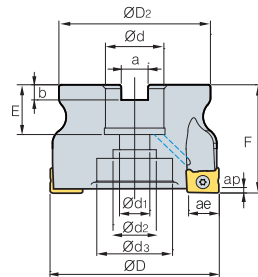
Especificación del adaptador: MAT-M16-035-S32S  
 Medida de roscado del adaptador (M16)

## Partes

| Especificación | Tornillo | Llave |
|----------------|----------|-------|
| Ø14~Ø50        | FTKA0307 | TW09S |

Insertos disponibles E11 Adaptador modular disponible E371~E372

# RM4ZC(M)3000/4000



AA 90°  
 • AR: -11°  
 • RR: -12°~-10°

(mm)

| Codigo         | ØD     | ØD2 | Ød | Ød1        | Ød2 | Ød3 | a           | b     | E       | F       | ap  | ae   | kg   |
|----------------|--------|-----|----|------------|-----|-----|-------------|-------|---------|---------|-----|------|------|
| RM4ZCM         | 3040HR | 40  | 37 | 16         | 9   | 14  | 8.4         | 5.6   | 19      | 40      | 1.5 | 9.0  | 0.21 |
|                | 3050HR | 50  | 47 | 22         | 11  | 18  | 10.4        | 6.3   | 20      | 40      | 1.5 | 9.0  | 0.33 |
|                | 3052HR | 52  | 48 | 22         | 11  | 18  | 10.4        | 6.3   | 20      | 40      | 1.5 | 9.0  | 0.37 |
|                | 4063HR | 63  | 58 | 22         | 11  | 18  | 10.4        | 6.3   | 20      | 40      | 2.5 | 14.0 | 0.56 |
| RM4ZC (RM4ZCM) | 4066HR | 66  | 61 | 25.4 (27)  | 14  | 20  | 9.5 (12.4)  | 6 (7) | 25      | 50      | 2.5 | 14.0 | 0.74 |
|                | 4080HR | 80  | 70 | 25.4 (27)  | 14  | 20  | 9.5 (12.4)  | 6 (7) | 25 (23) | 50      | 2.5 | 14.0 | 1.09 |
|                | 4100HR | 100 | 80 | 31.75 (32) | 18  | 26  | 12.7 (14.4) | 8 (8) | 25 (33) | 63 (50) | 2.5 | 14.0 | 1.71 |

( ) Tamaño métrico

## Insertos disponibles

LNM(E)X-MM



| Codigo    | Cermet |              | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |
|-----------|--------|--------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|
|           | CN2000 | CN30         | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 |
| 3000 tipo | LNEX   | 100605PNL-MM |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |
|           | LNMX   | 100605PNL-MM |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |
| 4000 tipo | LNEX   | 151008PNL-MM |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |
|           | LNMX   | 151008PNL-MM |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |

## Adaptadores disponibles

| Codigo            | Adaptadores disponibles |                                      |
|-------------------|-------------------------|--------------------------------------|
|                   | RM4ZC                   | RM4ZCM                               |
| RM4ZCM            | 3040HR                  | BT□□-FMC16-□□<br>BT□□-SCA16-□□       |
|                   | 3050HR                  | BT□□-FMC22-□□                        |
|                   | 3052HR                  |                                      |
| RM4ZCM (RM4ZC(M)) | 4063HR                  | BT□□-FMC22-□□                        |
|                   | 4066HR                  | BT□□-FMA25.4-□□                      |
|                   | 4080HR                  |                                      |
|                   | 4100HR                  | BT□□-FMA31.75-□□<br>BT□□-SCA31.75-□□ |

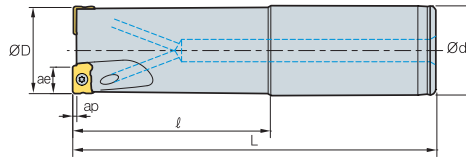
## Partes

| Especificación | Tornillo  | Llave |
|----------------|-----------|-------|
| Ø40~Ø52        | FTKA0307  | TW09S |
| Ø63~Ø100       | FTKA0412B | TW15S |

Insertos disponibles E11 Detalles del cortador E400~E402

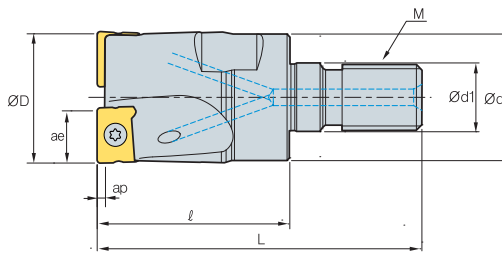


# RM4ZS3000



| Codigo |            | ØD | Ød | l  | L   | ap  | ae  |      |
|--------|------------|----|----|----|-----|-----|-----|------|
| RM4ZS  | 3025HR-L25 | 2  | 25 | 25 | 120 | 200 | 1.5 | 0.62 |
|        | 3032HR-L32 | 3  | 32 | 32 | 120 | 210 | 1.5 | 1.13 |
|        | 3040HR-L32 | 4  | 40 | 32 | 120 | 250 | 1.5 | 1.53 |

# RM4ZM3000



| Codigo |            | ØD | Ød | Ød1 | l    | L  | M   | ap  | ae  |      |
|--------|------------|----|----|-----|------|----|-----|-----|-----|------|
| RM4ZM  | 3025HR-M12 | 2  | 25 | 23  | 12.5 | 35 | M12 | 1.5 | 9.0 | 0.11 |
|        | 3032HR-M16 | 3  | 32 | 29  | 17   | 40 | M16 | 1.5 | 9.0 | 0.21 |
|        | 3040HR-M16 | 4  | 40 | 29  | 17   | 40 | M16 | 1.5 | 9.0 | 0.28 |

## Insertos disponibles

LNM(E)X-MM



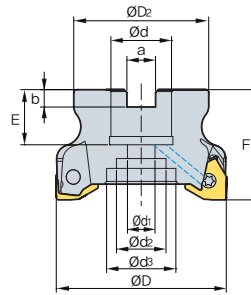
| Codigo            | Cermet |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |
|-------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|
|                   | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 |
| LNEX 100605PNL-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |
| LNMX 100605PNL-MM |        |      |            |        |        |        |        | ●      | ●      | ●      |        |        |          | ●      | ●      |      |       |     |

## Partes

| Especificación |                      |                |
|----------------|----------------------|----------------|
| Ø25~Ø40        | Tornillo<br>FTKA0307 | Llave<br>TW09S |

Insertos disponibles E11

# RM6PCM-WN04 new



AA  
90°

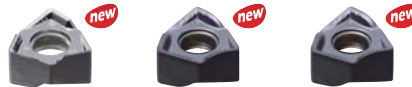
• AR: -6°  
• RR: -14°~ -11°

(mm)

| Codigo                | 6 | 7 | 8 | 9 | 10 | 11 | ØD | ØD2 | Ød | Ød1 | Ød2 | Ød3 | a    | b   | E  | F  | ap  | kg   |
|-----------------------|---|---|---|---|----|----|----|-----|----|-----|-----|-----|------|-----|----|----|-----|------|
| RM6PCM 040R-16-6-WN04 | 6 | 7 | 8 | 9 | 10 | 11 | 40 | 35  | 16 | 9   | 14  | -   | 8.4  | 5.6 | 19 | 40 | 4.3 | 0.19 |
| 040R-16-7-WN04        | 6 | 7 | 8 | 9 | 10 | 11 | 40 | 35  | 16 | 9   | 14  | -   | 8.4  | 5.6 | 19 | 40 | 4.3 | 0.19 |
| 050R-22-8-WN04        | 6 | 7 | 8 | 9 | 10 | 11 | 50 | 42  | 22 | 11  | 18  | -   | 10.4 | 6.3 | 20 | 40 | 4.3 | 0.28 |
| 050R-22-9-WN04        | 6 | 7 | 8 | 9 | 10 | 11 | 50 | 42  | 22 | 11  | 18  | -   | 10.4 | 6.3 | 20 | 40 | 4.3 | 0.28 |
| 063R-22-10-WN04       | 6 | 7 | 8 | 9 | 10 | 11 | 63 | 49  | 22 | 11  | 18  | -   | 10.4 | 6.3 | 20 | 40 | 4.3 | 0.47 |
| 063R-22-11-WN04       | 6 | 7 | 8 | 9 | 10 | 11 | 63 | 49  | 22 | 11  | 18  | -   | 10.4 | 6.3 | 20 | 40 | 4.3 | 0.47 |

## Insertos disponibles

WNGX-MA WNGX-ML WNGX-MM



| Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| WNGX 040304PNFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
| 040308PNFR-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
| 040312PNFR-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
| 040316PNFR-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
| 040304PNER-ML      |        |      |            |        |        |        |        |        | ●      |        | ●      |        |        | ●        | ●      |       |      |     |     |
| 040308PNER-ML      |        |      |            |        |        |        |        |        | ●      |        |        |        |        | ●        | ●      |       |      |     |     |
| 040312PNER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |       |      |     |     |
| 040316PNER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |       |      |     |     |
| 040304PNSR-MM      |        |      |            |        |        |        |        |        | ●      |        | ●      |        |        | ●        | ●      |       |      |     |     |
| 040308PNSR-MM      |        |      |            |        |        |        |        |        | ●      |        |        |        |        | ●        | ●      |       |      |     |     |
| 040312PNSR-MM      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |       |      |     |     |
| 040316PNSR-MM      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |       |      |     |     |

## Adaptadores disponibles

| Codigo                | Adaptadores NC |
|-----------------------|----------------|
| RM6PCM 040R-16-6-WN04 | BT□□-FMC16-□□  |
| 040R-16-7-WN04        |                |
| 050R-22-8-WN04        |                |
| 050R-22-9-WN04        | BT□□-FMC22-□□  |
| 063R-22-10-WN04       |                |
| 063R-22-11-WN04       |                |

## Partes

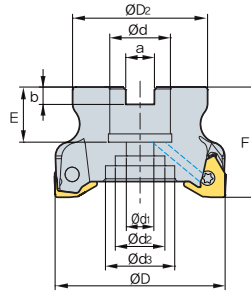
| Especificación | Tornillo  | Llave |
|----------------|-----------|-------|
| Ø40~Ø63        | ETNA02506 | TW07S |

Insertos disponibles E28 Detalles del cortador E400~E402





# RM6PC(M)-WN08 **new**



**AA 90°**  
 • AR: -6°  
 • RR: -14° ~ -11°

(mm)

| Codigo |                    | $\varnothing D$ | $\varnothing D_2$ | $\varnothing d$ | $\varnothing d_1$ | $\varnothing d_2$ | $\varnothing d_3$ | a  | b    | E   | F  | ap |     |      |
|--------|--------------------|-----------------|-------------------|-----------------|-------------------|-------------------|-------------------|----|------|-----|----|----|-----|------|
| RM6PCM | 050R-22-4-WN08     | 4               | 50                | 42              | 22                | 11                | 18                | -  | 10.4 | 6.3 | 20 | 40 | 8.2 | 0.28 |
|        | 050R-22-5-WN08     | 5               | 50                | 42              | 22                | 11                | 18                | -  | 10.4 | 6.3 | 20 | 40 | 8.2 | 0.27 |
|        | 063R-22-5-WN08     | 5               | 63                | 49              | 22                | 11                | 18                | -  | 10.4 | 6.3 | 20 | 40 | 8.2 | 0.45 |
|        | 063R-22-6-WN08     | 6               | 63                | 49              | 22                | 11                | 18                | -  | 10.4 | 6.3 | 20 | 40 | 8.2 | 0.45 |
|        | 080R-27-7-WN08     | 7               | 80                | 57              | 27                | 14                | 20                | 35 | 12.4 | 7   | 23 | 50 | 8.2 | 0.90 |
|        | 080R-27-9-WN08     | 9               | 80                | 57              | 27                | 14                | 20                | 35 | 12.4 | 7   | 23 | 50 | 8.2 | 0.89 |
|        | 100R-32-8-WN08     | 8               | 100               | 67              | 32                | 18                | 26                | 42 | 14.4 | 8   | 25 | 50 | 8.2 | 1.47 |
|        | 100R-32-11-WN08    | 11              | 100               | 67              | 32                | 18                | 26                | 42 | 14.4 | 8   | 25 | 50 | 8.2 | 1.45 |
|        | 125R-40-11-WN08    | 11              | 125               | 90              | 40                | 22                | 32                | 52 | 16.4 | 9   | 29 | 63 | 8.2 | 2.94 |
|        | 125R-40-14-WN08    | 14              | 125               | 90              | 40                | 22                | 32                | 52 | 16.4 | 9   | 29 | 63 | 8.2 | 2.91 |
| RM6PC  | 080R-25.4-7-WN08   | 7               | 80                | 57              | 25.4              | 14                | 20                | 35 | 9.5  | 6   | 25 | 50 | 8.2 | 0.91 |
|        | 080R-25.4-9-WN08   | 9               | 80                | 57              | 25.4              | 14                | 20                | 35 | 9.5  | 6   | 25 | 50 | 8.2 | 0.91 |
|        | 100R-31.75-8-WN08  | 8               | 100               | 67              | 31.75             | 18                | 26                | 42 | 12.7 | 8   | 32 | 63 | 8.2 | 1.69 |
|        | 100R-31.75-11-WN08 | 11              | 100               | 67              | 31.75             | 18                | 26                | 42 | 12.7 | 8   | 32 | 63 | 8.2 | 1.73 |
|        | 125R-38.1-11-WN08  | 11              | 125               | 90              | 38.1              | 22                | 32                | 52 | 15.9 | 10  | 35 | 63 | 8.2 | 1.98 |
|        | 125R-38.1-14-WN08  | 14              | 125               | 90              | 38.1              | 22                | 32                | 52 | 15.9 | 10  | 35 | 63 | 8.2 | 2.90 |

## Insertos disponibles



| Codigo             | Recubierta    |      |        |        |        |        |        |        |        |        | Sin Rec. | pag. | Codigo | Recubierta |        |        |        |                    |               |     |        |      |        | Sin Rec. | pag. |        |        |        |        |        |        |        |        |        |        |        |
|--------------------|---------------|------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------|--------|------------|--------|--------|--------|--------------------|---------------|-----|--------|------|--------|----------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                    | CN2000        | CN30 | NCM325 | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 |          |      |        | PC6510     | PC9530 | PC9540 | PC5300 | PC5400             | ST30A         | H01 | CN2000 | CN30 | NCM325 |          |      | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 |
| WNGX 080604PNFR-MA | 080604PNFR-MA |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        | E28    | WNGX 080616PNER-ML | 080616PNER-ML |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        | E28    |
|                    | 080608PNFR-MA |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |                    | 080620PNER-ML |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |
|                    | 080612PNFR-MA |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |                    | 080604PNSR-MM |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |
|                    | 080616PNFR-MA |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |                    | 080608PNSR-MM |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |
|                    | 080620PNFR-MA |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |                    | 080612PNSR-MM |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |
|                    | 080604PNER-ML |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |                    | 080616PNSR-MM |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |
|                    | 080608PNER-ML |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |                    | 080620PNSR-MM |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |
|                    | 080612PNER-ML |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |                    |               |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |

## Adaptadores disponibles

| Codigo | Adaptadores NC     | Codigo | Adaptadores NC  |  |
|--------|--------------------|--------|-----------------|--|
| RM6PC  | 080R-25.4-7-WN08   | RM6PCM | 063R-22-5-WN08  |  |
|        | 080R-25.4-9-WN08   |        | 063R-22-6-WN08  |  |
|        | 100R-31.75-8-WN08  |        | 080R-27-7-WN08  |  |
|        | 100R-31.75-11-WN08 |        | 080R-27-9-WN08  |  |
|        | 125R-38.1-11-WN08  |        | 100R-32-8-WN08  |  |
|        | 125R-38.1-14-WN08  |        | 100R-32-11-WN08 |  |
| RM6PCM | 050R-22-4-WN08     | RM6PCM | 125R-40-11-WN08 |  |
|        | 050R-22-5-WN08     |        | 125R-40-14-WN08 |  |
|        |                    |        |                 |  |
|        |                    |        |                 |  |

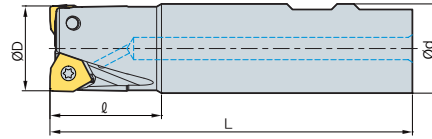
## Partes

| Especificación                     | Tornillo | Llave    |
|------------------------------------|----------|----------|
| $\varnothing 50 - \varnothing 125$ | FTNA0512 | TW20-100 |

Insertos disponibles E28    Detalles del cortador E400~E402



## RM6PS-WN04 new



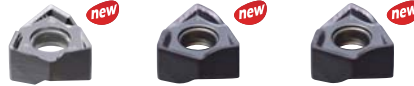
AA  
90°  
• AR: -6°  
• RR: -20°~ -14°

(mm)

| Codigo                   | ØD | Ød | ℓ  | L   | ap  | kg   |
|--------------------------|----|----|----|-----|-----|------|
| RM6PS 020R-2W20-110-WN04 | 20 | 20 | 35 | 110 | 4.3 | 0.22 |
| 020R-3W20-110-WN04       | 3  | 20 | 35 | 110 | 4.3 | 0.22 |
| 025R-3W25-110-WN04       | 3  | 25 | 35 | 110 | 4.3 | 0.36 |
| 025R-4W25-110-WN04       | 4  | 25 | 35 | 110 | 4.3 | 0.35 |
| 032R-5W32-110-WN04       | 5  | 32 | 35 | 110 | 4.3 | 0.60 |
| 025R-6W32-110-WN04       | 6  | 32 | 35 | 110 | 4.3 | 0.60 |

### Insertos disponibles

WNGX-MA WNGX-ML WNGX-MM



| Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| WNGX 040304PNFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
| 040308PNFR-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
| 040312PNFR-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
| 040316PNFR-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
| 040304PNER-ML      |        |      |            |        |        |        |        | ●      |        | ●      |        |        |        | ●        | ●      |       |      |     |     |
| 040308PNER-ML      |        |      |            |        |        |        |        | ●      |        |        |        |        |        | ●        | ●      |       |      |     |     |
| 040312PNER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     |
| 040316PNER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     |
| 040304PNSR-MM      |        |      |            |        |        |        |        | ●      |        | ●      |        |        |        | ●        | ●      |       |      |     |     |
| 040308PNSR-MM      |        |      |            |        |        |        |        | ●      |        |        |        |        |        | ●        | ●      |       |      |     |     |
| 040312PNSR-MM      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     |
| 040316PNSR-MM      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     |

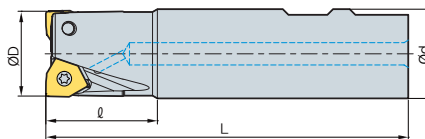
### Partes

| Especificación | Tornillo  | Llave |
|----------------|-----------|-------|
| Ø20~Ø32        | ETNA02506 | TW07S |

Insertos disponibles E28



# RM6PS-WN08 new



| Codigo |                    | ØD | Ød | ℓ  | L  | ap  |      |
|--------|--------------------|----|----|----|----|-----|------|
| RM6PS  | 032R-2W32-120-WN08 | 2  | 32 | 32 | 40 | 120 | 0.65 |
|        | 040R-3W32-120-WN08 | 3  | 40 | 32 | 40 | 120 | 0.69 |
|        | 040R-4W32-120-WN08 | 4  | 40 | 32 | 40 | 120 | 0.69 |
|        | 050R-4W32-120-WN08 | 4  | 50 | 32 | 40 | 120 | 0.76 |
|        | 050R-5W32-120-WN08 | 5  | 50 | 32 | 40 | 120 | 0.76 |

## Insertos disponibles



| Codigo | Cermet        |      | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| WNGX   | 080604PNFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
|        | 080608PNFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
|        | 080612PNFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
|        | 080616PNFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
|        | 080620PNFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | ●   |
|        | 080604PNER-ML |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |       |      |     |     |
|        | 080608PNER-ML |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 080612PNER-ML |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     |
|        | 080616PNER-ML |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     |
|        | 080620PNER-ML |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     |
|        | 080604PNSR-MM |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |       |      |     |     |
|        | 080608PNSR-MM |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |
|        | 080612PNSR-MM |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     |
|        | 080616PNSR-MM |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     |
|        | 080620PNSR-MM |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     |

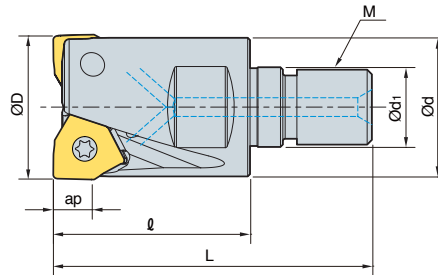
## Partes

| Especificación |          |          |
|----------------|----------|----------|
| Ø32~Ø50        | FTNA0512 | TW20-100 |

Insertos disponibles E28



RM6PM



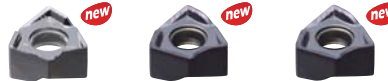
AA **90°**  
 • AR: -6°  
 • RR: -9°~ -6°

(mm)

| Codigo                | ∩ | ØD | Ød | Ød <sub>1</sub> | l  | L  | M  | ap  | kg   |
|-----------------------|---|----|----|-----------------|----|----|----|-----|------|
| RM6PM 020R-2-M10-WN04 | 2 | 20 | 18 | 10.5            | 30 | 50 | 10 | 4.3 | 0.06 |
| 020R-3-M10-WN04       | 3 | 20 | 18 | 10.5            | 30 | 50 | 10 | 4.3 | 0.06 |
| 025R-4-M12-WN04       | 4 | 25 | 23 | 12.5            | 30 | 53 | 12 | 4.3 | 0.1  |
| 025R-5-M12-WN04       | 5 | 25 | 23 | 12.5            | 30 | 53 | 12 | 4.3 | 0.09 |
| 032R-5-M16-WN04       | 5 | 32 | 29 | 17              | 40 | 66 | 16 | 4.3 | 0.25 |
| 032R-6-M16-WN04       | 6 | 32 | 29 | 17              | 40 | 66 | 16 | 4.3 | 0.24 |
| 032R-2-M16-WN08       | 2 | 32 | 29 | 17              | 43 | 69 | 16 | 8.2 | 0.22 |
| 040R-3-M16-WN08       | 3 | 40 | 29 | 17              | 43 | 69 | 16 | 8.2 | 0.31 |
| 040R-4-M16-WN08       | 4 | 40 | 29 | 17              | 43 | 69 | 16 | 8.2 | 0.30 |

Insertos disponibles

WNGX-MA     WNGX-ML     WNGX-MM



| Codigo             | Recubierto |      |        |        |        |        |        |        |        |        |        | Sin Rec. | pag. | Codigo | Recubierto |        |        |        |       |     |        |      |        |        |        | Sin Rec. | pag. |        |        |        |        |        |        |        |        |
|--------------------|------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------|--------|------------|--------|--------|--------|-------|-----|--------|------|--------|--------|--------|----------|------|--------|--------|--------|--------|--------|--------|--------|--------|
|                    | CN2000     | CN30 | NCM325 | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 |          |      |        | PC9530     | PC9540 | PC5300 | PC5400 | ST30A | H01 | CN2000 | CN30 | NCM325 | NC5330 | NCM535 |          |      | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 |
| WNGX 040304PNFR-MA |            |      |        |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 040308PNFR-MA      |            |      |        |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 040312PNFR-MA      |            |      |        |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 040316PNFR-MA      |            |      |        |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 040304PNER-ML      |            |      |        |        |        |        |        |        |        | •      |        | •        |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 040308PNER-ML      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 040312PNER-ML      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 040316PNER-ML      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 040304PNSR-MM      |            |      |        |        |        |        |        |        |        | •      |        | •        |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 040308PNSR-MM      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 040312PNSR-MM      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 040316PNSR-MM      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| WNGX 080604PNFR-MA |            |      |        |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080608PNFR-MA      |            |      |        |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080612PNFR-MA      |            |      |        |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080616PNFR-MA      |            |      |        |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080620PNFR-MA      |            |      |        |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080604PNER-ML      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080608PNER-ML      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080612PNER-ML      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080616PNER-ML      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080620PNER-ML      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080604PNSR-MM      |            |      |        |        |        |        |        |        |        | •      |        | •        |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080608PNSR-MM      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080612PNSR-MM      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080616PNSR-MM      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |
| 080620PNSR-MM      |            |      |        |        |        |        |        |        |        | •      |        |          |      |        | •          | •      |        |        |       |     |        |      |        |        |        |          |      |        |        |        |        |        |        |        |        |

Adaptador modular disponible

| Codigo                | Adaptador modular disponible | Codigo                | Adaptador modular disponible |
|-----------------------|------------------------------|-----------------------|------------------------------|
| RM6PM 020R-2-M10-WN04 | MAT-M10                      | RM6PM 032R-6-M16-WN04 | MAT-M16                      |
| 020R-3-M10-WN04       | MAT-M10                      | 032R-2-M16-WN08       | MAT-M16                      |
| 025R-4-M12-WN04       | MAT-M12                      | 040R-3-M16-WN08       | MAT-M16                      |
| 025R-5-M12-WN04       | MAT-M12                      | 040R-4-M16-WN08       | MAT-M16                      |
| 032R-5-M16-WN04       | MAT-M16                      |                       |                              |

Designación: RM6PM032R-5-M16-WN04  
 Tamaño de medida de roscado de cabeza modular (M16)

II  
 Especificación del adaptador:  
 MAT-M16-035-S32S  
 Medida de roscado del adaptador (M16)

Partes

| Especificación |           | Tornillo | Llave |
|----------------|-----------|----------|-------|
| WNGX04 Ø20-Ø32 | ETNA02506 | -        |       |
| WNGX08 Ø32-Ø40 | FTNA0512  | TW20-100 |       |

# RM8AC(M)4000

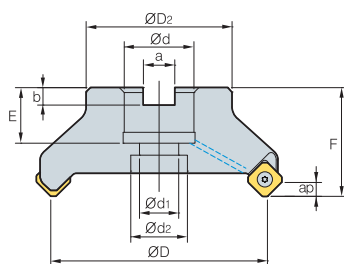


Fig. 1

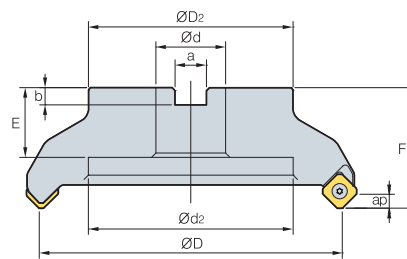


Fig. 2



AA  
45°

- AR: -6°
- RR: -9°~-6°

(mm)

| Codigo                | ØD | ØD2 | Ød  | Ød1         | Ød2 | a   | b           | E      | F         | ap      | kg  | Fig.        |   |
|-----------------------|----|-----|-----|-------------|-----|-----|-------------|--------|-----------|---------|-----|-------------|---|
| <b>RM8ACM</b>         |    |     |     |             |     |     |             |        |           |         |     |             |   |
| 4050HR-M              | 4  | 50  | 49  | 22          | 11  | 18  | 10.4        | 6.3    | 20        | 40      | 6.0 | 0.5         | 1 |
| 4050HR-H              | 6  | 50  | 49  | 22          | 11  | 18  | 10.4        | 6.3    | 20        | 40      | 6.0 | 0.5         | 1 |
| 4063HR-M              | 6  | 63  | 49  | 22          | 11  | 18  | 10.4        | 6.3    | 20        | 40      | 6.0 | 0.7         | 1 |
| 4063HR-H              | 8  | 63  | 49  | 22          | 11  | 18  | 10.4        | 6.3    | 20        | 40      | 6.0 | 0.7         | 1 |
| <b>RM8AC (RM8ACM)</b> |    |     |     |             |     |     |             |        |           |         |     |             |   |
| 4080HR                | 5  | 80  | 57  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23)   | 50      | 6.0 | 1.2         | 1 |
| 4080HR-M              | 7  | 80  | 57  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23)   | 50      | 6.0 | 1.2         | 1 |
| 4080HR-H              | 10 | 80  | 57  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23)   | 50      | 6.0 | 1.3         | 1 |
| 4100HR                | 6  | 100 | 67  | 31.75 (32)  | 18  | 26  | 12.7 (14.4) | 8      | 33 (25.5) | 63 (50) | 6.0 | 1.7         | 1 |
| 4100HR-M              | 8  | 100 | 67  | 31.75 (32)  | 18  | 26  | 12.7 (14.4) | 8      | 33 (25.5) | 63 (50) | 6.0 | 1.7         | 1 |
| 4100HR-H              | 12 | 100 | 67  | 31.75 (32)  | 18  | 26  | 12.7 (14.4) | 8      | 33 (25.5) | 63 (50) | 6.0 | 1.7         | 1 |
| 4125HR                | 8  | 125 | 87  | 38.1 (40)   | 22  | 32  | 15.9 (16.4) | 10 (9) | 36 (30)   | 63      | 6.0 | 3.6         | 1 |
| 4125HR-M              | 10 | 125 | 87  | 38.1 (40)   | 22  | 32  | 15.9 (16.4) | 10 (9) | 36 (30)   | 63      | 6.0 | 3.6         | 1 |
| 4125HR-H              | 16 | 125 | 87  | 38.1 (40)   | 22  | 32  | 15.9 (16.4) | 10 (9) | 36 (30)   | 63      | 6.0 | 3.7         | 1 |
| 4160R                 | 10 | 160 | 107 | 50.8 (40)   | -   | 107 | 19 (16.4)   | 11 (9) | 38 (32)   | 63      | 6.0 | 4.8         | 2 |
| 4160R-M               | 12 | 160 | 107 | 50.8 (40)   | -   | 107 | 19 (16.4)   | 11 (9) | 38 (32)   | 63      | 6.0 | 5.3         | 2 |
| 4160R-H               | 20 | 160 | 107 | 50.8 (40)   | -   | 107 | 19 (16.4)   | 11 (9) | 38 (32)   | 63      | 6.0 | 5.4         | 2 |
| 4200R-M               | 14 | 200 | 130 | 47.625 (60) | -   | 135 | 25.4 (25.7) | 14     | 38 (32)   | 63      | 6.0 | 7.1         | 2 |
| 4200R-H               | 24 | 200 | 130 | 47.625 (60) | -   | 135 | 25.4 (25.7) | 14     | 38 (32)   | 63      | 6.0 | 7.1         | 2 |
| 4250R-M               | 16 | 250 | 180 | 47.625 (60) | -   | 180 | 25.4 (25.7) | 14     | 38 (32)   | 63      | 6.0 | 11.9        | 2 |
| 4250R-H               | 30 | 250 | 180 | 47.625 (60) | -   | 180 | 25.4 (25.7) | 14     | 38 (32)   | 63      | 6.0 | 12.0        | 2 |
| 4315R                 | 18 | 315 | 240 | 47.625 (60) | -   | 238 | 25.4 (25.7) | 14     | 38        | 63      | 6.0 | 18.8 (18.6) | 2 |
| 4315R-M               | 20 | 315 | 240 | 47.625 (60) | -   | 238 | 25.4 (25.7) | 14     | 38        | 63      | 6.0 | 18.8 (18.6) | 2 |
| 4400R-M               | 28 | 400 | 260 | 47.625 (60) | -   | 238 | 25.4 (25.7) | 14     | 38        | 80      | 6.0 | 37.7 (37.4) | 2 |

( ) Tamaño métrico

## Insertos disponibles

SNM(E)X-MF    SNEX-ML    SNM(E)X-MM    SNEX-MA    SNEX-W



| Codigo          | Cermet |      | Recubierta |        |        |        |        |        |        | Sin Rec. | pag. |        |        |        |        |        |
|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|----------|------|--------|--------|--------|--------|--------|
|                 | CN2000 | CN30 | NCM925     | NC5330 | NCM635 | NCM645 | PC2505 | PC2010 | PC3600 |          |      | PC6510 | PC9530 | PC9540 | PC5300 | PC5400 |
| SNEX 1206ANN-MF |        |      |            |        |        |        |        |        |        |          |      |        |        |        |        |        |
| 1206ANN-ML      |        |      |            |        |        |        |        |        |        |          |      |        |        |        |        |        |
| 1206ANN-MM      |        |      |            |        |        |        |        |        |        |          |      |        |        |        |        | E22    |
| 1206ANN-MA      |        |      |            |        |        |        |        |        |        |          |      |        |        |        |        | E23    |
| 1206ANN-W       |        |      |            |        |        |        |        |        |        |          |      |        |        |        |        | E24    |
| SNMX 1206ANN-MF |        |      |            |        |        |        |        |        |        |          |      |        |        |        |        |        |
| 1206ANN-MM      |        |      |            |        |        |        |        |        |        |          |      |        |        |        |        |        |

## Adaptadores disponibles

| Codigo          | Adaptadores disponibles |               |
|-----------------|-------------------------|---------------|
|                 | RM8AC                   | RM8ACM        |
| RM8ACM 4050HR-□ | -                       | BT□□-FMC22-□□ |
| 4063HR-□        | -                       | BT□□-FMC27-□□ |
| RM8AC 4080HR-□  | BT□□-FMA25.4-□□         | BT□□-FMC32-□□ |
| 4100HR-□        | BT□□-FMA31.75-□□        | BT□□-FMC32-□□ |
| 4125HR-□        | BT□□-FMA38.1-□□         | BT□□-FMB40-□□ |
| 4160R-□         | BT□□-FMA50.8-□□         | BT□□-FMC40-□□ |
| 4200R-□         | -                       | -             |
| 4250R-□         | BT□□-FMA47.625-□□       | BT□□-FMB60-□□ |
| 4315R-□         | -                       | -             |
| 4400R-□         | -                       | -             |

## Partes

| Especificación | Tornillo | Llave |
|----------------|----------|-------|
| Ø50-Ø400       | FTKA0410 | TW15S |

Insertos disponibles E22~E24

Detalles del cortador E400~E402



# RMH8AC(M)4000

Tipo placa

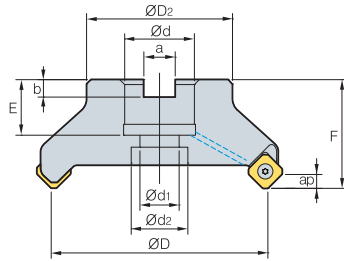


Fig. 1

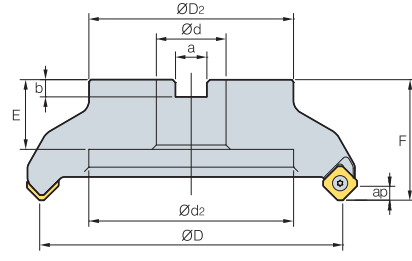


Fig. 2



AA  
45°

• AR: -6°  
• RR: -9°~ -6°

(mm)

| Codigo                  | ØD | ØD2 | Ød  | Ød1         | Ød2 | a   | b           | E         | F       | ap  | Fig. |             |   |
|-------------------------|----|-----|-----|-------------|-----|-----|-------------|-----------|---------|-----|------|-------------|---|
| <b>RMH8AC (RMH8ACM)</b> |    |     |     |             |     |     |             |           |         |     |      |             |   |
| 4080HR-M                | 7  | 80  | 57  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 25 (23)   | 50      | 6.0 | 6.0  | 1.2         | 1 |
| 4100HR-M                | 8  | 100 | 67  | 31.75 (32)  | 18  | 26  | 12.7 (14.4) | 33 (25.5) | 63 (50) | 6.0 | 6.0  | 1.7         | 1 |
| 4125HR-M                | 10 | 125 | 87  | 38.1 (40)   | 22  | 32  | 15.9 (16.4) | 36 (30)   | 63      | 6.0 | 6.0  | 3.6         | 1 |
| 4160R-M                 | 12 | 160 | 107 | 50.8 (40)   | -   | 107 | 19 (16.4)   | 38 (32)   | 63      | 6.0 | 6.0  | 5.3         | 2 |
| 4200R-M                 | 14 | 200 | 130 | 47.625 (60) | -   | 135 | 25.4 (25.7) | 38 (32)   | 63      | 6.0 | 6.0  | 7.1         | 2 |
| 4250R-M                 | 16 | 250 | 180 | 47.625 (60) | -   | 180 | 25.4 (25.7) | 38 (32)   | 63      | 6.0 | 6.0  | 11.9        | 2 |
| 4315R-M                 | 20 | 315 | 240 | 47.625 (60) | -   | 238 | 25.4 (25.7) | 38        | 63      | 6.0 | 6.0  | 18.8 (18.6) | 2 |
| 4400R-M                 | 26 | 400 | 260 | 47.625 (60) | -   | 238 | 25.4 (25.7) | 38        | 80      | 6.0 | 6.0  | 37.7 (37.4) | 2 |

( ) Tamaño métrico

## Insertos disponibles

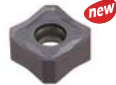
SNM(E)X-MF

SNEX-ML

SNM(E)X-MM

SNEX-MA

SNEX-W



| Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |                   |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-------------------|
|        | CN2000     | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01               |
| SNEX   | 1206ANN-MF |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     | E22<br>E23<br>E24 |
|        | 1206ANN-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |                   |
|        | 1206ANN-MM |      |            |        |        |        |        |        | ●      | ●      | ●      | ●      |          | ●      | ●      |      |       |     |                   |
|        | 1206ANN-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       | ●   |                   |
|        | 1206ANN-W  |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |                   |
| SNMX   | 1206ANN-MF |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        | ●        | ●      | ●      |      |       |     |                   |
|        | 1206ANN-MM |      |            | ●      | ●      |        |        |        | ●      |        | ●      | ●      |          | ●      | ●      |      |       |     |                   |

## Adaptadores disponibles

| Codigo           | Adaptadores disponibles |                    |                |
|------------------|-------------------------|--------------------|----------------|
|                  | RMH8AC                  | RMH8ACM            |                |
| RMH8AC (RMH8ACM) | 4080HR-□                | BT□□ -FMA25.4-□□   | BT□□ -FMC27-□□ |
|                  | 4100HR-□                | BT□□ -FMA31.75-□□  | BT□□ -FMC32-□□ |
|                  | 4125HR-□                | BT□□ -FMA38.1-□□   | BT□□ -FMB40-□□ |
|                  | 4160R-□                 | BT□□ -FMA50.8-□□   | BT□□ -FMC40-□□ |
|                  | 4200R-□                 | BT□□ -FMA47.625-□□ | BT□□ -FMB60-□□ |
|                  | 4250R-□                 |                    |                |
|                  | 4315R-□                 |                    |                |
|                  | 4400R-□                 |                    |                |

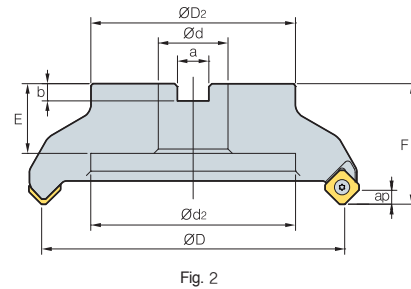
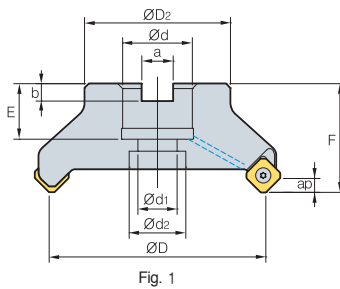
## Partes

| Especificación | Tornillo  | Placa   | Llave Placa | Llave |
|----------------|-----------|---------|-------------|-------|
| Ø80~Ø400       | FTKA0412B | SS42RM8 | SHXN0609F   | TW15S |

Insertos disponibles E22~E24 Detalles del cortador E400~E402



# RM8AC(M)5000



AA  
45°

• AR: -6°  
• RR: -9°~-6°

(mm)

| Codigo            | ØD       | ØD2 | Ød  | Ød1 | Ød2         | a  | b   | E           | F      | ap      | Fig.    |     |             |   |
|-------------------|----------|-----|-----|-----|-------------|----|-----|-------------|--------|---------|---------|-----|-------------|---|
| RM8AC<br>(RM8ACM) | 5080HR-M | 6   | 80  | 57  | 25.4 (27)   | 14 | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23) | 50      | 7.5 | 1.2         | 1 |
|                   | 5100HR-M | 7   | 100 | 67  | 31.75 (32)  | 18 | 26  | 12.7 (14.4) | 8.0    | 33 (25) | 63 (50) | 7.5 | 2.5 (1.8)   | 1 |
|                   | 5125HR-M | 8   | 125 | 87  | 38.1 (40)   | 22 | 32  | 15.9 (16.4) | 10 (9) | 35 (30) | 63      | 7.5 | 3.6         | 1 |
|                   | 5160R-M  | 10  | 160 | 107 | 50.8 (40)   | -  | 107 | 19 (16.4)   | 11 (9) | 38 (32) | 63      | 7.5 | 5 (4.56)    | 2 |
|                   | 5200R-M  | 12  | 200 | 130 | 47.625 (60) | -  | 135 | 25.4 (25.7) | 14.0   | 38      | 63      | 7.5 | 7.1 (6.8)   | 2 |
|                   | 5250R-M  | 15  | 250 | 180 | 47.625 (60) | -  | 180 | 25.4 (25.7) | 14.0   | 38      | 63      | 7.5 | 11.9 (10.6) | 2 |
|                   | 5315R-M  | 20  | 315 | 240 | 47.625 (60) | -  | 238 | 25.4 (25.7) | 14.0   | 38      | 63      | 7.5 | 19.1 (18.9) | 2 |
|                   | 5400R-M  | 28  | 400 | 260 | 47.625 (60) | -  | 238 | 25.4 (25.7) | 14.0   | 38      | 80      | 7.5 | 37.7 (37.5) | 2 |

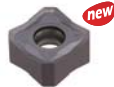
( )Tamaño métrico

## Insertos disponibles

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM



| Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|-----|
|        | CN2000     | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |     |
| SNEX   | 1507ANN-MF |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     | E22 |     |
|        | 1507ANN-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |     | E23 |
|        | 1507ANN-MM |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     |     |     |
| SNMX   | 1507ANN-MF |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     | E24 |     |
|        | 1507ANN-MM |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |     |     |

## Adaptadores disponibles

| Codigo   | Adaptadores disponibles |                   |               |
|----------|-------------------------|-------------------|---------------|
|          | RM8AC                   | RM8ACM            |               |
| RM8AC    | 5080HR-□                | BT□□-FMA25.4-□□   | BT□□-FMC27-□□ |
| (RM8ACM) | 5100HR-□                | BT□□-FMA31.75-□□  | BT□□-FMC32-□□ |
|          | 5125HR-□                | BT□□-FMA38.1-□□   | BT□□-FMB40-□□ |
|          | 5160R-□                 | BT□□-FMA50.8-□□   | BT□□-FMC40-□□ |
|          | 5200R-□                 |                   |               |
|          | 5250R-□                 |                   |               |
|          | 5315R-□                 | BT□□-FMA47.625-□□ | BT□□-FMB60-□□ |
|          | 5400R-□                 |                   |               |

## Partes

| Especificación | Tornillo | Llave    |
|----------------|----------|----------|
| Ø80-Ø400       | FTGA0513 | TW20-100 |

Insertos disponibles E22~E24

Detalles del cortador E400~E402



# RMH8AC(M)5000

Tipo placa

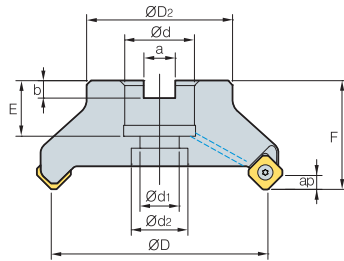


Fig. 1

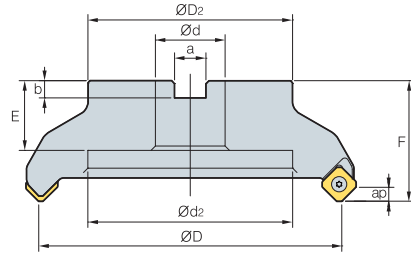


Fig. 2



AA  
45°

• AR: -6°  
• RR: -9°~ -6°

(mm)

| Codigo              | ØD       | ØD2 | Ød  | Ød1 | Ød2         | a  | b   | E           | F      | ap      | kg      | Fig. |             |   |
|---------------------|----------|-----|-----|-----|-------------|----|-----|-------------|--------|---------|---------|------|-------------|---|
| RMH8AC<br>(RMH8ACM) | 5080HR-M | 6   | 80  | 57  | 25.4 (27)   | 14 | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23) | 50      | 7.5  | 1.2         | 1 |
|                     | 5100HR-M | 7   | 100 | 67  | 31.75 (32)  | 18 | 26  | 12.7 (14.4) | 8.0    | 33 (25) | 63 (50) | 7.5  | 2.5 (1.8)   | 1 |
|                     | 5125HR-M | 8   | 125 | 87  | 38.1 (40)   | 22 | 32  | 15.9 (16.4) | 10 (9) | 36 (30) | 63      | 7.5  | 3.6         | 1 |
|                     | 5160R-M  | 10  | 160 | 107 | 50.8 (40)   | -  | 107 | 19 (16.4)   | 11 (9) | 38 (32) | 63      | 7.5  | 5 (4.56)    | 2 |
|                     | 5200R-M  | 12  | 200 | 130 | 47.625 (60) | -  | 135 | 25.4 (25.7) | 14.0   | 38 (32) | 63      | 7.5  | 7.1 (6.8)   | 2 |
|                     | 5250R-M  | 15  | 250 | 180 | 47.625 (60) | -  | 180 | 25.4 (25.7) | 14.0   | 38 (32) | 63      | 7.5  | 11.9 (10.6) | 2 |
|                     | 5315R-M  | 20  | 315 | 240 | 47.625 (60) | -  | 238 | 25.4 (25.7) | 14.0   | 38      | 63      | 7.5  | 19.1 (18.9) | 2 |
|                     | 5400R-M  | 22  | 400 | 260 | 47.625 (60) | -  | 238 | 25.4 (25.7) | 14.0   | 38      | 80      | 7.5  | 37.7 (37.5) | 2 |

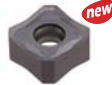
( ) Tamaño métrico

## Insertos disponibles

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM



| Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|-----|
|        | CN2000     | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |     |
| SNEX   | 1507ANN-MF |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     | E22 |     |
|        | 1507ANN-ML |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     | E23 |
|        | 1507ANN-MM |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |     |     |
| SNMX   | 1507ANN-MF |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     | E24 |     |
|        | 1507ANN-MM |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |     |

## Adaptadores disponibles

| Codigo              | Adaptadores disponibles |                   |               |
|---------------------|-------------------------|-------------------|---------------|
|                     | RMH8AC                  | RMH8ACM           |               |
| RMH8AC<br>(RMH8ACM) | 5080HR-□                | BT□□-FMA25.4-□□   | BT□□-FMC27-□□ |
|                     | 5100HR-□                | BT□□-FMA31.75-□□  | BT□□-FMC32-□□ |
|                     | 5125HR-□                | BT□□-FMA38.1-□□   | BT□□-FMB40-□□ |
|                     | 5160R-□                 | BT□□-FMA50.8-□□   | BT□□-FMC40-□□ |
|                     | 5200R-□                 |                   |               |
|                     | 5250R-□                 |                   |               |
|                     | 5315R-□                 | BT□□-FMA47.625-□□ | BT□□-FMB60-□□ |
|                     | 5400R-□                 |                   |               |

## Partes

| Especificación | Tornillo | Placa   | Llave Placa | Llave    |
|----------------|----------|---------|-------------|----------|
| Ø80~Ø400       | FTGA0513 | SS53RM8 | SHXN0712F   | TW20-100 |

Insertos disponibles E22~E24    Detalles del cortador E400~E402





# RM8EC(M)4000

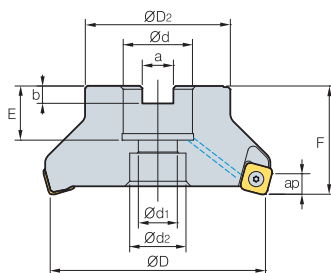


Fig. 1

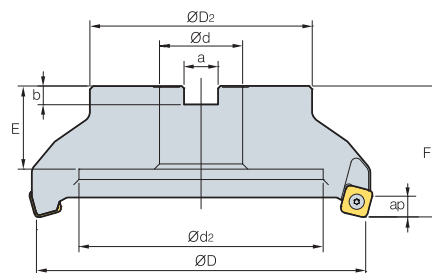


Fig. 2



AA  
75°

• AR: -6°  
• RR: -8°~ -6°

(mm)

| Codigo                | ØD | ØD2 | Ød  | Ød1         | Ød2 | a   | b           | E      | F       | ap      | kg  | Fig.        |   |
|-----------------------|----|-----|-----|-------------|-----|-----|-------------|--------|---------|---------|-----|-------------|---|
| <b>RM8ECM</b>         |    |     |     |             |     |     |             |        |         |         |     |             |   |
| 4050HR-M              | 4  | 50  | 49  | 22          | 11  | 18  | 10.4        | 6.3    | 20      | 40      | 9.0 | 0.4         | 1 |
| 4063HR-M              | 6  | 63  | 49  | 22          | 11  | 18  | 10.4        | 6.3    | 20      | 40      | 9.0 | 0.6         | 1 |
| <b>RM8EC (RM8ECM)</b> |    |     |     |             |     |     |             |        |         |         |     |             |   |
| 4080HR                | 5  | 80  | 57  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23) | 50      | 9.0 | 1.2         | 1 |
| 4080HR-M              | 7  | 80  | 57  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23) | 50      | 9.0 | 1.1         | 1 |
| 4100HR                | 6  | 100 | 67  | 31.75 (32)  | 18  | 26  | 12.7 (14.4) | 8      | 33 (25) | 63 (50) | 9.0 | 1.6         | 1 |
| 4100HR-M              | 8  | 100 | 67  | 31.75 (32)  | 18  | 26  | 12.7 (14.4) | 8      | 33 (25) | 63 (50) | 9.0 | 2.5         | 1 |
| 4125HR                | 8  | 125 | 87  | 38.1 (40)   | 22  | 32  | 15.9 (16.4) | 10 (9) | 35 (29) | 63      | 9.0 | 2.9 (3.3)   | 1 |
| 4125HR-M              | 10 | 125 | 87  | 38.1 (40)   | 22  | 32  | 15.9 (16.4) | 10 (9) | 35 (29) | 63      | 9.0 | 3.0         | 1 |
| 4160R                 | 10 | 160 | 107 | 50.8 (40)   | -   | 107 | 19 (16.4)   | 11 (9) | 38 (32) | 63      | 9.0 | 4.4         | 2 |
| 4160R-M               | 12 | 160 | 107 | 50.8 (40)   | -   | 107 | 19 (16.4)   | 11 (9) | 38 (32) | 63      | 9.0 | 4.0         | 2 |
| 4200R-M               | 16 | 200 | 130 | 47.625 (60) | -   | 135 | 25.4 (25.7) | 14     | 38 (32) | 63      | 9.0 | 5.9         | 2 |
| 4250R-M               | 16 | 250 | 180 | 47.625 (60) | -   | 180 | 25.4 (25.7) | 14     | 38      | 63      | 9.0 | 10.9 (10.6) | 2 |
| 4315R-M               | 20 | 315 | 240 | 47.625 (60) | -   | 238 | 25.4 (25.7) | 14     | 38      | 63      | 9.0 | 18.1 (17.9) | 2 |
| 4400R-M               | 28 | 400 | 260 | 47.625 (60) | -   | 238 | 25.4 (25.7) | 14     | 38      | 80      | 9.0 | 31.8 (31.5) | 2 |

## Insertos disponibles

( ) Tamaño métrico

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM

SNEX-MA



| Codigo      | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|-------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|             | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC8510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| <b>SNEX</b> |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| 1206ENN-MF  |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| 1206ENN-ML  |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | E22 |
| 1206ENN-MM  |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | E23 |
| 1206ENN-MA  |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | E24 |
| <b>SNMX</b> |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| 1206ENN-MF  |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| 1206ENN-MM  |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |

## Adaptadores disponibles

| Codigo                | Adaptadores NC    |               |
|-----------------------|-------------------|---------------|
|                       | RM8EC             | RM8ECM        |
| <b>RM8ECM</b>         |                   |               |
| 4050HR-□              | -                 | BT□□-FMC22-□□ |
| 4063HR-□              |                   |               |
| <b>RM8EC (RM8ECM)</b> |                   |               |
| 4080HR-□              | BT□□-FMA25.4-□□   | BT□□-FMC27-□□ |
| 4100HR-□              | BT□□-FMA31.75-□□  | BT□□-FMC32-□□ |
| 4125HR-□              | BT□□-FMA38.1-□□   | BT□□-FMB40-□□ |
| 4160R-□               | BT□□-FMA50.8-□□   | BT□□-FMC40-□□ |
| 4200R-□               |                   |               |
| 4250R-□               |                   |               |
| 4315R-□               |                   |               |
| 4400R-□               | BT□□-FMA47.625-□□ | BT□□-FMB60-□□ |

## Partes

| Especificación | Tornillo    | Llave |
|----------------|-------------|-------|
| Ø50-Ø400       | PTKA0411-R3 | TW15S |

Insertos disponibles E22~E24

Detalles del cortador E400~E402

# RMH8EC(M)4000

Tipo placa

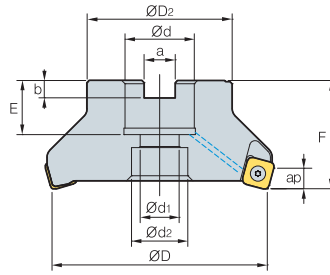


Fig. 1

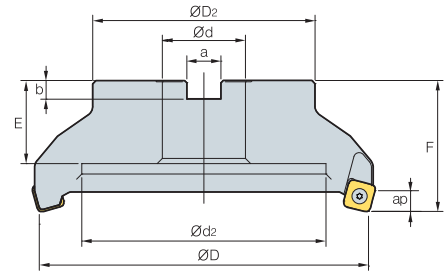


Fig. 2



AA  
75°

• AR: -6°  
• RR: -8°~-6°

(mm)

| Codigo              | ØD       | ØD2 | Ød  | Ød1 | Ød2         | a  | b   | E           | F      | ap        | $\frac{a}{kg}$ | Fig. |             |   |
|---------------------|----------|-----|-----|-----|-------------|----|-----|-------------|--------|-----------|----------------|------|-------------|---|
| RMH8EC<br>(RMH8ECM) | 4080HR-M | 7   | 80  | 57  | 25.4 (27)   | 14 | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23)   | 50             | 9.0  | 1.1         | 1 |
|                     | 4100HR-M | 8   | 100 | 67  | 31.75 (32)  | 18 | 26  | 12.7 (14.4) | 8      | 33 (25.5) | 63 (50)        | 9.0  | 2.5         | 1 |
|                     | 4125HR-M | 10  | 125 | 87  | 38.1 (40)   | 22 | 32  | 15.9 (16.4) | 10 (9) | 36 (30)   | 63             | 9.0  | 3.0         | 1 |
|                     | 4160R-M  | 12  | 160 | 107 | 50.8 (40)   | -  | 107 | 19 (16.4)   | 11 (9) | 38 (32)   | 63             | 9.0  | 4.0         | 2 |
|                     | 4200R-M  | 16  | 200 | 130 | 47.625 (60) | -  | 135 | 25.4 (25.7) | 14     | 38 (32)   | 63             | 9.0  | 5.9         | 2 |
|                     | 4250R-M  | 16  | 250 | 180 | 47.625 (60) | -  | 180 | 25.4 (25.7) | 14     | 38 (32)   | 63             | 9.0  | 10.9 (10.6) | 2 |
|                     | 4315R-M  | 20  | 315 | 240 | 47.625 (60) | -  | 238 | 25.4 (25.7) | 14     | 38        | 63             | 9.0  | 18.1 (17.9) | 2 |
|                     | 4400R-M  | 24  | 400 | 260 | 47.625 (60) | -  | 238 | 25.4 (25.7) | 14     | 38        | 80             | 9.0  | 31.8 (31.5) | 2 |

( ) Tamaño métrico

## Insertos disponibles



| Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |                   |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-------------------|
|        | CN2000     | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01               |
| SNEX   | 1206ENN-MF |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     | E22<br>E23<br>E24 |
|        | 1206ENN-ML |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |                   |
|        | 1206ENN-MM |      |            |        |        |        |        |        | ●      |        |        |        |        | ●        | ●      |       |      |     |                   |
|        | 1206ENN-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |                   |
| SNMX   | 1206ENN-MF |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        | ●      | ●        | ●      |       |      |     |                   |
|        | 1206ENN-MM |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        | ●      | ●        | ●      |       |      |     |                   |

## Adaptadores disponibles

| Codigo              | Adaptadores disponibles |                   |               |
|---------------------|-------------------------|-------------------|---------------|
|                     | RMH8EC                  | RMH8ECM           |               |
| RMH8EC<br>(RMH8ECM) | 4080HR-□                | BT□□-FMA25.4-□□   | BT□□-FMC27-□□ |
|                     | 4100HR-□                | BT□□-FMA31.75-□□  | BT□□-FMC32-□□ |
|                     | 4125HR-□                | BT□□-FMA38.1-□□   | BT□□-FMB40-□□ |
|                     | 4160R-□                 | BT□□-FMA50.8-□□   | BT□□-FMC40-□□ |
|                     | 4200R-□                 |                   |               |
|                     | 4250R-□                 |                   |               |
|                     | 4315R-□                 |                   |               |
|                     | 4400R-□                 | BT□□-FMA47.625-□□ | BT□□-FMB60-□□ |

## Partes

| Especificación |             |         |           |       |
|----------------|-------------|---------|-----------|-------|
| Ø80~Ø400       | PTKA0411-R3 | SS42RM8 | SHXN0609F | TW15S |

Insertos disponibles E22~E24    Detalles del cortador E400~E402



# RM8EC(M)5000

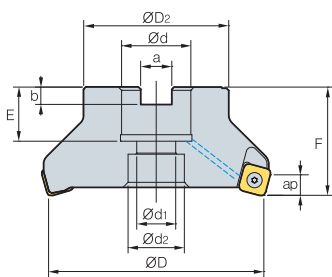


Fig. 1

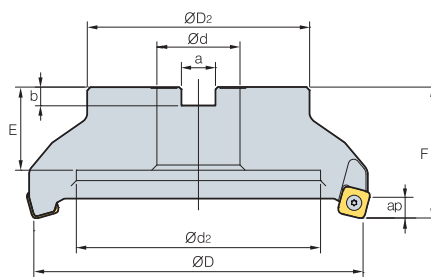


Fig. 2



AA  
75°

• AR: -6°  
• RR: -8°~ -6°

(mm)

| Codigo         | ØD       | ØD2 | Ød  | Ød1 | Ød2         | a  | b   | E           | F      | ap      | $\frac{kg}{m^3}$ | Fig. |             |   |
|----------------|----------|-----|-----|-----|-------------|----|-----|-------------|--------|---------|------------------|------|-------------|---|
| RM8EC (RM8ECM) | 5080HR-M | 6   | 80  | 57  | 25.4 (27)   | 14 | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23) | 50               | 11.0 | 1.1         | 1 |
|                | 5100HR-M | 7   | 100 | 67  | 31.75 (32)  | 18 | 26  | 12.7 (14.4) | 8.0    | 33 (25) | 63 (50)          | 11.0 | 2.1 (1.7)   | 1 |
|                | 5125HR-M | 8   | 125 | 87  | 38.1 (40)   | 22 | 32  | 15.9 (16.4) | 10 (9) | 35 (30) | 63               | 11.0 | 3.4 (3.3)   | 1 |
|                | 5160R-M  | 10  | 160 | 107 | 50.8 (40)   | -  | 107 | 19 (16.4)   | 11 (9) | 38 (32) | 63               | 11.0 | 4.4 (4.1)   | 2 |
|                | 5200R-M  | 12  | 200 | 130 | 47.625 (60) | -  | 135 | 25.4 (25.7) | 14.0   | 38      | 63               | 11.0 | 6.4 (6.1)   | 2 |
|                | 5250R-M  | 15  | 250 | 180 | 47.625 (60) | -  | 180 | 25.4 (25.7) | 14.0   | 38      | 63               | 11.0 | 11.0 (10.7) | 2 |
|                | 5315R-M  | 20  | 315 | 240 | 47.625 (60) | -  | 238 | 25.4 (25.7) | 14.0   | 38      | 63               | 11.0 | 18.0 (17.7) | 2 |
|                | 5400R-M  | 28  | 400 | 260 | 47.625 (60) | -  | 238 | 25.4 (25.7) | 14.0   | 38      | 80               | 11.0 | 35.7 (35.4) | 2 |

( ) Tamaño métrico

## Insertos disponibles

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM



| Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|-----|
|        | CN2000     | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |     |
| SNEX   | 1507ENN-MF |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     | E22 |     |
|        | 1507ENN-ML |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |     | E23 |
|        | 1507ENN-MM |      |            |        |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |     | E24 |
| SNMX   | 1507ENN-MF |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     | E24 |     |
|        | 1507ENN-MM |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |     |     |

## Adaptadores disponibles

| Codigo         | Adaptadores disponibles |                   |               |
|----------------|-------------------------|-------------------|---------------|
|                | RM8EC                   | RM8ECM            |               |
| RM8EC (RM8ECM) | 5080HR-□                | BT□□-FMA25.4-□□   | BT□□-FMC27-□□ |
|                | 5100HR-□                | BT□□-FMA31.75-□□  | BT□□-FMC32-□□ |
|                | 5125HR-□                | BT□□-FMA38.1-□□   | BT□□-FMB40-□□ |
|                | 5160R-□                 | BT□□-FMA50.8-□□   | BT□□-FMC40-□□ |
|                | 5200R-□                 |                   |               |
|                | 5250R-□                 |                   |               |
|                | 5315R-□                 |                   |               |
|                | 5400R-□                 | BT□□-FMA47.625-□□ | BT□□-FMB60-□□ |

## Partes

| Especificación | Tornillo | Llave    |
|----------------|----------|----------|
| Ø80-Ø400       | FTGA0513 | TW20-100 |

Insertos disponibles E22-E24

Detalles del cortador E400-E402

# RMH8EC(M)5000

Tipo placa

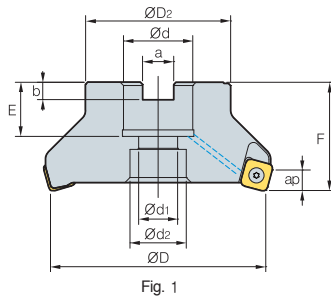


Fig. 1

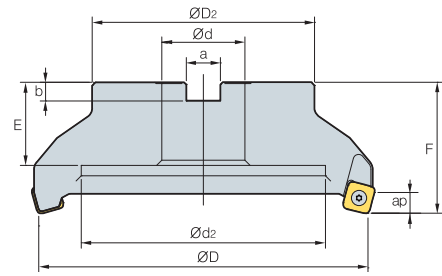


Fig. 2



AA  
75°

• AR: -6°  
• RR: -8°~-6°

(mm)

| Codigo           | ØD       | ØD2 | Ød  | Ød1 | Ød2         | a  | b   | E           | F      | ap        | kg      | Fig. |             |   |
|------------------|----------|-----|-----|-----|-------------|----|-----|-------------|--------|-----------|---------|------|-------------|---|
| RMH8EC (RMH8ECM) | 5080HR-M | 6   | 80  | 57  | 25.4 (27)   | 14 | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23)   | 50      | 11.0 | 1.1         | 1 |
|                  | 5100HR-M | 7   | 100 | 67  | 31.75 (32)  | 18 | 26  | 12.7 (14.4) | 8.0    | 33 (25.5) | 63 (50) | 11.0 | 2.1 (1.7)   | 1 |
|                  | 5125HR-M | 8   | 125 | 87  | 38.1 (40)   | 22 | 32  | 15.9 (16.4) | 10 (9) | 36 (30)   | 63      | 11.0 | 3.4 (3.3)   | 1 |
|                  | 5160HR-M | 10  | 160 | 107 | 50.8 (60)   | -  | 107 | 19 (16.4)   | 11 (9) | 38 (32)   | 63      | 11.0 | 4.4 (4.1)   | 2 |
|                  | 5200R-M  | 12  | 200 | 130 | 47.625 (60) | -  | 135 | 25.4 (25.7) | 14.0   | 38 (32)   | 63      | 11.0 | 6.4 (6.1)   | 2 |
|                  | 5250R-M  | 15  | 250 | 180 | 47.625 (60) | -  | 180 | 25.4 (25.7) | 14.0   | 38 (32)   | 63      | 11.0 | 110 (10.7)  | 2 |
|                  | 5315R-M  | 20  | 315 | 240 | 47.625 (60) | -  | 238 | 25.4 (25.7) | 14.0   | 38        | 63      | 11.0 | 18.0 (17.7) | 2 |
|                  | 5400R-H  | 22  | 400 | 260 | 47.625 (60) | -  | 238 | 25.4 (25.7) | 14.0   | 38        | 80      | 11.0 | 35.7 (35.4) | 2 |

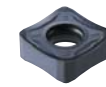
( ) Tamaño métrico

## Insertos disponibles

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM



| Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|-----|
|        | CN2000     | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |     |
| SNEX   | 1507ENN-MF |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     | E22 |     |
|        | 1507ENN-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |     | E23 |
|        | 1507ENN-MM |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     |     |     |
| SNMX   | 1507ENN-MF |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     | E24 |     |
|        | 1507ENN-MM |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |     |     |

## Adaptadores disponibles

| Codigo           | Adaptadores disponibles |                   |               |
|------------------|-------------------------|-------------------|---------------|
|                  | RMH8EC                  | RMH8ECM           |               |
| RMH8EC (RMH8ECM) | 5080HR-□                | BT□□-FMA25.4-□□   | BT□□-FMC27-□□ |
|                  | 5100HR-□                | BT□□-FMA31.75-□□  | BT□□-FMC32-□□ |
|                  | 5125HR-□                | BT□□-FMA38.1-□□   | BT□□-FMB40-□□ |
|                  | 5160R-□                 | BT□□-FMA50.8-□□   | BT□□-FMC40-□□ |
|                  | 5200R-□                 |                   |               |
|                  | 5250R-□                 |                   |               |
|                  | 5315R-□                 | BT□□-FMA47.625-□□ | BT□□-FMB60-□□ |
|                  | 5400R-□                 |                   |               |

## Partes

| Especificación | Tornillo | Placa   | Llave Placa | Llave    |
|----------------|----------|---------|-------------|----------|
| Ø80~Ø400       | FTGA0513 | SS53RM8 | SHXN0712F   | TW20-100 |

Insertos disponibles E22~E24    Detalles del cortador E400~E402



# RM8QC(M)4000

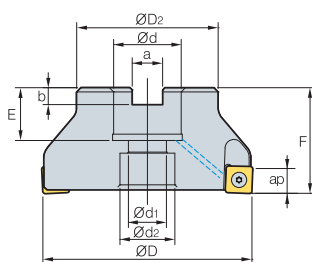


Fig. 1

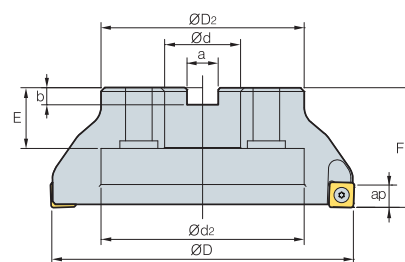


Fig. 2



AA  
88°

• AR: -6°  
• RR: -8°~ -6°

(mm)

| Codigo                | ØD | ØD2 | Ød  | Ød1         | Ød2 | a   | b           | E      | F         | ap      | kg   | Fig. |   |
|-----------------------|----|-----|-----|-------------|-----|-----|-------------|--------|-----------|---------|------|------|---|
| <b>RM8QCM</b>         |    |     |     |             |     |     |             |        |           |         |      |      |   |
| 4063HR-M              | 6  | 63  | 49  | 22          | 11  | 18  | 10.4        | 6.3    | 20        | 40      | 11.5 | 0.6  | 1 |
| 4063HR-H              | 8  | 63  | 49  | 22          | 11  | 18  | 10.4        | 6.3    | 20        | 40      | 11.5 | 0.6  | 1 |
| <b>RM8QC (RM8QCM)</b> |    |     |     |             |     |     |             |        |           |         |      |      |   |
| 4080HR-M              | 7  | 80  | 57  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23)   | 50      | 11.5 | 1.1  | 1 |
| 4080HR-H              | 10 | 80  | 57  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23)   | 50      | 11.5 | 1.0  | 1 |
| 4100HR-M              | 8  | 100 | 67  | 31.75 (32)  | 18  | 26  | 12.7 (14.4) | 8      | 33 (25.5) | 63 (50) | 11.5 | 1.7  | 1 |
| 4100HR-H              | 12 | 100 | 67  | 31.75 (32)  | 18  | 26  | 12.7 (14.4) | 8      | 33 (25.5) | 63 (50) | 11.5 | 1.6  | 1 |
| 4125HR-M              | 10 | 125 | 87  | 38.1 (40)   | 22  | 32  | 15.9 (16.4) | 10 (9) | 36 (30)   | 63      | 11.5 | 3.3  | 1 |
| 4125HR-H              | 14 | 125 | 87  | 38.1 (40)   | 22  | 32  | 15.9 (16.4) | 10 (9) | 36 (30)   | 63      | 11.5 | 3.3  | 1 |
| 4160R-M               | 12 | 160 | 107 | 50.8 (40)   | -   | 107 | 19 (16.4)   | 11 (9) | 38 (32)   | 63      | 11.5 | 3.9  | 2 |
| 4160R-H               | 18 | 160 | 107 | 50.8 (40)   | -   | 107 | 19 (16.4)   | 11 (9) | 38 (32)   | 63      | 11.5 | 3.9  | 2 |
| 4200R-M               | 14 | 200 | 130 | 47.625 (60) | -   | 135 | 25.4 (25.7) | 14     | 38 (32)   | 63      | 11.5 | 6.4  | 2 |
| 4200R-H               | 22 | 200 | 130 | 47.625 (60) | -   | 135 | 25.4 (25.7) | 14     | 38 (32)   | 63      | 11.5 | 6.4  | 2 |

## Insertos disponibles

( ) Tamaño métrico

SNM(E)X-MF

SNEX-ML

SNM(E)X-MM

SNEX-MA



| Codigo      | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |
|-------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|
|             | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 |
| <b>SNEX</b> |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |
| 1206QNN-MF  |        |      |            |        |        |        |        |        |        | ●      | ●      |        |          | ●      | ●      |      |       |     |
| 1206QNN-ML  |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |
| 1206QNN-MM  |        |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     |
| 1206QNN-MA  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       | ●   |
| 120612-MF   |        |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     |
| 120612-ML   |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |
| 120612-MM   |        |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     |
| 120612-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       | ●   |
| <b>SNMX</b> |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |
| 1206QNN-MF  |        |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |
| 1206QNN-MM  |        |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |
| 120612-MF   |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |
| 120612-MM   |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |

## Adaptadores disponibles

| Codigo          | Adaptadores disponibles |                   |               |
|-----------------|-------------------------|-------------------|---------------|
|                 | RM8QC                   | RM8QCM            |               |
| <b>RM8QCM</b>   | 4063HR-□                | -                 | BT□□-FMC22-□□ |
| <b>RM8QC</b>    | 4080HR-□                | BT□□-FMA25.4-□□   | BT□□-FMC27-□□ |
| <b>(RM8QCM)</b> | 4100HR-□                | BT□□-FMA31.75-□□  | BT□□-FMC32-□□ |
|                 | 4125HR-□                | BT□□-FMA38.1-□□   | BT□□-FMB40-□□ |
|                 | 4160R-□                 | BT□□-FMA50.8-□□   | BT□□-FMC40-□□ |
|                 | 4200R-□                 | BT□□-FMA47.625-□□ | BT□□-FMB60-□□ |

## Partes

| Especificación | Tornillo    | Llave |
|----------------|-------------|-------|
| Ø63-Ø200       | PTKA0411-R3 | TW15S |

Insertos disponibles E22-E24

Detalles del cortador E400~E402

# RMH8QC(M)4000

Tipo placa

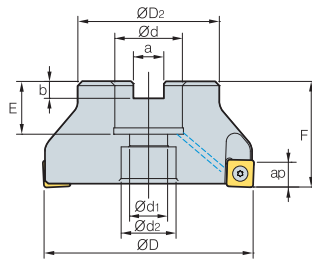


Fig. 1

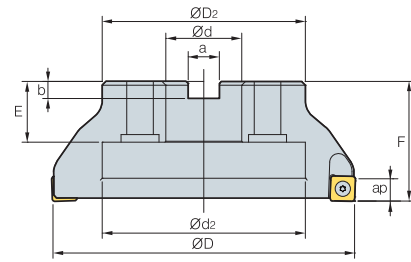


Fig. 2



AA  
**88°**

• AR: -6°  
• RR: -8° ~ -6°

(mm)

| Codigo                            | ØD | ØD <sub>2</sub> | Ød  | Ød <sub>1</sub> | Ød <sub>2</sub> | a   | b           | E      | F         | ap      | kg   | Fig. |   |
|-----------------------------------|----|-----------------|-----|-----------------|-----------------|-----|-------------|--------|-----------|---------|------|------|---|
| <b>RMH8QC</b><br><b>(RMH8QCM)</b> |    |                 |     |                 |                 |     |             |        |           |         |      |      |   |
| 4080HR-M                          | 7  | 80              | 57  | 25.4 (27)       | 14              | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23)   | 50      | 11.5 | 1.1  | 1 |
| 4100HR-M                          | 8  | 100             | 67  | 31.75 (32)      | 18              | 26  | 12.7 (14.4) | 8      | 33 (25.5) | 63 (50) | 11.5 | 2.5  | 1 |
| 4125HR-M                          | 10 | 125             | 87  | 38.1 (40)       | 22              | 32  | 15.9 (16.4) | 10 (9) | 36 (30)   | 63      | 11.5 | 3.0  | 1 |
| 4160R-M                           | 12 | 160             | 107 | 50.8 (40)       | -               | 107 | 19 (16.4)   | 11 (9) | 38 (32)   | 63      | 11.5 | 4.0  | 2 |
| 4200R-M                           | 16 | 200             | 130 | 47.625 (60)     | -               | 135 | 25.4 (25.7) | 14     | 38 (32)   | 63      | 11.5 | 5.9  | 2 |

( ) Tamaño métrico

## Insertos disponibles



| Codigo      | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|-------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|             | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| <b>SNEX</b> |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
| 1206QNN-MF  |        |      |            |        |        |        |        |        |        | ●      | ●      |        |          | ●      | ●      |      |       |     |     |
| 1206QNN-ML  |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |     |
| 1206QNN-MM  |        |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     |     |
| 1206QNN-MA  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       | ●   |     |
| 120612-MF   |        |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     |     |
| 120612-ML   |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |     |
| 120612-MM   |        |      |            |        |        |        |        |        |        |        | ●      |        |          |        |        |      |       |     |     |
| 120612-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       | ●   |     |
| <b>SNMX</b> |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
| 1206QNN-MF  |        |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |     |
| 1206QNN-MM  |        |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        | ●        | ●      | ●      |      |       |     |     |
| 120612-MF   |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |     |
| 120612-MM   |        |      |            |        |        |        |        |        | ●      | ●      | ●      |        |          | ●      | ●      |      |       |     |     |

## Adaptadores disponibles

| Codigo                            | Adaptadores disponibles |               |
|-----------------------------------|-------------------------|---------------|
|                                   | RMH8QC                  | RMH8QCM       |
| <b>RMH8QC</b><br><b>(RMH8QCM)</b> |                         |               |
| 4080HR-□                          | BT□□-FMA25.4-□□         | BT□□-FMC27-□□ |
| 4100HR-□                          | BT□□-FMA31.75-□□        | BT□□-FMC32-□□ |
| 4125HR-□                          | BT□□-FMA38.1-□□         | BT□□-FMB40-□□ |
| 4160R-□                           | BT□□-FMA50.8-□□         | BT□□-FMC40-□□ |
| 4200R-□                           | BT□□-FMA47.625-□□       | BT□□-FMB60-□□ |

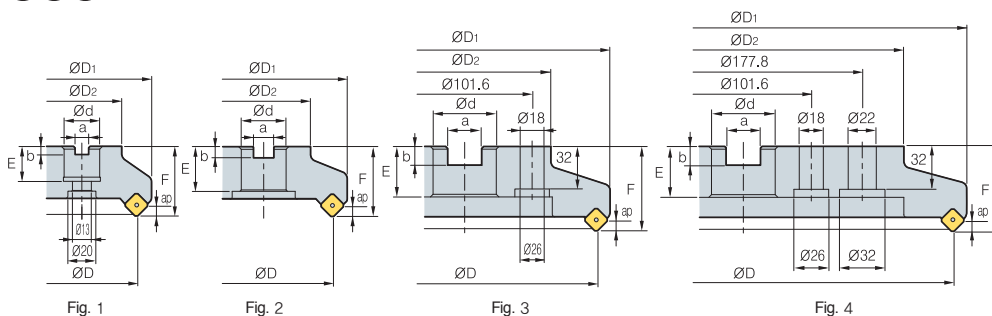
## Partes

| Especificación |             |         |           |       |
|----------------|-------------|---------|-----------|-------|
| Ø80~Ø200       | PTKA0411-R3 | SS42RM8 | SHXN0609F | TW15S |

Insertos disponibles E22~E24    Detalles del cortador E400~E402



# RMT8A(M)4000



AA  
45°  
• AR: -6°  
• RR: -6°

(mm)

| Codigo         | ØD      | ØD1 | ØD2 | Ød  | a   | b           | E           | F       | ap      | kg | Fig. |      |   |
|----------------|---------|-----|-----|-----|-----|-------------|-------------|---------|---------|----|------|------|---|
| RMT8A (RMT8AM) | 4080R   | 5   | 80  | 100 | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 4    | 1.6  | 1 |
|                | 4080R-M | 6   | 80  | 100 | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 4    | 1.6  | 1 |
|                | 4100R   | 6   | 100 | 120 | 70  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 4    | 2.3  | 2 |
|                | 4100R-M | 8   | 100 | 120 | 70  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 4    | 2.3  | 2 |
|                | 4125R   | 8   | 125 | 144 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 4    | 4.3  | 2 |
|                | 4125R-M | 10  | 125 | 144 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 4    | 4.3  | 2 |
|                | 4160R   | 10  | 160 | 179 | 110 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 4    | 6.5  | 2 |
|                | 4160R-M | 14  | 160 | 179 | 110 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 4    | 6.5  | 2 |
|                | 4200R   | 12  | 200 | 219 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 4    | 8.8  | 3 |
|                | 4200R-M | 18  | 200 | 219 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 4    | 8.8  | 3 |
|                | 4250R   | 16  | 250 | 269 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 4    | 14.1 | 3 |
|                | 4250R-M | 22  | 250 | 269 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 4    | 14.1 | 3 |
|                | 4315R   | 20  | 315 | 334 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 4    | 22.3 | 4 |
|                | 4315R-M | 28  | 315 | 334 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 4    | 22.3 | 4 |

## Insertos disponibles

( ) Tamaño métrico

SNC(M)F-MF      SNC(M)F-MM



| Codigo | Cermet     |      | Recubierta |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |       |     | pag. |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-------|-----|------|-----|
|        | CN2000     | CN80 | NCM825     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | ST30A | G10 |      | H01 |
| SNCF   | 1206ANN-MF |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      | E20 |
|        | 1206ANN-MM |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |     |
| SNMF   | 1206ANN-MF |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      | E21 |
|        | 1206ANN-MM |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |     |

## Adaptadores disponibles

| Codigo         | Adaptador general | Adaptadores NC                       |                     |       |
|----------------|-------------------|--------------------------------------|---------------------|-------|
|                |                   | RMT8A                                | RMT8AM              |       |
| RMT8A (RMT8AM) | □080R             | NT*□□(M/U)-FMA25.4-25                | BT**□□-FMA25.4-□□   | FMC27 |
|                | □100R             | NT*□□(M/U)-FMA31.75-□□               | BT**□□-FMA31.75-□□  | FMC32 |
|                | □125R             | NT*□□(M/U)-FMA38.1-□□                | BT**□□-FMA38.1-□□   | FMB40 |
|                | □160R             | NT*□□(M/U)-FMA50.8-□□                | BT**□□-FMA50.8-□□   |       |
|                | □200R             | NT*□□(M/U)-FMA47.625-25,<br>KCP-8*** | BT**□□-FMA47.625-□□ | FMB60 |
|                | □250R             |                                      |                     |       |
|                | □315R             |                                      |                     |       |

\*□□-NT Numero    \*\*□□-BT Numero    \*\*\*Más de fresado 5

## Partes

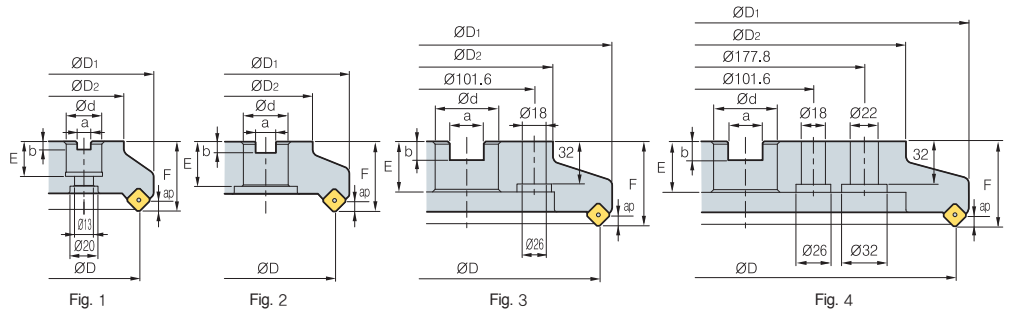
| Especificación |          |          |         |             |          |
|----------------|----------|----------|---------|-------------|----------|
|                | Tornillo | Tornillo | Muelle  | Cerrojo     | Llave    |
| Ø80-Ø315       | ETKA0523 | KHB0417  | SPR0315 | LTC05SR-RM4 | TW20-100 |

Insertos disponibles E20, E21

Detalles del cortador E400-E402



# RMT8A(M)5000



• AR: -6°  
• RR: -6°

(mm)

| Codigo                      | ØD | ØD1 | ØD2 | Ød  | a           | b           | E       | F       | ap | $\frac{m}{kg}$ | Fig. |   |
|-----------------------------|----|-----|-----|-----|-------------|-------------|---------|---------|----|----------------|------|---|
| <b>RMT8A (RMT8AM)</b> 5080R | 5  | 80  | 104 | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 6              | 1.8  | 1 |
| 5080R-M                     | 6  | 80  | 104 | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 6              | 1.8  | 1 |
| 5100R                       | 6  | 100 | 124 | 70  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 6              | 2.6  | 2 |
| 5100R-M                     | 8  | 100 | 124 | 70  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 6              | 2.6  | 2 |
| 5125R                       | 8  | 125 | 149 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 6              | 4.3  | 2 |
| 5125R-M                     | 10 | 125 | 149 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 6              | 4.3  | 2 |
| 5160R                       | 10 | 160 | 184 | 110 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 6              | 6.5  | 2 |
| 5160R-M                     | 14 | 160 | 184 | 110 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 6              | 6.5  | 2 |
| 5200R                       | 12 | 200 | 224 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 6              | 9.0  | 3 |
| 5200R-M                     | 18 | 200 | 224 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 6              | 9.0  | 3 |
| 5250R                       | 16 | 250 | 274 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 6              | 14.4 | 3 |
| 5250R-M                     | 22 | 250 | 274 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 6              | 14.4 | 3 |
| 5315R                       | 20 | 315 | 339 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 6              | 22.2 | 4 |
| 5315R-M                     | 28 | 315 | 339 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 6              | 22.2 | 4 |

## Insertos disponibles

( ) Tamaño métrico

SNC(M)F-MF      SNC(M)F-MM



| Codigo                 | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |            |
|------------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|------------|
|                        | CN2000 | CN80 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC3300 | PC5400 |      | ST30A | G10 | H01        |
| <b>SNCF</b> 1507ANN-MF |        |      |            |        |        |        |        |        |        |        | ●      |        |          |        |        |      |       |     | E20<br>E21 |
| 1507ANN-MM             |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |            |
| <b>SNMF</b> 1507ANN-MF |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |            |
| 1507ANN-MM             |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |            |

## Adaptadores disponibles

| Codigo                      | Adaptador general                    | Adaptadores NC      |        |
|-----------------------------|--------------------------------------|---------------------|--------|
|                             |                                      | RMT8A               | RMT8AM |
| <b>RMT8A (RMT8AM)</b> □080R | NT*□□(M/U)-FMA25.4-25                | BT**□□-FMA25.4-□□   | FMC27  |
| □100R                       | NT*□□(M/U)-FMA31.75-□□               | BT**□□-FMA31.75     | FMC32  |
| □125R                       | NT*□□(M/U)-FMA38.1-□□                | BT**□□-FMA38.1      | FMC32  |
| □160R                       | NT*□□(M/U)-FMA50.8-□□                | BT**□□-FMA50.8      |        |
| □200R                       | NT*□□(M/U)-FMA47.625-25,<br>KCP-8*** | BT**□□-FMA47.625-□□ | FMB60  |
| □250R                       |                                      |                     |        |
| □315R                       | KCP-8*** (Center Candado C Plug)     | -                   | -      |

\*□□-NT Numero    \*\*□□-BT Numero    \*\*\*Más de fresado 5

## Partes

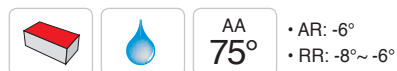
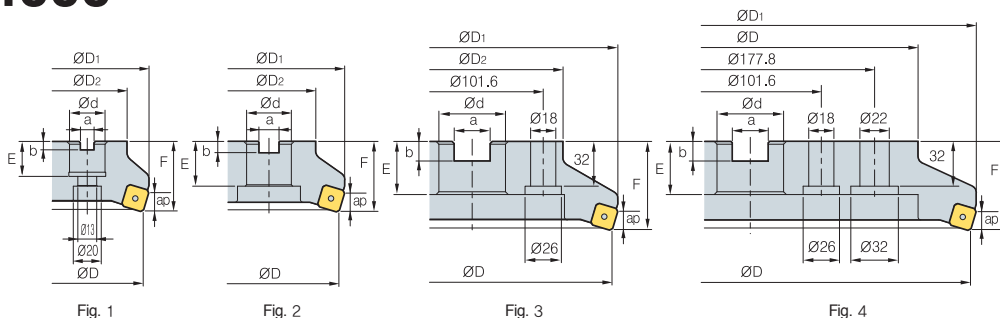
| Especificación |          |          |         |             |          |
|----------------|----------|----------|---------|-------------|----------|
|                | Tornillo | Tornillo | Muelle  | Cerrojo     | Llave    |
| Ø80~Ø315       | ETKA0625 | KHB0417  | SPR0415 | LTC06SR-RM5 | TW20-100 |

Insertos disponibles E20, E21      Detalles del cortador E400-E402





# RMT8E(M)4000



• AR: -6°  
• RR: -8°~-6°

(mm)

| Codigo                      | ØD  | ØD1 | ØD2 | Ød          | a           | b       | E       | F  | ap | kg   | Fig. |
|-----------------------------|-----|-----|-----|-------------|-------------|---------|---------|----|----|------|------|
| <b>RMT8E (RMT8EM)</b> 4080R | 80  | 100 | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 5  | 1.5  | 1    |
| 4080R-M                     | 80  | 100 | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 5  | 1.5  | 1    |
| 4100R                       | 100 | 120 | 67  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 5  | 2    | 2    |
| 4100R-M                     | 100 | 120 | 67  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 5  | 2    | 2    |
| 4125R                       | 125 | 144 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 5  | 3.8  | 2    |
| 4125R-M                     | 125 | 144 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 5  | 3.8  | 2    |
| 4160R                       | 160 | 179 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 5  | 5.8  | 2    |
| 4160R-M                     | 160 | 179 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 5  | 5.8  | 2    |
| 4200R                       | 200 | 219 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 5  | 7.9  | 3    |
| 4200R-M                     | 200 | 219 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 5  | 7.9  | 3    |
| 4250R                       | 250 | 269 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 5  | 13.0 | 3    |
| 4250R-M                     | 250 | 269 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 5  | 13.0 | 3    |
| 4315R                       | 315 | 334 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 5  | 20.5 | 4    |
| 4315R-M                     | 315 | 334 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 5  | 20.5 | 4    |

## Insertos disponibles

( ) Tamaño métrico

SNC(M)F-MF    SNC(M)F-MM



| Codigo | Cermet     |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000     | CN30 | NCM825     | NC5330 | NCM635 | NCM645 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| SNCF   | 1206ENN-MF |      |            |        |        |        |        |        |        | ●      |        |        |          |        |        |      |       |     | E20 |
|        | 1206ENN-MM |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
| SNMF   | 1206ENN-MF |      |            |        |        |        |        |        |        | ●      |        |        |          |        |        |      |       |     | E21 |
|        | 1206ENN-MM |      |            |        |        |        |        |        |        | ●      |        |        |          |        |        |      |       |     |     |

## Adaptadores disponibles

| Codigo                        | Adaptador general                | Adaptadores NC  |  |       |
|-------------------------------|----------------------------------|---|--|-------|
|                               |                                  | RMT8E   | RMT8EM   |       |
| RMT8E (RMT8EM)                | <input type="checkbox"/> 080R    | NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA25.4-25  | BT** <input type="checkbox"/> <input type="checkbox"/> -FMA25.4- <input type="checkbox"/> <input type="checkbox"/>   | FMC27 |
|                               | <input type="checkbox"/> 100R    | NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA31.75- <input type="checkbox"/> <input type="checkbox"/> | BT** <input type="checkbox"/> <input type="checkbox"/> -FMA31.75- <input type="checkbox"/> <input type="checkbox"/>  | FMC32 |
|                               | <input type="checkbox"/> 125R    | NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA38.1- <input type="checkbox"/> <input type="checkbox"/>  | BT** <input type="checkbox"/> <input type="checkbox"/> -FMA38.1- <input type="checkbox"/> <input type="checkbox"/>   | FMB40 |
|                               | <input type="checkbox"/> 160R    | NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA50.8- <input type="checkbox"/> <input type="checkbox"/>  | BT** <input type="checkbox"/> <input type="checkbox"/> -FMA50.8- <input type="checkbox"/> <input type="checkbox"/>   |       |
|                               | <input type="checkbox"/> 200R    | NT* <input type="checkbox"/> <input type="checkbox"/> (M/U)-FMA47.625-25,<br>KCP-8***                                   | BT** <input type="checkbox"/> <input type="checkbox"/> -FMA47.625- <input type="checkbox"/> <input type="checkbox"/> | FMB60 |
|                               | <input type="checkbox"/> 250R    |   |  |       |
| <input type="checkbox"/> 315R | KCP-8*** (Center Candado C Plug) | -   | -  |       |

\*-NT Numero    \*\*-BT Numero    \*\*\*Más de fresado 5

## Partes

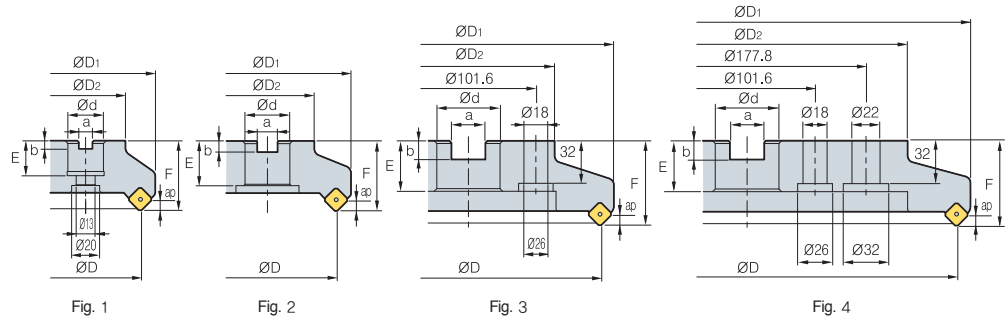
| Especificación |          |          |         |             |          |
|----------------|----------|----------|---------|-------------|----------|
|                | Tornillo | Tornillo | Muelle  | Cerrojo     | Llave    |
| Ø80-Ø315       | ETKA0523 | KHB0417  | SPR0315 | LTC05SR-RM4 | TW20-100 |

Insertos disponibles E20, E21

Detalles del cortador E400~E402



# RMT8E(M)5000



AA  
75°

• AR: -6°  
• RR: -8°~-6°

(mm)

| Codigo                | ØD  | ØD1 | ØD2 | Ød          | a           | b       | E       | F  | ap | kg   | Fig. |
|-----------------------|-----|-----|-----|-------------|-------------|---------|---------|----|----|------|------|
| <b>RMT8E (RMT8EM)</b> |     |     |     |             |             |         |         |    |    |      |      |
| 5080R                 | 80  | 88  | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 8  | 1.4  | 1    |
| 5080R-M               | 80  | 88  | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 8  | 1.4  | 1    |
| 5100R                 | 100 | 108 | 67  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 8  | 1.9  | 2    |
| 5100R-M               | 100 | 108 | 67  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 8  | 1.9  | 2    |
| 5125R                 | 125 | 133 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 8  | 3.7  | 2    |
| 5125R-M               | 125 | 133 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 8  | 3.7  | 2    |
| 5160R                 | 160 | 168 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 8  | 5.7  | 2    |
| 5160R-M               | 160 | 168 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 8  | 5.7  | 2    |
| 5200R                 | 200 | 208 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 8  | 7.5  | 3    |
| 5200R-M               | 200 | 208 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 8  | 7.5  | 3    |
| 5250R                 | 250 | 258 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 8  | 12.4 | 3    |
| 5250R-M               | 250 | 258 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 8  | 12.4 | 3    |
| 5315R                 | 315 | 323 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 8  | 19.9 | 4    |
| 5315R-M               | 315 | 323 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 8  | 19.9 | 4    |

( ) Tamaño métrico

## Insertos disponibles

SNC(M)F-MF      SNC(M)F-MM



| Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000     | CN30 | NCM325     | NC5330 | NCM635 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| SNCF   | 1507ENN-MF |      |            |        |        |        |        |        |        |        | ●      |        |          |        |        |      |       |     | E20 |
|        | 1507ENN-MM |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     | E21 |
| SNMF   | 1507ENN-MF |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 1507ENN-MM |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |

## Adaptadores disponibles

| Codigo                | Adaptador general                | Adaptadores NC      |        |
|-----------------------|----------------------------------|---------------------|--------|
|                       |                                  | RMT8E               | RMT8EM |
| <b>RMT8E (RMT8EM)</b> | □080R                            | BT**□□-FMA25.4-□□   | FMC27  |
|                       | □100R                            | BT**□□-FMA31.75-□□  | FMC32  |
|                       | □125R                            | BT**□□-FMA38.1-□□   | FMB40  |
|                       | □160R                            | BT**□□-FMA50.8-□□   | FMB60  |
|                       | □200R                            | BT**□□-FMA47.625-□□ |        |
|                       | □250R                            |                     |        |
|                       | □315R                            |                     |        |
|                       | KCP-8*** (Center Candado C Plug) |                     |        |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

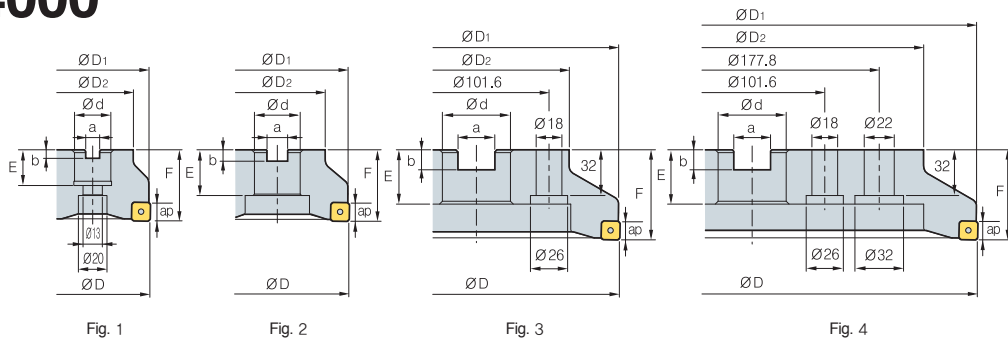
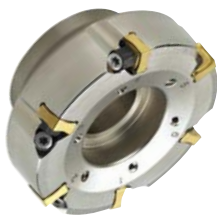
## Partes

| Especificación | Tornillo | Tornillo | Muelle  | Cerrojo     | Llave    |
|----------------|----------|----------|---------|-------------|----------|
| Ø80~Ø315       | ETKA0625 | KHB0417  | SPR0415 | LTC06SR-RM5 | TW20-100 |

Insertos disponibles E20, E21      Detalles del cortador E400~E402



# RMT8Q(M)4000



AA  
**88°**

• AR: -6°  
• RR: -11° ~ -6°

(mm)

| Codigo          | ØD | ØD1 | ØD2 | Ød  | a           | b           | E       | F       | ap | kg | Fig. |   |
|-----------------|----|-----|-----|-----|-------------|-------------|---------|---------|----|----|------|---|
| <b>RMT8Q</b>    |    |     |     |     |             |             |         |         |    |    |      |   |
| <b>(RMT8QM)</b> |    |     |     |     |             |             |         |         |    |    |      |   |
| 4080R           | 5  | 80  | 79  | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 5  | 1.4  | 1 |
| 4080R-M         | 6  | 80  | 79  | 57  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 5  | 1.4  | 1 |
| 4100R           | 6  | 100 | 99  | 67  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 5  | 1.8  | 2 |
| 4100R-M         | 8  | 100 | 99  | 67  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50 | 5  | 1.8  | 2 |
| 4125R           | 8  | 125 | 124 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 5  | 3.6  | 2 |
| 4125R-M         | 10 | 125 | 124 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63 | 5  | 3.6  | 2 |
| 4160R           | 10 | 160 | 159 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 5  | 5.7  | 2 |
| 4160R-M         | 14 | 160 | 159 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63 | 5  | 5.7  | 2 |
| 4200R           | 12 | 200 | 199 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 5  | 7.5  | 3 |
| 4200R-M         | 18 | 200 | 199 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 5  | 7.5  | 3 |
| 4250R           | 16 | 250 | 249 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 5  | 12.5 | 3 |
| 4250R-M         | 22 | 250 | 249 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 5  | 12.5 | 3 |
| 4315R           | 20 | 315 | 314 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 5  | 19.9 | 4 |
| 4315R-M         | 28 | 315 | 314 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63 | 5  | 19.9 | 4 |

( ) Tamaño métrico

## Insertos disponibles

SNC(M)F-MF      SNC(M)F-MM



| Codigo | Cermet     |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|
|        | CN2000     | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 |
| SNCF   | 1206QNN-MF |      |            |        |        |        |        |        |        |        | ●      |        |          |        |        |      |       |     |
|        | 1206QNN-MM |      |            |        |        |        |        |        |        | ●      |        |        |          |        |        |      |       |     |
| SNMF   | 1206QNN-MF |      |            |        |        |        |        |        | ●      |        |        |        |          |        |        |      |       |     |
|        | 1206QNN-MM |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       | E20 |

## Adaptadores disponibles

| Codigo          | Adaptador general | Adaptadores NC                   |                     |       |
|-----------------|-------------------|----------------------------------|---------------------|-------|
|                 |                   | RMT8Q                            | RMT8QM              |       |
| <b>RMT8Q</b>    | □080R             | NT*□□(M/U)-FMA25.4-□□            | BT**□□-FMA25.4-□□   | FMC27 |
| <b>(RMT8QM)</b> | □100R             | NT*□□(M/U)-FMA31.75-□□           | BT**□□-FMA31.75-□□  | FMC32 |
|                 | □125R             | NT*□□(M/U)-FMA38.1-□□            | BT**□□-FMA38.1-□□   | FMB40 |
|                 | □160R             | NT*□□(M/U)-FMA50.8-□□            | BT**□□-FMA50.8-□□   |       |
|                 | □200R             | NT*□□(M/U)-FMA47.625-25,         | BT**□□-FMA47.625-□□ | FMB60 |
|                 | □250R             | KCP-8***                         |                     |       |
|                 | □315R             | KCP-8*** (Center Candado C Plug) | -                   | -     |

\*□□-NT Numero    \*\*□□-BT Numero    \*\*\*Más de fresado 5

## Partes

| Especificación | Tornillo | Tornillo | Muelle  | Cerrojo     | Llave    |
|----------------|----------|----------|---------|-------------|----------|
| Ø80-Ø315       | ETKA0523 | KHB0417  | SPR0315 | LTC05SR-RM4 | TW20-100 |

Insertos disponibles E20    Detalles del cortador E400~E402

# RM16AC(M)6000

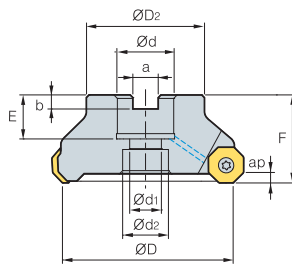


Fig. 1

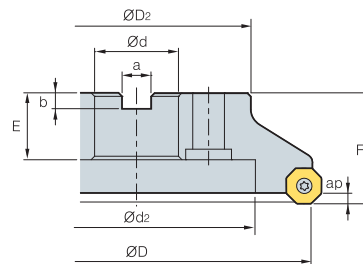


Fig. 2



AA  
45°

• AR: -6°  
• RR: -6°

(mm)

| Codigo                    | ØD | ØD2 | Ød  | Ød1         | Ød2 | a   | b           | E      | F       | ap      | kg  | Fig. |   |
|---------------------------|----|-----|-----|-------------|-----|-----|-------------|--------|---------|---------|-----|------|---|
| RM16ACM 6063HR-M          | 5  | 63  | 49  | 22          | 11  | 18  | 10.4        | 6.3    | 20      | 40      | 4.0 | 0.7  | 1 |
| RM16AC (RM16ACM) 6080HR-M | 6  | 80  | 57  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)  | 25 (23) | 50      | 4.0 | 1.2  | 1 |
| 6100HR-M                  | 7  | 100 | 67  | 31.75 (32)  | 18  | 26  | 12.7 (14.4) | 8      | 33 (25) | 63 (50) | 4.0 | 1.9  | 1 |
| 6125HR-M                  | 8  | 125 | 87  | 38.1 (40)   | 22  | 32  | 15.9 (16.4) | 10 (9) | 35 (29) | 63      | 4.0 | 3.5  | 1 |
| 6160R-M                   | 10 | 160 | 107 | 50.8 (40)   | -   | 107 | 19 (16.4)   | 11 (9) | 38 (32) | 63      | 4.0 | 4.1  | 2 |
| 6200R-M                   | 12 | 200 | 130 | 47.625 (60) | -   | 135 | 25.4 (25.7) | 14     | 38 (32) | 63      | 4.0 | 6.1  | 2 |
| 6250R-M                   | 15 | 250 | 180 | 47.625 (60) | -   | 180 | 25.4 (25.7) | 14     | 38      | 63      | 4.0 | 11.5 | 2 |
| 6315R-M                   | 20 | 315 | 240 | 47.625 (60) | -   | 238 | 25.4 (25.7) | 14     | 38      | 63      | 4.0 | 18.9 | 2 |
| 6400R-M                   | 26 | 400 | 260 | 47.625 (60) | -   | 238 | 25.4 (25.7) | 14     | 38      | 80      | 4.0 | 32.7 | 2 |

( ) Tamaño métrico

## Insertos disponibles



| Codigo         | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|                | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| ONHX 060608-MM |        |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     | E14 |
| 060608-MF      |        |      |            |        |        |        |        |        |        |        | ●      |        |          | ●      | ●      |      |       |     |     |
| 060608-ML      |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |     |
| 060608-MA      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       | ●   |     |
| 060608-W       |        |      |            |        |        |        |        |        |        |        | ●      | ●      |          | ●      | ●      |      |       |     |     |
| 0606ANN-MM     |        |      |            |        |        |        |        |        |        |        | ●      | ●      |          | ●      | ●      |      |       |     |     |
| 0606ANN-MF     |        |      |            |        |        |        |        |        |        |        | ●      | ●      |          | ●      | ●      |      |       |     |     |
| ONMX 060608-MM |        |      |            |        | ●      |        |        |        |        |        | ●      | ●      |          | ●      | ●      |      |       |     |     |
| 060608-MF      |        |      |            |        | ●      |        |        |        |        |        | ●      | ●      |          | ●      | ●      |      |       |     |     |
| 0606ANN-MM     |        |      |            |        | ●      |        |        |        |        |        | ●      | ●      |          | ●      | ●      |      |       |     |     |
| 0606ANN-MF     |        |      |            |        | ●      |        |        |        |        |        | ●      | ●      |          | ●      | ●      |      |       |     |     |

## Adaptadores disponibles

| Codigo                    | Adaptadores disponibles |               |
|---------------------------|-------------------------|---------------|
|                           | RM16AC                  | RM16ACM       |
| RM16AC (RM16ACM) 6063HR-M |                         | BT□□-FMC22-□□ |
| 6080HR-M                  | BT□□-FMA25.4-□□         | BT□□-FMC27-□□ |
| 6100HR-M                  | BT□□-FMA31.75-□□        | BT□□-FMC32-□□ |
| 6125HR-M                  | BT□□-FMA38.1-□□         | BT□□-FMB40-□□ |
| 6160R-M                   | BT□□-FMA50.8-□□         | BT□□-FMC40-□□ |
| 6200R-M                   |                         |               |
| 6250R-M                   |                         |               |
| 6315R-M                   |                         |               |
| 6400R-M                   | BT□□-FMA47.625-□□       | BT□□-FMB60-□□ |

## Partes

| Especificación | Tornillo | Llave    |
|----------------|----------|----------|
| Ø63~Ø400       | FTGA0513 | TW20-100 |

Insertos disponibles E14    Detalles del cortador E400~E402



# RM16AC(M)8000

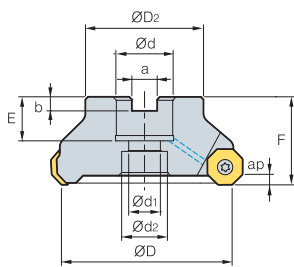


Fig. 1

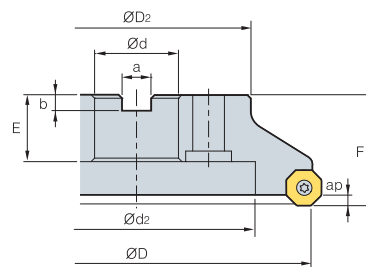


Fig. 2



AA  
45°

• AR: -6°  
• RR: -6°

(mm)

| Codigo                    | Fig. | ØD  | ØD2 | Ød          | Ød1 | Ød2 | a           | b       | E       | F       | ap  | kg   | Fig. |
|---------------------------|------|-----|-----|-------------|-----|-----|-------------|---------|---------|---------|-----|------|------|
| RM16ACM 8063HR-M          | 5    | 63  | 49  | 22          | 11  | 18  | 10.4        | 6.3     | 20      | 40      | 5.5 | 0.7  | 1    |
| RM16AC (RM16ACM) 8080HR-M | 6    | 80  | 57  | 25.4 (27)   | 14  | 20  | 9.5 (12.4)  | 6 (7)   | 25 (23) | 50      | 5.5 | 1.2  | 1    |
| 8100HR-M                  | 7    | 100 | 67  | 31.75 (32)  | 18  | 26  | 12.7 (14.4) | 8       | 33 (25) | 63 (50) | 5.5 | 1.8  | 1    |
| 8125HR-M                  | 8    | 125 | 87  | 38.1 (40)   | 22  | 32  | 15.9 (16.4) | 10 (9)  | 35 (29) | 63      | 5.5 | 3.5  | 1    |
| 8160R-M                   | 10   | 160 | 107 | 50.8 (40)   | -   | 107 | 19 (16.4)   | 11 (9)  | 38 (32) | 63      | 5.5 | 4.5  | 2    |
| 8200R-M                   | 12   | 200 | 130 | 47.625 (60) | -   | 135 | 25.4 (25.7) | 14 (14) | 38 (32) | 63      | 5.5 | 5.8  | 2    |
| 8250R-M                   | 14   | 250 | 180 | 47.625 (60) | -   | 180 | 25.4 (25.7) | 14      | 38      | 63      | 5.5 | 11.4 | 2    |
| 8315R-M                   | 18   | 315 | 240 | 47.625 (60) | -   | 238 | 25.4 (25.7) | 14      | 38      | 63      | 5.5 | 18.8 | 2    |
| 8400R-M                   | 24   | 400 | 260 | 47.625 (60) | -   | 238 | 25.4 (25.7) | 14      | 38      | 80      | 5.5 | 32.7 | 2    |

( ) Tamaño métrico

## Insertos disponibles

| ONHX-MF | ONHX-ML | ONHX-MM | ONHX-W | ONHX-MA | ONMX-MF | ONMX-MM |
|---------|---------|---------|--------|---------|---------|---------|
|         |         |         |        |         |         |         |

| Codigo         | Cermet |      | Recubierta |       |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |
|----------------|--------|------|------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|
|                | CN2000 | CN30 | NCM325     | NC530 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 |
| ONHX 080608-MM |        |      |            |       |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |
| 080608-MF      |        |      |            |       |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |
| 080608-ML      |        |      |            |       |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |
| 080608-MA      |        |      |            |       |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   |
| 080608-W       |        |      |            |       |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |
| 0806ANN-MM     |        |      |            |       |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |
| 0806ANN-MF     |        |      |            |       |        |        |        |        |        |        | ●      |        |        | ●        | ●      |       |      |     |
| ONMX 080608-MM |        |      |            |       | ●      |        |        | ●      | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |
| 080608-MF      |        |      |            |       | ●      |        |        | ●      | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |
| 0806ANN-MM     |        |      |            |       | ●      |        |        | ●      | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |
| 0806ANN-MF     |        |      |            |       | ●      |        |        | ●      | ●      | ●      | ●      |        |        | ●        | ●      |       |      |     |

## Adaptadores disponibles

| Codigo             | Adaptadores disponibles |               |
|--------------------|-------------------------|---------------|
|                    | RM16AC                  | RM16ACM       |
| RM16AC 8063HR-M    | -                       | BT□□-FMC22-□□ |
| (RM16ACM) 8080HR-M | BT□□-FMA25.4-□□         | BT□□-FMC27-□□ |
| 8100HR-M           | BT□□-FMA31.75-□□        | BT□□-FMC32-□□ |
| 8125HR-M           | BT□□-FMA38.1-□□         | BT□□-FMB40-□□ |
| 8160R-M            | BT□□-FMA50.8-□□         | BT□□-FMC40-□□ |
| 8200R-M            |                         |               |
| 8250R-M            |                         |               |
| 8315R-M            |                         |               |
| 8400R-M            | BT□□-FMA47.625-□□       | BT□□-FMB60-□□ |

## Partes

| Especificación |          |          |
|----------------|----------|----------|
| Ø63-Ø400       | FTGA0513 | TW20-100 |

Insertos disponibles E14    Detalles del cortador E400~E402

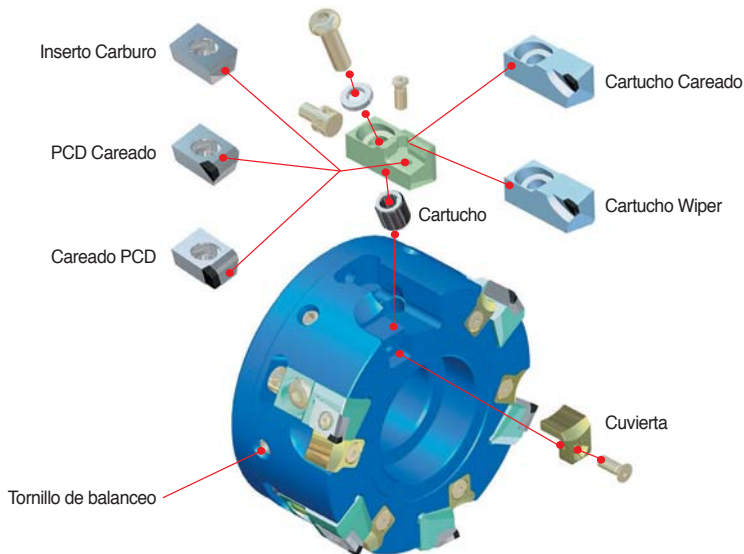


Cuerpo liviano asegurando excelentes resultados en maquinado a alta velocidad

## Aero Mill

- Excelente desempeño al maquinar, especialmente para trabajar a alta velocidad, debido a lo ligero del cuerpo de aluminio 50% mas ligero que uno de cuerpo de acero.
- El aluminio especial y el alto ángulo de incidencia del inserto prevee rigidez y un estable maquinado al cortador aero mill.
- Alta calidad en los acabados superficiales se pueden conseguir con este cortador debido a la baja carga de corte por el alto ángulo de incidencia.
- Balanceado a nivel 2.5 G

### Montaje de fresa



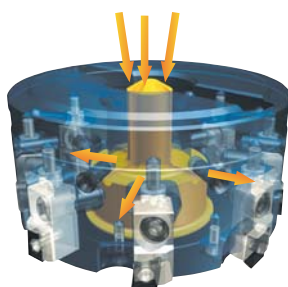
### Características de la fresa

- El localizador mejora la durabilidad del cortador.
- Es posible ser usado para en los dos tipos : tipo inserto y tipo navaja
- El tipo de desahogo garantiza un flujo suave de la viruta
- Carburo cementado e insertos pcd, pueden ser seleccionados para varíaos materiales.
- El cubre viruta esta diseñado para evitar que el cortador sufa daños o desgastes en el cuerpo de aluminio

### Sistema lubricación interno

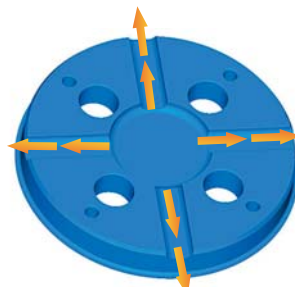
- Diseñado especialmente, el sistema de refrigeración provee refrigeración desde el centro del cortador hacia el inserto, intensifica la refrigeración y esto ayuda a tener un mejor flujo de evacuación de la viruta.
- Diseñado especialmente el disparador direccional del sistema refrigera directo al filo inserto, maximizando la evacuación de la viruta
- El tornillo puede ser utilizado en mas de 160 diferentes Holders.

Perno Refrigerante



Para Ø80~Ø160

Cuierta Refrigeracion

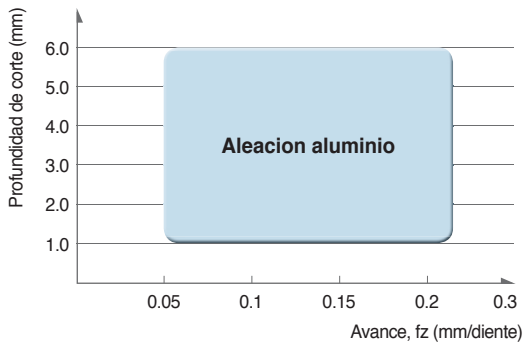


Para Ø200 y más

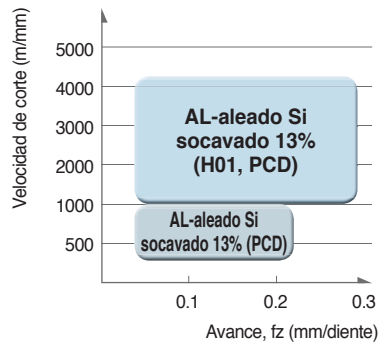


## Aero Mill

### ➤ Rango de Aplicación

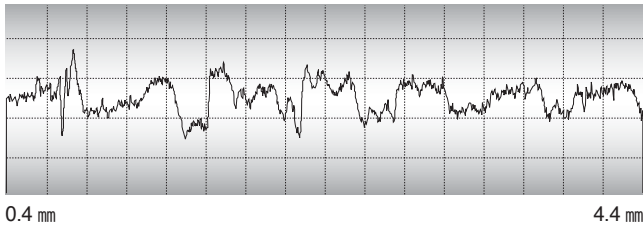


### ➤ Condiciones de corte recomendadas



### ➤ Revoluciones Maximas

- **Pieza Trabajo** A6061
- **Condiciones de Corte**
  - vc = 1570 m/min    vf = 3000 mm/min
  - S = 5000 rpm      fz = 0.1 mm/diente
  - ap = 0.5 mm      Machine = PCV620
- **Codigo**
  - Fresa** APD100R-A6Z (6 Flutes)
  - Inserto** CDEW1204R-XCF (H01)



- Rmax: 2.1  $\mu\text{m}$
- Rz: 1.6  $\mu\text{m}$
- Ra: 0.3  $\mu\text{m}$

### ➤ Revoluciones Maximas Disponibles

| Diametro (mm) | Maxima Revoluciones (rpm) |
|---------------|---------------------------|
| Ø80           | 16,000                    |
| Ø100          | 15,000                    |
| Ø125          | 12,500                    |
| Ø160          | 10,000                    |
| Ø200          | 8,000                     |
| Ø250          | 6,500                     |
| Ø315          | 5,000                     |

### ➤ Coolant Partes

| Diametro (mm) | Tipo                    | Codigo                     | Forma | Nota              |
|---------------|-------------------------|----------------------------|-------|-------------------|
| Ø80           | Tornillo Refrigerante   | CBP080-IN/MM               |       | A encargar aparte |
| Ø100          | Tornillo Refrigerante   | CBP100-IN      CBP100-MM-1 |       |                   |
| Ø125          | Tornillo Refrigerante   | CBP125-IN      CBP125-MM-1 |       |                   |
| Ø160          | Tornillo Refrigerante   | CBP160-IN      CBP160-MM   |       |                   |
| Ø200          | Cuivierta Refrigeración | CCP200                     |       |                   |
| Ø250          | Cuivierta Refrigeración | CCP250                     |       |                   |
| Ø315          | Cuivierta Refrigeración | CCP315                     |       |                   |

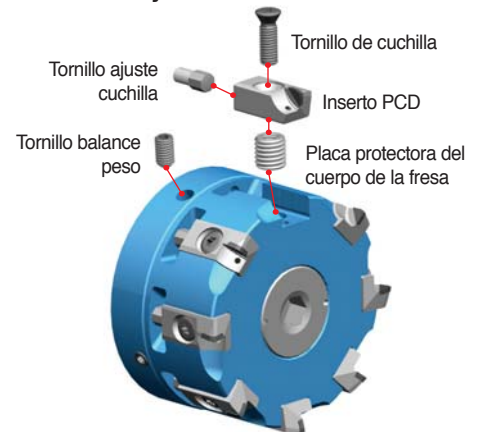
• Elección : CBP100-IN : Tipo APD, general para material no marcado

## Cabeza con forma de cono de taladrado indexable

# Aero Mill-Plus

- Mejore la vida útil de la herramienta hasta un 20% con un sistema de refrigerante que permite Spray de enfriamiento a cuchillas de corte
- Habilite el fresado de alto avance aumentando el número de cuchillas de corte en un 20% A través de un método de acoplamiento simplemente estructurado para pinzas
- Reduce el tiempo de configuración hasta en un 40% aplicando un método de ajuste de llave inglesa
- Introduzca un cuerpo de corte de aluminio para proporcionar un corte superior Rendimiento durante el fresado a alta velocidad

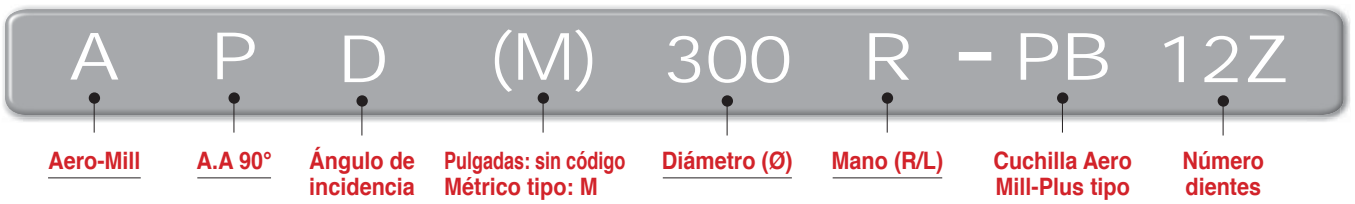
## Montaje de fresa



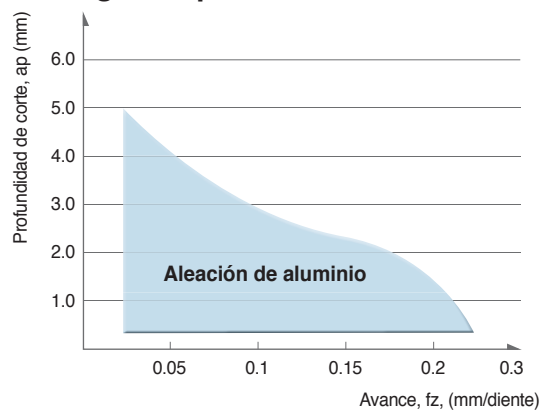
## Características de la fresa

- Evite la sobrecarga en los cojinetes del husillo a través de la reducción de peso del cuerpo de aleación de Al y permita un procesamiento de alta velocidad
- Proporcionar un diseño de cortador dedicado a las cuchillas PCD para ofrecer una vida útil estable de la herramienta y un aumento de las cuchillas aplicadas
- Mejore la vida útil de la cuchilla aplicando un sistema de refrigerante que permite el enfriamiento directo por aspersión a las cuchillas de corte
- Adopte un método de sujeción con estructura simple sin tornillo de fijación.
- Reduzca el peso y aplique un perno de refrigerante que se utiliza exclusivamente para Aero-Mill Plus que aplica refrigerante para eliminar el chip interno

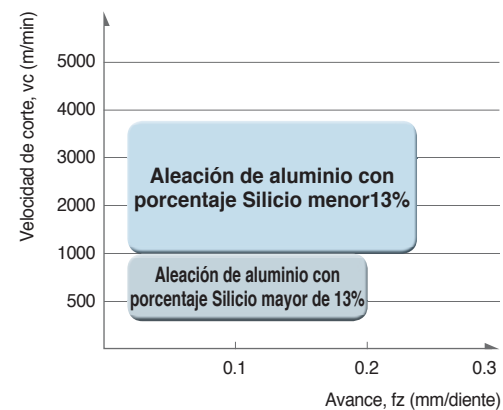
## Sistema de codificación



## Rango de aplicación



## Recommended Velocidad de Corte



## Max. RPM

| Diametro (mm) | Max. vueltas por minuto (rpm) |
|---------------|-------------------------------|
| Ø80           | 20,000                        |
| Ø100          | 18,000                        |
| Ø125          | 16,000                        |
| Ø160          | 13,000                        |
| Ø200          | 10,000                        |
| Ø250          | 8,000                         |
| Ø315          | 7,000                         |

## Partes refrigeración

| Diametro (mm) | Tipo                   | Pulgadas/mm | Codigo       | Forma | Material | Nota              |
|---------------|------------------------|-------------|--------------|-------|----------|-------------------|
| Ø80           | Tornillo refrigeración | Pulgadas/mm | CB12-AMaP80  |       | Acero    | Incluido          |
|               |                        | inch        | CB16-AMP100  |       |          |                   |
|               |                        | mm          | CB16-AMP100M |       |          |                   |
|               |                        | inch        | CB20-AMP125  |       |          |                   |
|               |                        | mm          | CB20-AMP125M |       |          |                   |
|               |                        | inch        | CB24-AMP160  |       |          |                   |
| Ø160          | Cubierta refrigeración | inch, mm    | CCV-AMP200   |       | Aluminio | A encargar aparte |
|               |                        | inch, mm    | CCV-AMP250   |       |          |                   |
|               |                        | inch, mm    | CCV-AMP315   |       |          |                   |





El buen desempeño en tamaños de operación pequeña

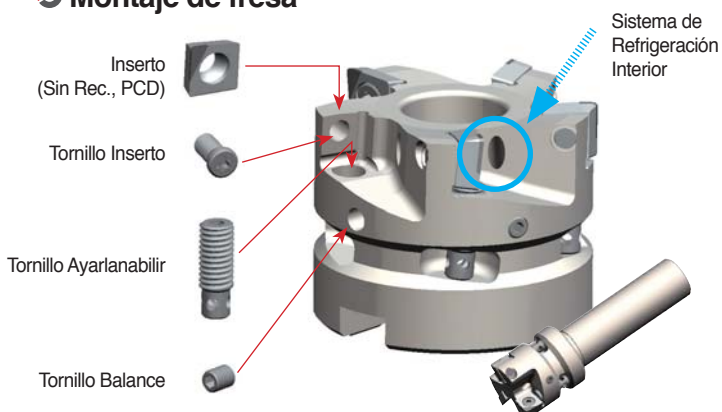
# Aero Mill-Mini

- El buen desempeño en tamaños de operación pequeña - mediana.
- Buena duración del cuerpo de acero.
- Elección de carburo sin recubrimiento/grado de PCD se pueden ser aplicados a diversos tipos de material de trabajo.
- Balanceado a: G25

## Características de la fresa

- Diseño sencillo y fuerte sistema de sujeción.
- Margen ajustable:  $\pm 0,1$  mm Max
- Paso ajustable: mín. 2 micro metro.
- Amplia zona de alojamiento de la viruta para desbaste y el maquinado de aluminio.
- Sistema de enfriamiento interno

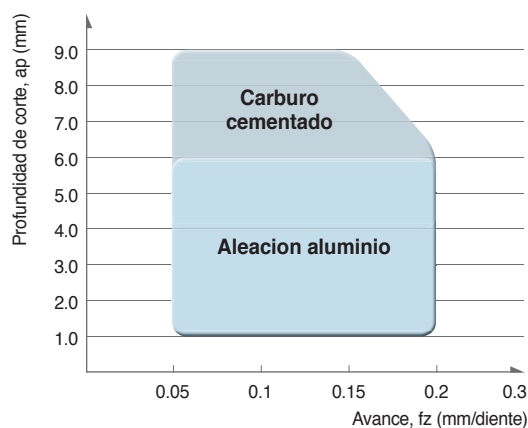
## Montaje de fresa



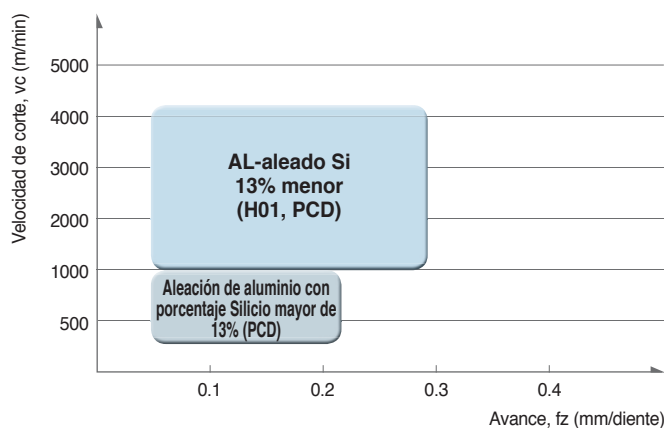
## Sistema de codificación



## Rango de Aplicación



## Condiciones de corte recomendadas



## Max. RPM

| Diámetro | Max. RPM (min <sup>-1</sup> ) |
|----------|-------------------------------|
| Ø32      | 26,000                        |
| Ø40      | 24,500                        |
| Ø50      | 22,000                        |
| Ø63      | 20,000                        |

## APD(M)-A

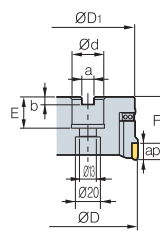
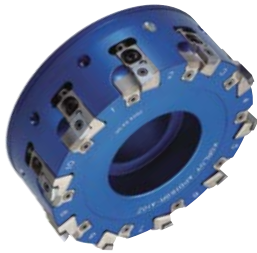


Fig. 1

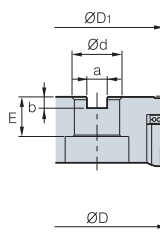


Fig. 2

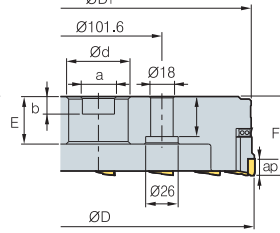


Fig. 3

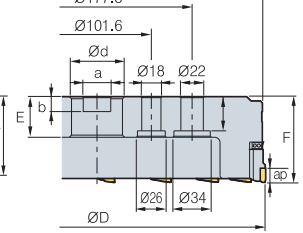


Fig. 4

## Cartucho + Placa



AA  
90°

• AR: 6°  
• RR: 5°~9°

(mm)

| Codigo | ØD          | ØD1 | Ød  | a   | b           | E           | F       | ap      | Max rpm | kg | Fig.  |      |   |
|--------|-------------|-----|-----|-----|-------------|-------------|---------|---------|---------|----|-------|------|---|
| APD    | 080R/L-A6Z  | 6   | 80  | 76  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50      | 10 | 16000 | 0.75 | 1 |
| APDM)  | 100R/L-A6Z  | 6   | 100 | 95  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32 (28) | 50      | 10 | 15000 | 0.95 | 2 |
|        | 125R/L-A8Z  | 8   | 125 | 120 | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (30) | 63      | 10 | 12500 | 1.8  | 2 |
|        | 160R/L-A10Z | 10  | 160 | 155 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (30) | 63      | 10 | 10000 | 2.9  | 2 |
|        | 200R/L-A12Z | 12  | 200 | 195 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63      | 10 | 8000  | 4.0  | 3 |
|        | 250R/L-A16Z | 16  | 250 | 245 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 63      | 10 | 6500  | 6.3  | 3 |
|        | 315R/L-A18Z | 18  | 315 | 310 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (38) | 80      | 10 | 5000  | 11.3 | 4 |

( ) Tamaño métrico

### Insertos disponibles

CDEW-XCF CDEW-XAF, NAF CDEW-XAW, NAW



| Codigo | Sin Rec.  |     |       | PCD   | pag.       |
|--------|-----------|-----|-------|-------|------------|
|        | H01       | G10 | ST30A | DP200 |            |
| CDEW   | 1204R-XCF |     |       |       | E06<br>E07 |
|        | 1204L-XCF |     |       |       |            |
|        | 1204R-XAF |     |       |       |            |
|        | 1204L-XAF |     |       |       |            |
|        | 1204R-NAF |     |       |       |            |
|        | 1204L-NAF |     |       |       |            |
|        | 1204R-XAW |     |       |       |            |
|        | 1204L-XAW |     |       |       |            |
|        | 1204R-NAW |     |       |       |            |
|        | 1204L-NAW |     |       |       |            |

### Adaptadores disponibles

| Codigo | Adaptador general                       | Adaptadores NC      |
|--------|---|---------------------|
| APD    | 080R/L NT*□□(M/U)-FMA25.4-25            | BT**□□-FMA25.4      |
| APDM)  | 100R/L NT*□□(M/U)-FMA31.75-□□           | BT**□□-FMA31.75     |
|        | 125R/L NT*□□(M/U)-FMA38.1-□□            | BT**□□-FMA38.1      |
|        | 160R/L NT*□□(M/U)-FMA50.8-□□            | BT**□□-FMA50.8      |
|        | 200R/L NT*□□(M/U)-FMA47.625-25,         | BT**□□-FMA47.625-□□ |
|        | 250R/L KCP-8***                         |                     |
|        | 315R/L KCP-8*** (Center Candado C Plug) | -                   |

\*□□-NT Numero \*\*□□-BT Numero \*\*\*Más de fresado 5

### Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte       |                        | Calidades    |
|---------------|--------------------------|------------------------|--------------|
|               | vc (m/min)               | fz (mm/diente)         |              |
| Aluminio      | 1,000~4,000<br>500~2,500 | 0.05~0.30<br>0.05~0.20 | DP200<br>H01 |

### Partes

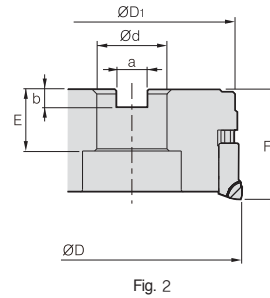
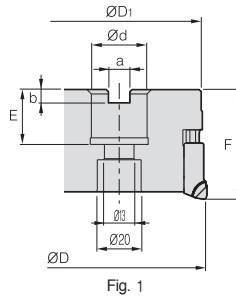
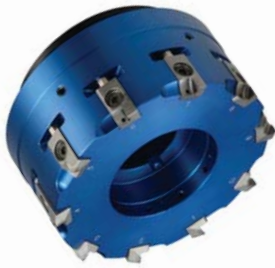
| Especificación |            |            |          |          |        |               |       |      |
|----------------|------------|------------|----------|----------|--------|---------------|-------|------|
| Ø80~Ø315       | LAPDR/L-AJ | CAPDR/L-AJ | PTMA0411 | FTNA0411 | AZ0514 | BHA0619-NYLOK | TW15S | HW50 |

Insertos disponibles E06, E07 Detalles del cortador E400~E402



# APD(M)-PB

Cuchilla



AA  
90°

• AR: 6°  
• RR: -4°~1°

| Codigo       | Max | ØD | ØD1 | Ød  | a          | b           | E      | F       | ap | kg | Fig. |   |
|--------------|-----|----|-----|-----|------------|-------------|--------|---------|----|----|------|---|
| APD (APDM)   |     |    |     |     |            |             |        |         |    |    |      |   |
| 080R/L-PB6Z  | 6   | 10 | 80  | 77  | 25.4 (27)  | 9.5 (12.4)  | 6 (7)  | 23.5    | 50 | 5  | 0.55 | 1 |
| 080R/L-PB8Z  | 8   | 10 | 80  | 77  | 25.4 (27)  | 9.5 (12.4)  | 6 (7)  | 23.5    | 50 | 5  | 0.55 | 1 |
| 100R/L-PB6Z  | 6   | 12 | 100 | 97  | 31.75 (32) | 12.7 (14.4) | 8      | 34 (32) | 50 | 5  | 0.92 | 2 |
| 100R/L-PB8Z  | 8   | 12 | 100 | 97  | 31.75 (32) | 12.7 (14.4) | 8      | 34 (32) | 50 | 5  | 0.92 | 2 |
| 125R/L-PB8Z  | 8   | 14 | 125 | 122 | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 40 (35) | 63 | 5  | 1.9  | 2 |
| 125R/L-PB10Z | 10  | 14 | 125 | 122 | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 40 (35) | 63 | 5  | 1.9  | 2 |
| 160R/L-PB10Z | 10  | 20 | 160 | 157 | 50.8 (40)  | 19.0 (16.4) | 11 (9) | 41 (35) | 63 | 5  | 3.3  | 2 |
| 160R/L-PB12Z | 12  | 20 | 160 | 157 | 50.8 (40)  | 19.0 (16.4) | 11 (9) | 41 (35) | 63 | 5  | 3.3  | 2 |

( ) Tamaño métrico

## Cartuchos PCD disponibles

BAMPR-XAF BAMPR-XAW BAMPR-XAWR



| Codigo     | PCD   | pag. |
|------------|-------|------|
|            | DP150 |      |
| BAMPR-XAF  | ●     | E06  |
| BAMPR-XAW  | ●     |      |
| BAMPR-XAWR |       |      |

## Adaptadores disponibles

| Codigo           | Adaptadores NC             |
|------------------|----------------------------|
| APD-PB (APDM-PB) | BT□□-FMA25.4(FMC27)-□□     |
|                  | BT□□-FMA31.75(FMC32)-□□    |
|                  | BT□□-FMA38.1(FMB40)-□□     |
|                  | BT□□-FMA50.8(FMB/FMC40)-□□ |

## Partes

| Especificación | Tornillo cartucho | Tornillo ajuste cartucho | Protección del cuerpo de la fresa | Tornillo nivelación | Llave Inserto | Llave cartucho |
|----------------|-------------------|--------------------------|-----------------------------------|---------------------|---------------|----------------|
| Ø80-Ø160       | ETKA0620          | AZ0514-SPN6              | UZD1010                           | KHE0610             | SPN-6         | TW25-100       |

Insertos disponibles E06

Detalles del cortador E400~E402

## APD(M)-PB

Cuchilla

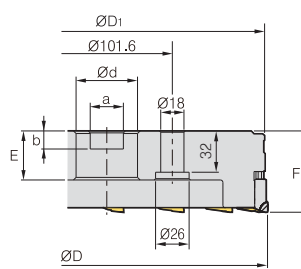


Fig. 1

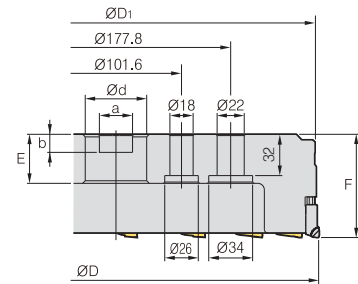


Fig. 2



AA  
90°

• AR: -6°  
• RR: -39°~-16°

(mm)

| Codigo        | Max | ØD | ØD1 | Ød  | a           | b           | E  | F  | ap | kg | Fig. |   |
|---------------|-----|----|-----|-----|-------------|-------------|----|----|----|----|------|---|
| APD<br>(APDM) | 12  | 26 | 200 | 197 | 47.625 (60) | 25.4 (25.7) | 14 | 40 | 63 | 5  | 4.0  | 1 |
|               | 16  | 32 | 250 | 247 | 47.625 (60) | 25.4 (25.7) | 14 | 40 | 63 | 5  | 6.5  | 1 |
|               | 18  | 42 | 315 | 312 | 47.625 (60) | 25.4 (25.7) | 14 | 40 | 63 | 5  | 11.3 | 2 |

( ) Tamaño métrico

### Cartuchos PCD disponibles

BAMPR-XAF

BAMPR-XAW

BAMPR-XAWR



| Codigo     | PCD   | pag. |
|------------|-------|------|
|            | DP150 |      |
| BAMPR-XAF  | ●     | E06  |
| BAMPR-XAW  | ●     |      |
| BAMPR-XAWR |       |      |

### Adaptadores disponibles

| Codigo              | Adaptadores NC           |
|---------------------|--------------------------|
| APD-PB<br>(APDM-PB) | BT□□-FMA47.625(FMB60)-□□ |
|                     |                          |
|                     |                          |

### Partes

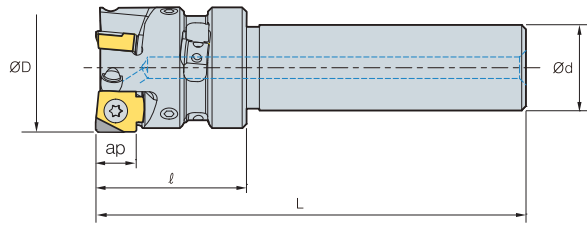
| Especificación | Tornillo cartucho | Tornillo ajuste cartucho | Protección del cuerpo de la fresa | Tornillo nivelación | Llave Inserto | Llave cartucho |
|----------------|-------------------|--------------------------|-----------------------------------|---------------------|---------------|----------------|
| Ø200-Ø315      | ETKA0620          | AZ0514-SPN6              | UZD1010                           | KHE0610             | SPN-6         | TW25-100       |

Insertos disponibles E06

Detalles del cortador E400-E402



# MAPDS000HR/L-Z0



\* PCD ap: 5mm



• AR: 6°  
• RR: -4°~1°

| Codigo |            | ⊙ | ØD | Ød | l  | L   | ap  | Max rpm | kg   |
|--------|------------|---|----|----|----|-----|-----|---------|------|
| MAPDS  | 032HR/L-Z3 | 3 | 32 | 20 | 35 | 100 | 9.5 | 26,000  | 0.35 |
|        | 040HR/L-Z4 | 4 | 40 | 20 | 35 | 100 | 9.5 | 24,500  | 0.42 |

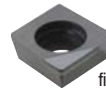
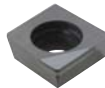
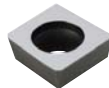
(mm)

## Insertos disponibles

SNEW

SNEW-XAF






SNEW-NAF



filo fortalecido

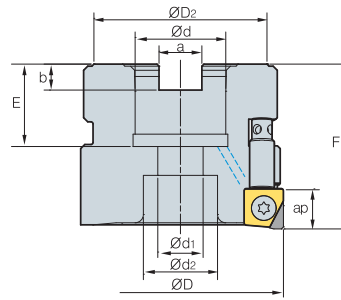
| Codigo | Sin Rec.     |     |       | PCD   | pag.       |
|--------|--------------|-----|-------|-------|------------|
|        | H01          | G10 | ST30A | DP200 |            |
| SNEW   | 09T3ADFR     | ●   |       |       | E22<br>E23 |
|        | 09T3ADTR-XAF |     |       | ●     |            |
|        | 09T3ADTR-XAW |     |       | ●     |            |
|        | 09T3ADTR-NAF |     |       | ●     |            |
|        | 09T3ADTR-NAW |     |       | ●     |            |

## Partes

| Especificación |  |  |  |  |  |
|----------------|---|---|---|--|---|
| Ø32~Ø63        | FTKA0408  | AHX0617F-NYLOK  | KHD0405   | TW15S  | HW20L   |

Insertos disponibles E22, E23

## MAPD000HR/L-Z0



\* PCD ap: 5 mm



AA  
90°

• AR: 6°  
• RR: -1°~12°

(mm)

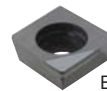
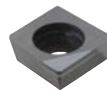
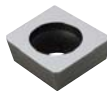
| Codigo          | ØD | ØD2 | Ød | a    | b   | E  | F  | Ød1 | Ød2 | ap  | Max rpm | kg   |
|-----------------|----|-----|----|------|-----|----|----|-----|-----|-----|---------|------|
| MAPD 040HR/L-Z4 | 40 | 34  | 16 | 8.4  | 5.6 | 18 | 40 | 9   | 14  | 9.5 | 24,000  | 0.24 |
| 050HR/L-Z5      | 50 | 42  | 22 | 10.4 | 6.3 | 20 | 40 | 11  | 18  | 9.5 | 22,000  | 0.35 |
| 063HR/L-Z6      | 63 | 42  | 22 | 10.4 | 6.3 | 20 | 40 | 11  | 18  | 9.5 | 20,000  | 0.65 |

### Insertos disponibles

SNEW

SNEW-XAF

SNEW-NAF



Eje endurecido

| Codigo        | Sin Rec. |     |       |      | PCD   | pag. |
|---------------|----------|-----|-------|------|-------|------|
|               | H01      | G10 | ST30A | ST20 | DP200 |      |
| SNEW 09T3ADFR | ●        |     |       |      |       |      |
| 09T3ADTR-XAF  |          |     |       |      | ●     | E22  |
| 09T3ADTR-XAW  |          |     |       |      | ●     | E23  |
| 09T3ADTR-NAF  |          |     |       |      | ●     |      |
| 09T3ADTR-NAW  |          |     |       |      | ●     |      |

### Adaptadores disponibles

| Codigo          | Adaptadores NC  |
|-----------------|-----------------|
| MAPD 040HR/L-Z4 | BT**□□-FMC16-□□ |
| 050HR/L-Z5      | BT**□□-FMC22-□□ |
| 063HR/L-Z6      | BT**□□-FMC22-□□ |

### Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte       |                        | Calidades    |
|---------------|--------------------------|------------------------|--------------|
|               | vc (m/min)               | fz (mm/diente)         |              |
| Aluminum      | 1,000~4,000<br>500~2,500 | 0.05~0.30<br>0.05~0.20 | DP200<br>H01 |

### Tornillo Refrigerante (no incluido)

| Codigo | Fresa aplicable | Diámetros disponibles |
|--------|-----------------|-----------------------|
| CB0525 | MAPD040HR/L-Z4  | Ø40                   |
| CB1025 | MAPD050HR/L-Z5  | Ø50                   |
|        | MAPD063HR/L-Z6  | Ø63                   |

### Partes

| Especificación | Tor. Inserto | Tor. Ajuste    | Balance Tornillo | Llave Inserto | Adjust Llave |
|----------------|--------------|----------------|------------------|---------------|--------------|
| Ø32~Ø63        | FTKA0408     | AHX0617F-NYLOK | KHD0405          | TW15S         | HW20L        |

Insertos disponibles E22, E23 Detalles del cortador E400~E402

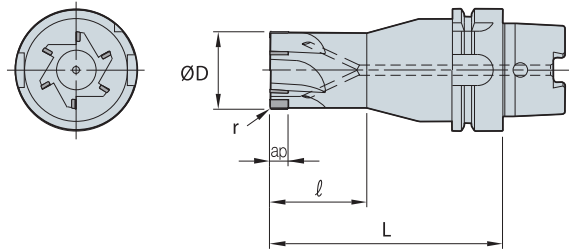


➤ Sistema de codificación

PDF
6
032
- HSK63A

PCD Face cutter
Dientes
Diametro
Mango

**PCD Cortador frontal**



AA  
90°

- AR: 6°
- RR: 5°~9°

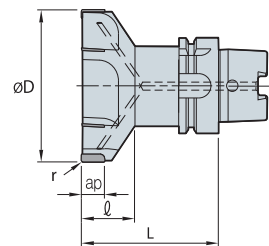
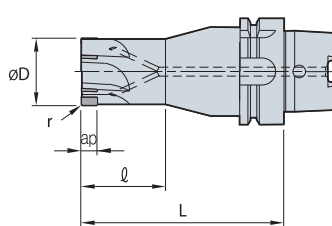
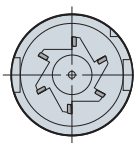
| Codigo |              |   | ØD | r   | ap | l  | L   |
|--------|--------------|---|----|-----|----|----|-----|
| PDF    | 4032-HSK50A  | 4 | 32 | 0.5 | 8  | 50 | 120 |
|        | 4040-HSK50A  | 4 | 40 | 0.5 | 8  | 50 | 120 |
|        | 4032-HSK63A  | 4 | 32 | 0.5 | 8  | 50 | 120 |
|        | 4040-HSK63A  | 4 | 40 | 0.5 | 8  | 50 | 120 |
|        | 4050-HSK63A  | 4 | 50 | 0.5 | 8  | 50 | 120 |
|        | 6063-HSK63A  | 6 | 63 | 0.5 | 12 | -  | 100 |
|        | 6063-HSK100A | 6 | 63 | 0.5 | 12 | -  | 100 |

(mm)

➤ Condiciones de corte recomendadas

| Pieza Trabajo             | vc (m/min) | fz (mm/diente) | ap (mm)  |
|---------------------------|------------|----------------|----------|
| Aluminio, latón, aleación | 200~2,000  | 0.02~0.1       | 0.05~4.0 |

**Formato Orden Especial PCD**



| Codigo | Fig. | Dientes | Dimensiones (mm) |   |    |   |   | Especif. Zanco |
|--------|------|---------|------------------|---|----|---|---|----------------|
|        |      |         | ØD               | r | ap | l | L |                |
| PDF    |      |         |                  |   |    |   |   |                |

# E Información técnica Alpha Mill-X

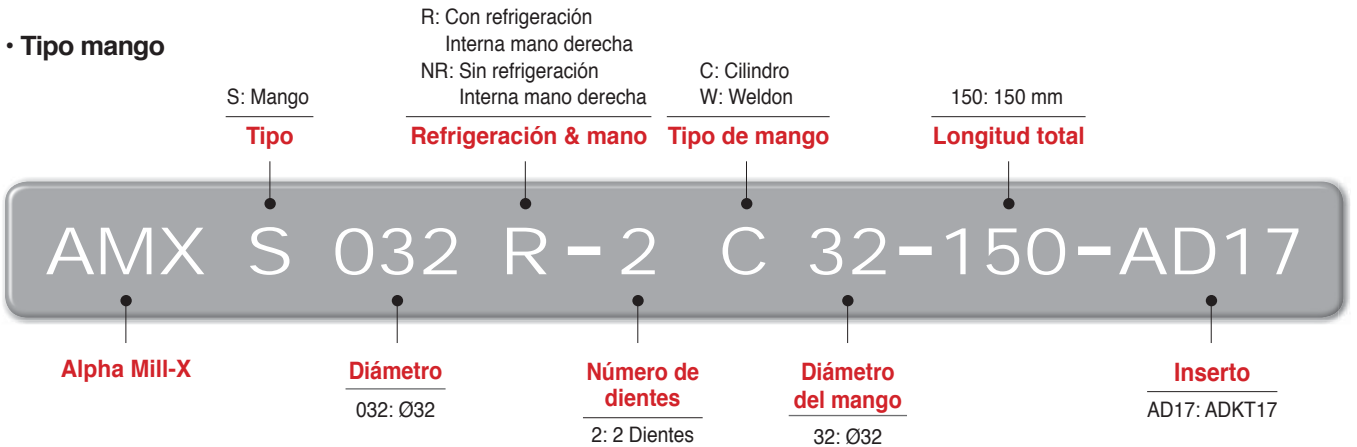
Herramienta de fresado para alta productividad con buena perpendicularidad y minimización de la carga de corte

## Alpha Mill-X new

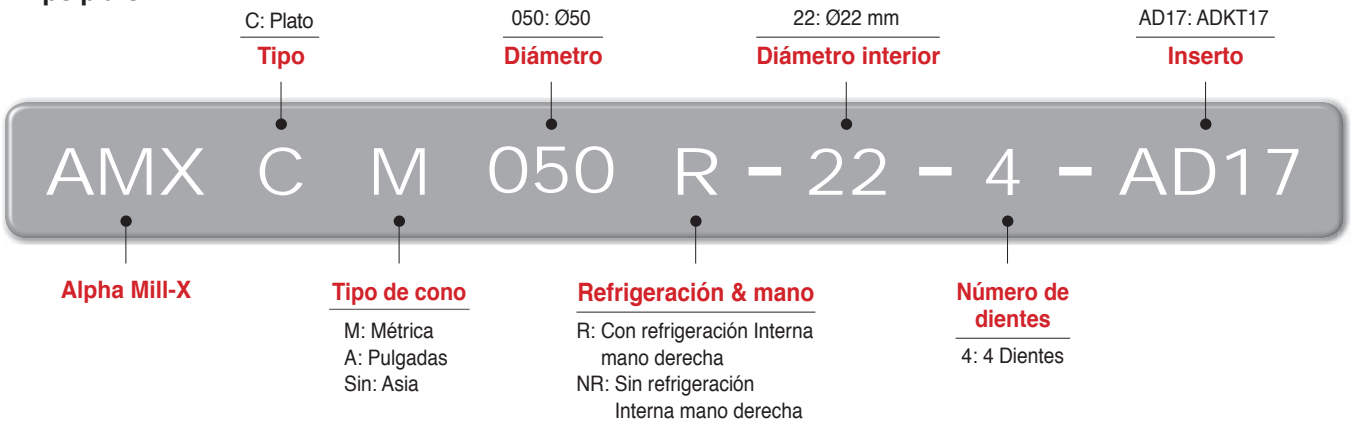
- Su perpendicularidad superior se logra mediante su diseño, optimizado para un acabado superficial de alta calidad.
- Carga de corte y rebabas minimizadas debido al filo de corte diseñado con un ángulo de corte altamente positivo.
- Productividad mejorada debido a la capacidad de la herramienta para mecanizar a alta velocidad y a alto avance (en comparación con las herramientas existentes, la velocidad de corte y el avance por diente aumentan en un 15%).

### 🔗 Sistema de codificación

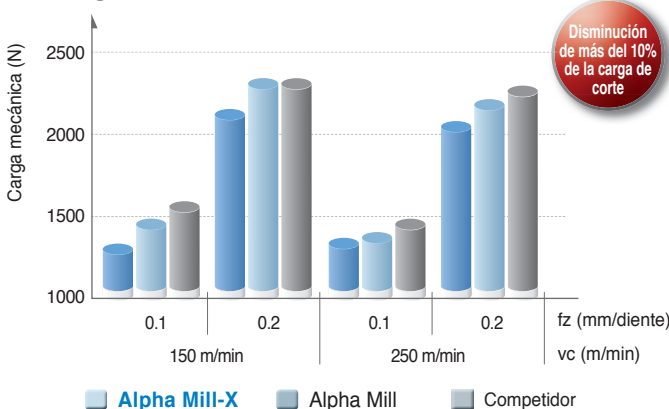
#### • Tipo mango



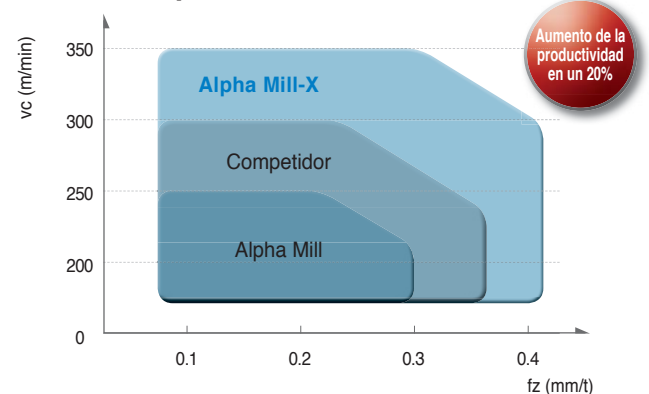
#### • Tipo plato



### 🔗 Carga mecánica



### 🔗 Área de aplicación





**Características**

**Rompeviruta con un ángulo de ataque muy positivo**

- Alto ángulo de ataque
- Mejor control de viruta

**Filo secundario con una función de Wiper (Filo secundario más largo para mejor acabado)**

- Filo de corte secundario optimizado para una superficie excelente en superficies mecanizadas

**Área de sujeción plana**

- Sujeción estable incluso a alta velocidad y alto avance

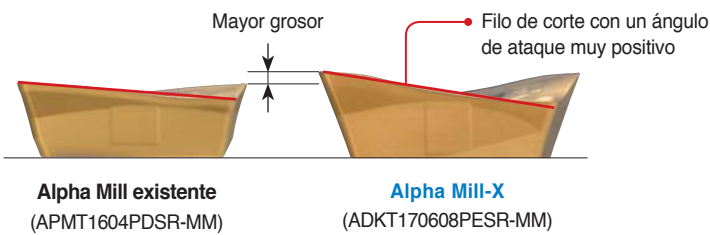
**Filo de corte agudo**

- Mejor acabado superficial
- Baja carga mecánica

**Cavidad de viruta ancha**

- Control de viruta maximizado
- Excelente control de viruta en mecanizado de alta velocidad y alto avance

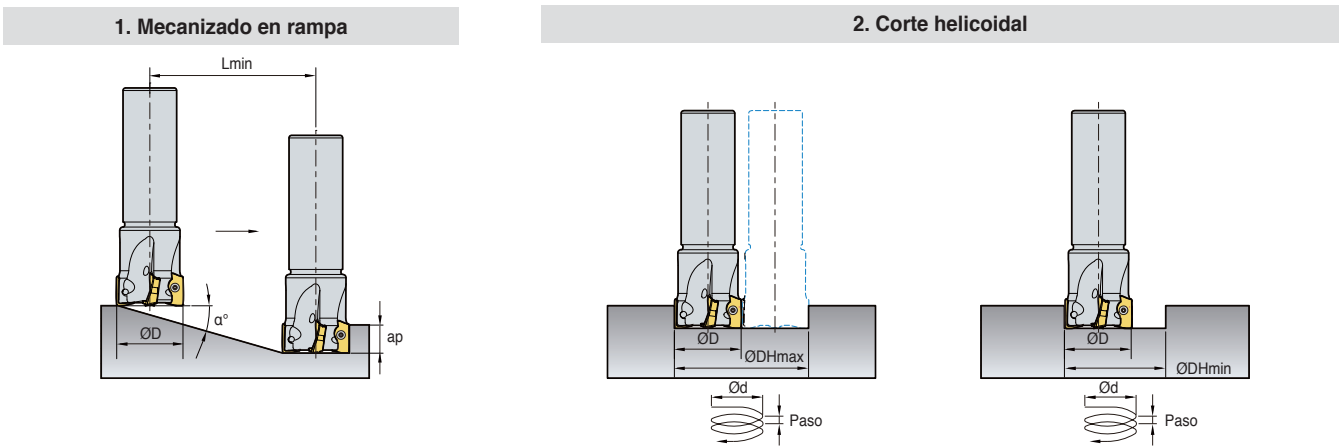
**Perpendicularidad perfecta**



- Filo de corte diseñado con un alto ángulo de ataque: disminución de la carga de corte.
- Inserto más grueso: alta rigidez del inserto

► **Óptimo para mecanizado de alta velocidad y alto avance.**

**Condiciones de corte para rampas y operaciones helicoidales**



| Designación | Diámetro de herramienta ØD | ap   | 1. Mecanizado en rampa |       | 2. Corte helicoidal               |             |                                   |             |                                   |             |
|-------------|----------------------------|------|------------------------|-------|-----------------------------------|-------------|-----------------------------------|-------------|-----------------------------------|-------------|
|             |                            |      | Ángulo máximo α (°)    | Lmin  | Agujero ciego                     |             |                                   |             | Agujero pasante                   |             |
|             |                            |      |                        |       | Diámetro mínimo realizable ØDHmin | Paso máximo | Diámetro mínimo realizable ØDHmax | Paso máximo | Diámetro mínimo realizable ØDHmin | Paso máximo |
| ADKT17      | 20                         | 16.5 | 13.0                   | 71.5  | 30.4                              | 7.0         | 38.4                              | 8.9         | 20.8                              | 4.8         |
|             | 25                         | 16.5 | 8.0                    | 117.4 | 40.4                              | 5.7         | 48.4                              | 6.8         | 30.8                              | 4.3         |
|             | 32                         | 16.5 | 3.7                    | 255.2 | 54.4                              | 3.5         | 62.4                              | 4.0         | 44.8                              | 2.9         |
|             | 33                         | 16.5 | 3.6                    | 262.3 | 56.4                              | 3.5         | 64.4                              | 4.1         | 46.8                              | 2.9         |
|             | 40                         | 16.5 | 2.6                    | 363.4 | 70.4                              | 3.2         | 78.4                              | 3.6         | 60.8                              | 2.8         |
|             | 50                         | 16.5 | 1.9                    | 497.4 | 90.4                              | 3.0         | 98.4                              | 3.3         | 80.8                              | 2.7         |
|             | 63                         | 16.5 | 1.3                    | 727.1 | 116.4                             | 2.6         | 124.4                             | 2.8         | 106.8                             | 2.4         |
|             | 80                         | 16.5 | 1.1                    | 859.3 | 150.4                             | 2.9         | 158.4                             | 3.0         | 140.8                             | 2.7         |

\* En rampas y mecanizado helicoidal, use refrigerante y aire. Lmin - ap / tan (α°)



## Condiciones de corte recomendadas

### • ADKT17 (Planeado y escuadrado)

| ISO | Grado recomendado | ADKT1706 <input type="checkbox"/> <input type="checkbox"/> PESR-MM / ML |                                     |                            |
|-----|-------------------|---|-------------------------------------|----------------------------|
|     |                   | vc  | fz                                  | max ap                     |
| P   | PC5300            | 150~240 m/min<br>(492~787 sfm)  | 0.3~0.05 mm/t<br>(0.012~0.002 ipt)  | 16.5 mm<br>(0.65 pulgadas) |
|     | PC5400            | 130~210 m/min<br>(426~688 sfm)  | 0.3~0.05 mm/t<br>(0.002~0.012 ipt)  |                            |
|     | PC3700            | 160~270 m/min<br>(426~688 sfm)  | 0.3~0.05 mm/t<br>(0.002~0.012 ipt)  |                            |
| M   | PC5300            | 90~150 m/min<br>(295~492 sfm)   | 0.25~0.05 mm/t<br>(0.01~0.002 ipt)  |                            |
|     | PC5400            | 70~120 m/min<br>(229~393 sfm)   | 0.25~0.05 mm/t<br>(0.01~0.002 ipt)  |                            |
| K   | PC5300            | 120~200 m/min<br>(393~656 sfm)  | 0.35~0.08 mm/t<br>(0.014~0.003 ipt) |                            |
| S   | PC5300            | 40~70m/min<br>(131~229 sfm)   | 0.2~0.05 mm/t<br>(0.014~0.002 ipt)  |                            |
|     | PC5400            | 30~50m/min<br>(98~164 sfm)  | 0.2~0.05 mm/t<br>(0.014~0.002 ipt)  |                            |

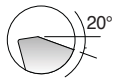
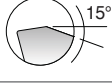
※ Condición de corte máxima: vc = 350 m / min, fz = 0.4 mm / t, según el entorno y las condiciones externas

### • ADKT17 (Ranurado, en rampa y helicoidal)

| ISO | Grado recomendado | ADKT1706 <input type="checkbox"/> <input type="checkbox"/> PESR-MM / ML |                                     |                            |
|-----|-------------------|---|-------------------------------------|----------------------------|
|     |                   | vc  | fz                                  | max ap                     |
| P   | PC5300            | 150~240 m/min<br>(492~787 sfm)  | 0.15~0.05 mm/t<br>(0.012~0.002 ipt) | 16.5 mm<br>(0.65 pulgadas) |
|     | PC5400            | 130~210 m/min<br>(426~688 sfm)  | 0.15~0.05 mm/t<br>(0.002~0.012 ipt) |                            |
|     | PC3700            | 160~270 m/min<br>(426~688 sfm)  | 0.3~0.05 mm/t<br>(0.002~0.012 ipt)  |                            |
| M   | PC5300            | 90~150 m/min<br>(295~492 sfm)   | 0.15~0.05 mm/t<br>(0.01~0.002 ipt)  |                            |
|     | PC5400            | 70~120 m/min<br>(229~393 sfm)   | 0.15~0.05 mm/t<br>(0.01~0.002 ipt)  |                            |
| K   | PC5300            | 120~200 m/min<br>(393~656 sfm)  | 0.2~0.08 mm/t<br>(0.014~0.003 ipt)  |                            |
| S   | PC5300            | 40~70m/min<br>(131~229 sfm)   | 0.15~0.05 mm/t<br>(0.006~0.002 ipt) |                            |
|     | PC5400            | 30~50m/min<br>(98~164 sfm)  | 0.15~0.05 mm/t<br>(0.006~0.002 ipt) |                            |

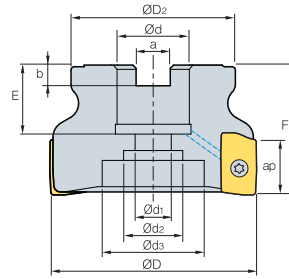
※ En ranurado profundo, ajuste la profundidad por debajo de 5 mm y use refrigerante y aire.

## Rompevirutas recomendados según pieza de trabajo

| Rompevirutas | Forma de filo de corte  | Rompevirutas recomendados según pieza de trabajo (●: 1ª recomendación) |                                  |   |                                  |                  |                      |           |                                  |                      |        |                   |                      |
|--------------|---|--|----------------------------------|---|----------------------------------|------------------|----------------------|-----------|----------------------------------|----------------------|--------|-------------------|----------------------|
|              |   | P  |                                  | M   |                                  | K                |                      | N         |                                  | S                    |        |                   |                      |
|              |   | Acero al carbono de bajo contenido / Acero dulce                       |                                  | Acero al carbono de alto contenido / Acero aleado |                                  | Acero inoxidable |                      | Fundición |                                  | Aleación de aluminio |        | Titanio / Inconel |                      |
|              |   | C/B  | Grados                           | C/B   | Grados                           | C/B              | Grados               | C/B       | Grados                           | C/B                  | Grados | C/B               | Grados               |
| ML           |  | -  | ● PC3700<br>○ PC5300<br>○ PC5400 | -   | ● PC3700<br>○ PC5300<br>○ PC5400 | ●                | ● PC5300<br>○ PC5400 | -         | ● PC6510<br>○ PC5300<br>○ PC5400 | -                    | -      | ●                 | ● PC5300<br>○ PC5400 |
| MM           |  | -  | ● PC3700<br>○ PC5300<br>○ PC5400 | ●   | ● PC3700<br>○ PC5300<br>○ PC5400 | -                | ● PC5300<br>○ PC5400 | ●         | ● PC6510<br>○ PC5300<br>○ PC5400 | -                    | -      | -                 | ● PC5300<br>○ PC5400 |



# AMXCM **new**



AA  
90°  
• AR: 8°  
• RR: -10°~3°

| Codigo                | ØD | ØD2 | Ød | Ød1 | Ød2 | Ød3 | a  | b    | E   | F  | ap | (mm) |      |
|-----------------------|----|-----|----|-----|-----|-----|----|------|-----|----|----|------|------|
| AMXCM 040R-16-3-AD17  | 3  | 40  | 35 | 16  | 9   | 14  | -  | 8.4  | 5.6 | 19 | 40 | 16.5 | 0.18 |
| AMXCM 040R-16-4-AD17  | 4  | 40  | 35 | 16  | 9   | 14  | -  | 8.4  | 5.6 | 19 | 40 | 16.5 | 0.18 |
| AMXCM 050R-22-4-AD17  | 4  | 50  | 42 | 22  | 11  | 18  | -  | 10.4 | 6.3 | 20 | 40 | 16.5 | 0.23 |
| AMXCM 050R-22-5-AD17  | 5  | 50  | 42 | 22  | 11  | 18  | -  | 10.4 | 6.3 | 20 | 40 | 16.5 | 0.20 |
| AMXCM 063R-22-5-AD17  | 5  | 63  | 49 | 22  | 11  | 18  | -  | 10.4 | 6.3 | 20 | 40 | 16.5 | 0.44 |
| AMXCM 063R-22-6-AD17  | 6  | 63  | 49 | 22  | 11  | 18  | -  | 10.4 | 6.3 | 20 | 40 | 16.5 | 0.49 |
| AMXCM 080R-27-6-AD17  | 6  | 80  | 57 | 27  | 14  | 25  | 38 | 12.4 | 7   | 23 | 50 | 16.5 | 0.88 |
| AMXCM 080R-27-7-AD17  | 7  | 80  | 57 | 27  | 14  | 25  | 38 | 12.4 | 7   | 23 | 50 | 16.5 | 0.90 |
| AMXCM 100R-32-8-AD17  | 8  | 100 | 70 | 32  | 18  | 28  | 45 | 14.4 | 8   | 28 | 63 | 16.5 | 1.76 |
| AMXCM 100R-32-10-AD17 | 10 | 100 | 70 | 32  | 18  | 28  | 45 | 14.4 | 8   | 28 | 63 | 16.5 | 1.68 |
| AMXCM 125R-40-8-AD17  | 8  | 125 | 90 | 40  | 22  | 32  | 54 | 16.4 | 9   | 30 | 63 | 16.5 | 2.89 |
| AMXCM 125R-40-10-AD17 | 10 | 125 | 90 | 40  | 22  | 32  | 54 | 16.4 | 9   | 30 | 63 | 16.5 | 4.83 |

## Insertos disponibles

ADKT-ML      ADKT-MM



| Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC3300   | PC5400 |      | G10 | H01 |
| ADKT 170604PESR-MM |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
| ADKT 170608PESR-MM |        |      |            |        | ●      |        |        |        |        | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
| ADKT 170608PESR-ML |        |      |            |        | ●      |        |        |        |        | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
| ADKT 170616PESR-MM |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
| ADKT 170620PESR-MM |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |

## Adaptadores disponibles

| Codigo               | Adaptadores NC |
|----------------------|----------------|
| AMXCM 040R-16-3-AD17 | BT□□-FMC26-□□  |
| AMXCM 040R-16-4-AD17 | BT□□-FMC26-□□  |
| AMXCM 050R-22-4-AD17 | BT□□-FMC22-□□  |
| AMXCM 050R-22-5-AD17 | BT□□-FMC22-□□  |
| AMXCM 063R-22-5-AD17 | BT□□-FMC22-□□  |
| AMXCM 063R-22-6-AD17 | BT□□-FMC22-□□  |
| AMXCM 080R-27-6-AD17 | BT□□-FMC27-□□  |
| AMXCM 080R-27-7-AD17 | BT□□-FMC27-□□  |

## Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø40~Ø80          | FTKA0410 | TW15S |

Insertos disponibles E04      Detalles del cortador E400~E402



## AMXS new

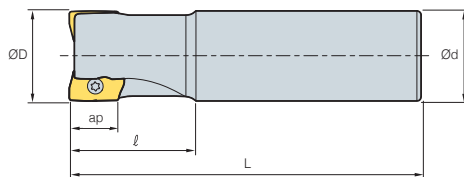


Fig. 1

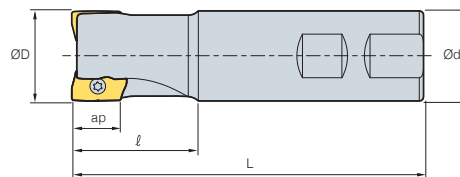
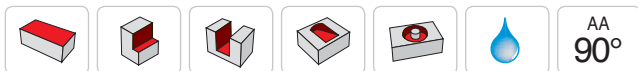


Fig. 2



AA  
90°  
• AR: 8°  
• RR: -10°~3°

(mm)

| Codigo                  |   | ØD | Ød | ℓ  | L   | ap   |       | Fig. |
|-------------------------|---|----|----|----|-----|------|-------|------|
| AMXS 020R-1W20-100-AD17 | 1 | 20 | 20 | 35 | 100 | 16.5 | 0.170 | 2    |
| 020R-1C20-200-AD17      | 1 | 20 | 20 | 35 | 200 | 16.5 | 0.360 | 1    |
| 025R-2W25-115-AD17      | 2 | 25 | 25 | 35 | 115 | 16.5 | 0.610 | 2    |
| 025R-2C25-200-AD17      | 2 | 25 | 25 | 35 | 200 | 16.5 | 0.450 | 1    |
| 032R-3W32-125-AD17      | 3 | 32 | 32 | 45 | 125 | 16.5 | 0.620 | 2    |
| 032R-3C32-200-AD17      | 3 | 32 | 32 | 45 | 200 | 16.5 | 1.050 | 1    |
| 033R-3W32-125-AD17      | 3 | 33 | 32 | 45 | 125 | 16.5 | 0.620 | 2    |
| 033R-3C32-200-AD17      | 3 | 33 | 32 | 45 | 200 | 16.5 | 1.050 | 1    |
| 040R-3W32-130-AD17      | 3 | 40 | 32 | 50 | 130 | 16.5 | 0.750 | 2    |
| 040R-3C32-200-AD17      | 3 | 40 | 32 | 50 | 200 | 16.5 | 1.170 | 1    |
| 040R-4W32-130-AD17      | 4 | 40 | 32 | 50 | 130 | 16.5 | 0.740 | 2    |
| 040R-4C32-200-AD17      | 4 | 40 | 32 | 50 | 200 | 16.5 | 1.200 | 1    |

### Insertos disponibles

ADKT-ML ADKT-MM



| Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| ADKT 170604PESR-MM |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     | E04 |
| 170608PESR-MM      |        |      |            |        | ●      |        |        |        |        | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
| 170608PESR-ML      |        |      |            |        | ●      |        |        |        |        | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
| 170616PESR-MM      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
| 170620PESR-MM      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |

### Partes

| Especificaciones |                      |                |
|------------------|----------------------|----------------|
| Ø20~Ø40          | Tornillo<br>FTKA0410 | Llave<br>TW15S |

Insertos disponibles E04 Detalles del cortador E400~E402



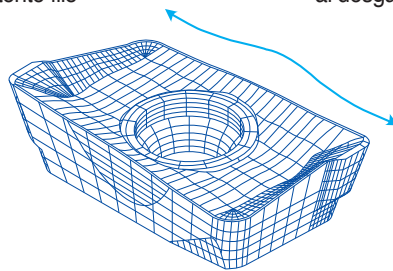
Los cortadores tienen una amplia gama de aplicaciones

# Alpha Mill

- El diseño innovador del filo del cote curo y el rompeviruta asegura un corte de 90° y una menor resistencia al corte.
- Los cortadores tienen una amplia gama de aplicaciones : Chapeado, mortajado, planeado, etc.
- Exelentes resultados garantizados en los cortes de gran profundidad, gracias a su filo de corte resistente y baja resistencia al corte.

## Característica del inserto

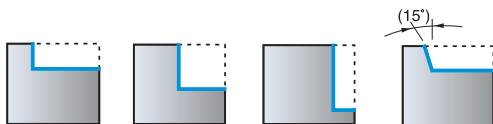
- Larga vida a altas velocidades, alto avance y profundidad en el corte debido a la baja resistencia de corte y su resistente flio
- La característica distintiva de la curva del Alpha-Mill reduce la resistencia al corte y mejora la resistencia al desgaste del filo de corte



- La baja resistencia al corte es lograda por el esclusivo diseño de KORLOY
- La aplicación del grado ideal permite un maquinado altamente eficiente

## Ejemplo de Aplicación

### Planeado



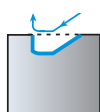
### Mortajado



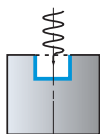
### Barrenado



### Plano Inclinado



### Operacion Helicoidal



## Alpha Mill Nick **new**

- Filo de corte aserrado (dentado) reduce la carga mecánica
- Alta productividad
- Los insertos Alpha Mill Nick son compatibles con los portaherramientas estándar para insertos APMT, reduciendo los gastos de existencias y almacenaje

### Características

- Baja carga de corte gracias a los filos aserrados sobrepuestos



Inserto nick aserrado

Inserto normal

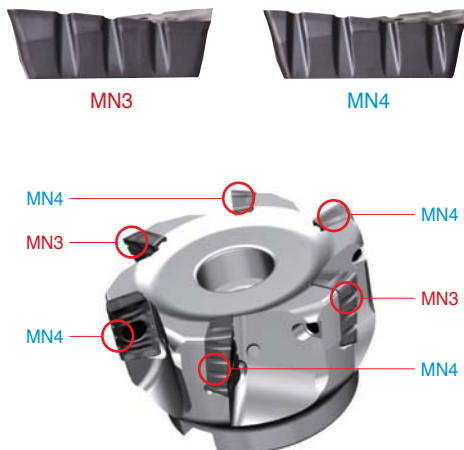


- ※ El mecanizado con insertos tipo nick con filos aserrados requiere del uso de ambos rompevirutas
- ※ Pueden ser usados con los portaherramientas Alpha Mill existentes. Recomendamos el uso de las fresas de filo largo para maximizar el rendimiento y obtener resultados excelentes (usar siempre fresas con número par de dientes/canales)

| Tipo                                   | Insertos nick aserrados  |  | Insertos generales  |
|--|--|--|---|
| Número de dientes requeridos           | 20   |  | 20  |
| Para AMCM3080M (4 canales x 5 dientes) |  x 10<br>APMT16-MN3 |  x 10<br>APMT16-MN4 |  x 20<br>APMT16-MM, MF, ML, MA |

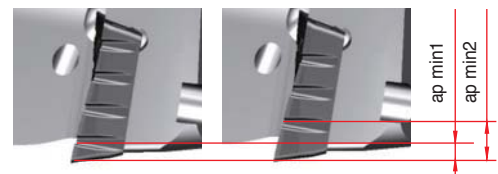
### Disposición de los insertos en la fresa

- Alterne los dos tipos de rompevirutas al usar estos insertos para un resultado óptimo



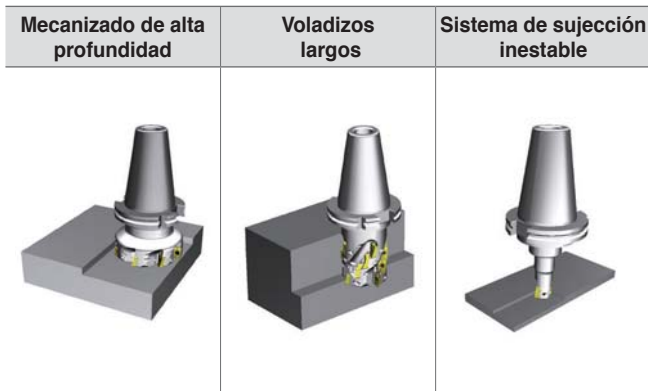
### Profundidad mínima de corte

- La profundidad de corte debe ser mayor que la distancia min1 indicada en la imagen para que la viruta sea fragmentada

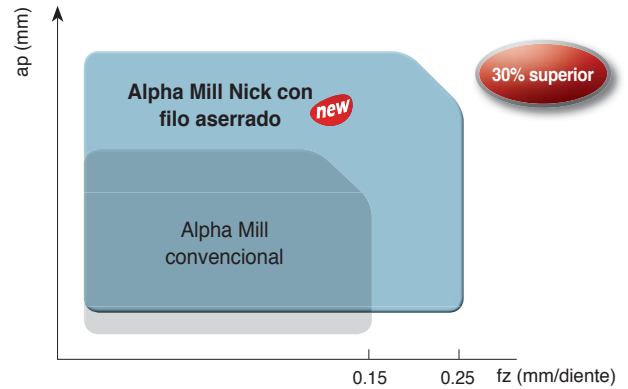


| Tipo               | ap min1 | ap min2 |
|--------------------|---------|---------|
| APMT11 (Tipo 2000) | 1.6 mm  | 4.1 mm  |
| APMT16 (Tipo 3000) | 2.2 mm  | 5 mm    |
| APMT18 (Tipo 4000) | 2.3 mm  | 5.5 mm  |

### Ejemplos de aplicación



### Área de aplicación



• Condiciones de corte un 30% superiores en comparación con los modelos convencionales

### Condiciones de corte recomendadas

| ISO | Grados | APMT 2000 Tipo |                |         | APMT 3000 Tipo |                |         | APMT 4000 Tipo |                |         |
|-----|--------|----------------|----------------|---------|----------------|----------------|---------|----------------|----------------|---------|
|     |        | vc (m/min)     | fz (mm/diente) | ap (mm) | vc (m/min)     | fz (mm/diente) | ap (mm) | vc (m/min)     | fz (mm/diente) | ap (mm) |
| P   | PC3700 | 180~280        | 0.05~0.15      | 11      | 160~270        | 0.05~0.18      | 16      | 160~270        | 0.05~0.18      | 17      |
|     | PC5300 | 150~250        | 0.05~0.15      |         | 150~240        | 0.05~0.18      |         | 150~240        | 0.05~0.18      |         |
| M   | PC5300 | 90~170         | 0.05~0.15      |         | 90~150         | 0.05~0.18      |         | 90~150         | 0.05~0.18      |         |
| K   | PC5300 | 120~240        | 0.1~0.2        |         | 120~200        | 0.1~0.23       |         | 120~200        | 0.1~0.23       |         |

※ Las condiciones de corte arriba indicadas pueden ser aplicadas hasta una velocidad de corte de 300 m/min y una velocidad de avance por diente de 0.4 mm/diente

### Características del rompevirutas

| Rompeviruta | Filo de corte | Usos                      | Características   |
|-------------|---------------|---------------------------|---|
| MA          |               | Al                        | Filo de corte y superficie pulida óptimos para el mecanizado de aluminio que aseguran un gran rendimiento en el mecanizado. |
| ML          |               | Material de difícil corte | Rompevirutas con baja carga de corte óptimo para el mecanizado de materiales de difícil corte                               |
| MF          |               | Corte ligero              | Rompevirutas con baja carga de corte y filo de corte más resistente que el de ML óptimo para el corte ligero.               |
| MM          |               | Corte general             | Óptimo para el fresado en rangos generales  |
| MN          |               | Desbaste con (Nick)       | Geometría diseñada para la fragmentación de virutas garantizando una muy buena maquinabilidad en desbaste                   |

## Constitución de producto

| Código inserto | Tipo      | Radio de punta | MA                | ML                |                |
|----------------|-----------|----------------|-------------------|-------------------|----------------|
| APMT           | 1000 Tipo | 0.4            | APMT0602PDFR-MA   | -                 |                |
|                |           | 0.8            | APMT060208PDFR-MA | -                 |                |
|                | 1500 Tipo | 0.4            | APMT0903PDFR-MA   | APMT0903PDER-ML   |                |
|                |           | 0.8            | APMT090308PDFR-MA | APMT090308PDER-ML |                |
|                | 2000 Tipo | 0.5            | APMT11T3PDFR-MA   | APMT11T3PDER-ML   |                |
|                |           | 0.8            | APMT11T308PDFR-MA | APMT11T308PDER-ML |                |
|                | 3000 Tipo | 0.4            | APMT160404PDFR-MA | APMT160404PDER-ML |                |
|                |           | 0.8            | APMT1604PDFR-MA   | APMT1604PDER-ML   |                |
|                | 4000 Tipo | 0.4            | APMT180604PDFR-MA | APMT180604PDER-ML |                |
|                |           | 0.8            | APMT1806PDFR-MA   | APMT1806PDER-ML   |                |
|                |           | 1.2            | APMT180612PDFR-MA | APMT180612PDER-ML |                |
|                |           | 1.6            | APMT180616PDFR-MA | APMT180616PDER-ML |                |
|                |           | 2.0            | APMT180620PDFR-MA | APMT180620PDER-ML |                |
|                |           | 2.4            | APMT180624PDFR-MA | APMT180624PDER-ML |                |
|                |           |                | 3.0               | APMT180630R-MA    | APMT180630R-ML |

- Las placas se pueden cambiar a los soportes de tipo APMT.

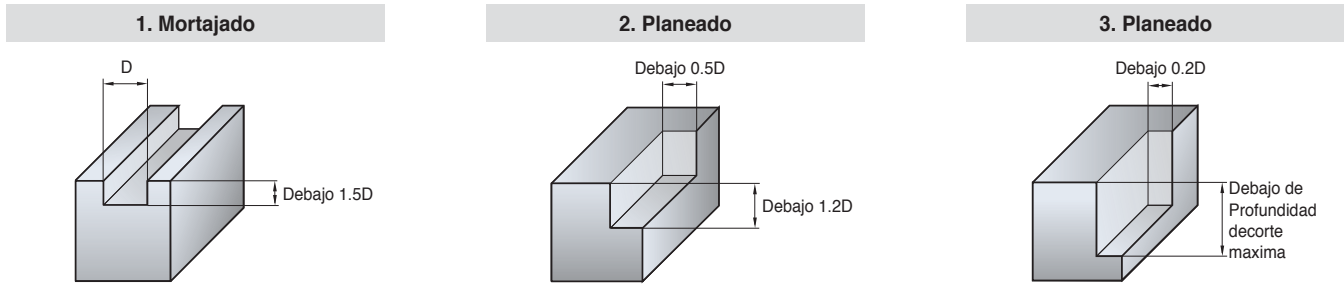
## Características del rompevirutas

| Rompevirutas | Filo de corte | Grados recomendados y rompevirutas según Pieza de Trabajo (•: 1ra.) |  |                  |  |           |  |                      |                                  |            |       |        |                                  |
|--------------|---------------|---|--|------------------|--|-----------|--|----------------------|----------------------------------|------------|-------|--------|----------------------------------|
|              |               | P   |  | M                |  | K         |  | N                    |                                  | S          |       |        |                                  |
|              |               | Acerobajoen Carbon/<br>Acero Suave                                  | Acero Altoen Carbon/<br>Acero Suave                      | Acero Inoxidable |  | Fundición |  | Aleacion de Aluminio |                                  | Ti/Inconel |       |        |                                  |
|              | C/B           | Grados  | C/B  | Grados           | C/B  | Grados    | C/B  | Grados               | C/B                              | Grados     | C/B   | Grados |                                  |
| MA           |               | -   | -  | -                | -  | -         | -  | -                    | -                                | •          | • H01 | -      | -                                |
| ML           |               | -   | -  | -                | -  | •         | • PC5300<br>○ PC5400<br>○ PC3545<br>○ PC9530 | -                    | -                                | -          | -     | •      | • PC5300<br>○ PC5400<br>○ PC3545 |
| MF           |               | •   | • PC3700<br>○ PC5300<br>○ PC5400<br>○ NCM325<br>○ NCM335 | -                | ○ PC3700<br>○ PC3545<br>○ NCM325<br>○ NCM335             | -         | • PC5300<br>○ PC5400<br>○ PC3545<br>○ PC9530 | -                    | • PC6510<br>○ PC5300<br>○ PC5400 | -          | -     | -      | • PC5300<br>○ PC5400<br>○ PC3545 |
| MM           |               | -   | • PC3700<br>○ PC5300<br>○ PC5400<br>○ NCM325<br>○ NCM335 | •                | • PC3700<br>○ PC5300<br>○ PC5400<br>○ NCM325<br>○ NCM335 | -         | • PC5300<br>○ PC5400<br>○ PC3545<br>○ PC9530 | •                    | • PC6510<br>○ PC5300<br>○ PC5400 | -          | -     | -      | • PC5300<br>○ PC5400<br>○ PC3545 |
| MN           |               | -   | • PC3500<br>○ PC5300<br>○ PC5400                         | -                | -  | -         | • PC5300<br>○ PC5400<br>○ PC9530             | -                    | • PC6510<br>○ PC5300<br>○ PC5400 | -          | -     | -      | • PC5300<br>○ PC5400<br>○ PC3545 |





**Profundidad de corte Recomendada**



**Condiciones de corte recomendadas (Filo-Multiple)**

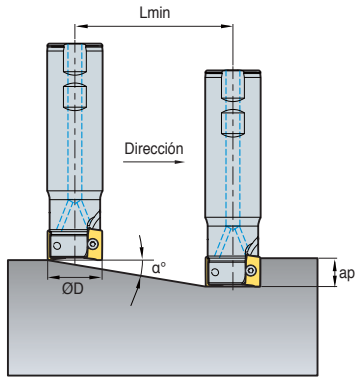
| Pieza Trabajo                        | Calidades  | Fig. | Diametro Herramienta |                |            |                |            |                |            |                |            |                |
|--------------------------------------|--|------|----------------------|----------------|------------|----------------|------------|----------------|------------|----------------|------------|----------------|
|                                      |  |      | Ø10, 16              |                | Ø20, 25    |                | Ø32, 40    |                | Ø50, 63    |                | Ø80, 100   |                |
|                                      |  |      | vc (m/min)           | fz (mm/diente) | vc (m/min) | fz (mm/diente) | vc (m/min) | fz (mm/diente) | vc (m/min) | fz (mm/diente) | vc (m/min) | fz (mm/diente) |
| Acero bajo carbon<br>Acero Suave     | NC5340<br>NCM325<br>PC5400<br>PC5300<br>PC3500<br>PC3600 | ①    | 50~80                | 0.05~0.08      | 80~100     | 0.05~0.08      | 100~120    | 0.05~0.08      | 100~120    | 0.05~0.08      | 100~120    | 0.05~0.08      |
|                                      |  | ②    | 65~90                | 0.08~0.1       | 100~120    | 0.08~0.1       | 120~140    | 0.08~0.1       | 120~140    | 0.08~0.1       | 120~140    | 0.08~0.1       |
|                                      |  | ③    | 65~95                | 0.1~0.15       | 100~120    | 0.1~0.15       | 120~140    | 0.1~0.15       | 120~140    | 0.1~0.15       | 130~150    | 0.1~0.15       |
| Acero alto carbon.<br>Aleacion Acero | NC5340<br>NCM325<br>PC5300<br>PC3500<br>PC3600           | ①    | 45~60                | 0.05           | 60~80      | 0.05           | 80~100     | 0.05           | 80~100     | 0.05           | 80~100     | 0.05           |
|                                      |  | ②    | 50~80                | 0.05~0.08      | 80~100     | 0.05~0.08      | 100~120    | 0.08~0.1       | 100~120    | 0.08~0.1       | 100~120    | 0.08~0.1       |
|                                      |  | ③    | 50~80                | 0.1~0.15       | 80~100     | 0.1~0.15       | 110~130    | 0.1~0.15       | 100~120    | 0.1~0.15       | 110~130    | 0.1~0.15       |
| Aleaciones de Acero                  | PC5300<br>PC3500<br>PC3600<br>PC2510<br>PC2505           | ①    | 40~55                | 0.05           | 50~70      | 0.05           | 70~90      | 0.05           | 70~90      | 0.05           | 70~90      | 0.05           |
|                                      |  | ②    | 45~60                | 0.05~0.08      | 60~80      | 0.05~0.08      | 90~120     | 0.05~0.08      | 100~120    | 0.05~0.08      | 100~120    | 0.05~0.08      |
|                                      |  | ③    | 50~75                | 0.12~0.18      | 90~110     | 0.12~0.18      | 100~130    | 0.1~0.15       | 100~120    | 0.1~0.15       | 110~130    | 0.1~0.15       |
| Acero Inoxidable                     | PC5300<br>PC9530   | ①    | 35~50                | 0.054          | 50~70      | 0.054          | 70~90      | 0.05           | 70~90      | 0.05           | 70~90      | 0.05           |
|                                      |  | ②    | 45~60                | 0.05~0.08      | 60~80      | 0.05~0.08      | 90~120     | 0.05~0.08      | 100~120    | 0.05~0.08      | 100~120    | 0.05~0.08      |
|                                      |  | ③    | 50~75                | 0.1~0.15       | 90~110     | 0.1~0.15       | 100~130    | 0.1~0.15       | 110~130    | 0.1~0.15       | 110~130    | 0.1~0.15       |
| Fundición                            | PC6510<br>PC5300   | ①    | 50~70                | 0.1~0.12       | 70~90      | 0.1~0.12       | 70~90      | 0.1~0.12       | 90~120     | 0.1~0.12       | 90~120     | 0.1~0.12       |
|                                      |  | ②    | 50~80                | 0.12           | 80~100     | 0.12           | 90~120     | 0.12           | 100~140    | 0.12           | 100~140    | 0.12           |
|                                      |  | ③    | 50~80                | 0.15~0.2       | 80~100     | 0.15~0.2       | 100~130    | 0.15~0.2       | 120~150    | 0.15~0.2       | 120~150    | 0.15~0.2       |
| Aleacion de Aluminio                 | H01  | ①    | 160~600              | 0.1~0.2        | 200~800    | 0.1~0.2        | 300~900    | 0.1~0.2        | 400~1,000  | 0.1~0.2        | 400~1,000  | 0.1~0.2        |
|                                      |  | ②    | 200~650              | 0.15~0.3       | 250~900    | 0.15~0.3       | 300~950    | 0.15~0.3       | 400~1,000  | 0.1~0.4        | 400~1,000  | 0.1~0.4        |
|                                      |  | ③    | 200~650              | 0.15~0.3       | 250~900    | 0.15~0.3       | 300~950    | 0.15~0.3       | 400~1,000  | 0.1~0.4        | 400~1,000  | 0.1~0.4        |
| Acero Endurecido                     | PC5300<br>PC2510<br>PC2505                               | ①    | 35~50                | 0.03           | 50~70      | 0.03           | 60~90      | 0.03           | 60~90      | 0.03           | 60~90      | 0.03           |
|                                      |  | ②    | 45~60                | 0.05~0.08      | 60~80      | 0.05~0.08      | 80~100     | 0.05~0.08      | 80~100     | 0.05~0.08      | 80~100     | 0.05~0.08      |
|                                      |  | ③    | 50~80                | 0.05~0.08      | 80~100     | 0.05~0.08      | 80~100     | 0.05~0.08      | 80~100     | 0.05~0.08      | 80~100     | 0.05~0.08      |

**Condiciones de corte recomendadas (para fresa con filo único)**

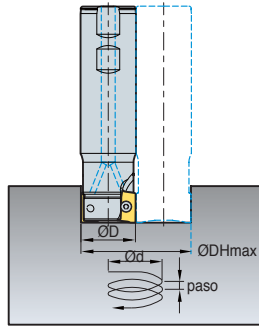
| Pieza Trabajo                        | Calidades  | Fig. | Diametro Herramienta |                |            |                |            |                |            |                |            |                |
|--------------------------------------|--|------|----------------------|----------------|------------|----------------|------------|----------------|------------|----------------|------------|----------------|
|                                      |  |      | Ø10, 16              |                | Ø20, 25    |                | Ø32, 40    |                | Ø50, 63    |                | Ø80, 100   |                |
|                                      |  |      | vc (m/min)           | fz (mm/diente) | vc (m/min) | fz (mm/diente) | vc (m/min) | fz (mm/diente) | vc (m/min) | fz (mm/diente) | vc (m/min) | fz (mm/diente) |
| Acero bajo carbon<br>Acero Suave     | NC5340<br>NCM325<br>PC5400<br>PC5300<br>PC3500<br>PC3600 | ①    | 45~60                | 0.05~0.08      | 60~80      | 0.05~0.08      | 80~120     | 0.05~0.08      | 120~200    | 0.05~0.08      | 150~200    | 0.05~0.08      |
|                                      |  | ②    | 60~90                | 0.08~0.1       | 80~120     | 0.08~0.1       | 120~180    | 0.08~0.1       | 180~250    | 0.08~0.1       | 200~250    | 0.08~0.1       |
|                                      |  | ③    | 60~90                | 0.1~0.15       | 80~120     | 0.1~0.15       | 120~180    | 0.1~0.15       | 180~250    | 0.1~0.15       | 200~250    | 0.1~0.15       |
| Acero alto carbon.<br>Aleacion Acero | NC5340<br>NCM325<br>PC5300<br>PC3500<br>PC3600           | ①    | 40~60                | 0.05           | 50~80      | 0.05           | 80~110     | 0.05           | 100~150    | 0.05           | 100~150    | 0.05           |
|                                      |  | ②    | 50~80                | 0.05~0.08      | 80~100     | 0.05~0.08      | 110~150    | 0.05~0.1       | 150~200    | 0.05~0.1       | 150~200    | 0.05~0.1       |
|                                      |  | ③    | 50~80                | 0.1~0.15       | 80~100     | 0.1~0.15       | 120~150    | 0.1~0.15       | 180~200    | 0.1~0.15       | 180~200    | 0.1~0.15       |
| Aleaciones de Acero                  | PC5300<br>PC3500<br>PC3600<br>PC2510<br>PC2505           | ①    | 35~50                | 0.05           | 50~70      | 0.05           | 80~100     | 0.05           | 100~130    | 0.05           | 100~130    | 0.05           |
|                                      |  | ②    | 45~70                | 0.05~0.08      | 70~100     | 0.05~0.08      | 100~130    | 0.05~0.1       | 130~180    | 0.05~0.1       | 130~180    | 0.05~0.1       |
|                                      |  | ③    | 45~70                | 0.1~0.15       | 70~100     | 0.1~0.15       | 100~150    | 0.1~0.15       | 130~180    | 0.1~0.15       | 130~180    | 0.1~0.15       |
| Acero Inoxidable                     | PC5300<br>PC9530   | ①    | 35~50                | 0.05           | 50~70      | 0.05           | 80~100     | 0.05           | 100~130    | 0.05           | 100~130    | 0.05           |
|                                      |  | ②    | 45~70                | 0.05~0.08      | 70~100     | 0.05~0.08      | 100~130    | 0.05~0.1       | 130~180    | 0.05~0.1       | 130~180    | 0.05~0.1       |
|                                      |  | ③    | 45~70                | 0.1~0.15       | 70~100     | 0.1~0.15       | 100~150    | 0.1~0.15       | 130~180    | 0.1~0.15       | 130~180    | 0.1~0.15       |
| Fundición                            | PC6510<br>PC5300   | ①    | 50~80                | 0.08~0.12      | 80~100     | 0.08~0.12      | 80~100     | 0.15           | 120~150    | 0.15           | 120~150    | 0.15           |
|                                      |  | ②    | 65~90                | 0.12~0.15      | 100~120    | 0.12~0.15      | 100~130    | 0.15~0.18      | 150~200    | 0.15~0.18      | 150~200    | 0.15~0.18      |
|                                      |  | ③    | 65~90                | 0.15~0.2       | 100~120    | 0.15~0.2       | 100~130    | 0.15~0.2       | 150~200    | 0.15~0.2       | 150~200    | 0.15~0.2       |
| Aleacion de Aluminio                 | H01  | ①    | 200~600              | 0.15~0.2       | 250~800    | 0.15~0.2       | 300~900    | 0.15~0.2       | 400~1,000  | 0.1~0.2        | 400~1,000  | 0.1~0.2        |
|                                      |  | ②    | 200~650              | 0.2~0.25       | 250~900    | 0.2~0.25       | 350~950    | 0.2~0.25       | 400~1,000  | 0.2~0.3        | 400~1,000  | 0.2~0.3        |
|                                      |  | ③    | 200~650              | 0.25~0.3       | 250~900    | 0.25~0.3       | 350~950    | 0.25~0.3       | 400~1,000  | 0.3~0.4        | 400~1,000  | 0.3~0.4        |
| Acero Endurecido                     | PC5300<br>PC2510<br>PC2505                               | ①    | 35~50                | 0.03           | 50~70      | 0.03           | 60~90      | 0.03           | 60~90      | 0.03           | 60~90      | 0.03           |
|                                      |  | ②    | 45~65                | 0.05~0.08      | 60~80      | 0.05~0.08      | 80~100     | 0.05~0.08      | 80~100     | 0.05~0.08      | 80~100     | 0.05~0.08      |
|                                      |  | ③    | 50~80                | 0.05~0.08      | 80~100     | 0.05~0.08      | 80~100     | 0.05~0.08      | 80~100     | 0.05~0.08      | 80~100     | 0.05~0.08      |

## Condición de corte para operación de Plano Inclinado & Operación Helicoidal

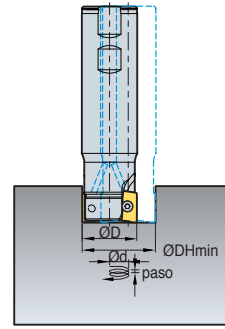
1. Plano Inclinado



2. Operacion Helicoidal



3. Operacion Helicoidal



(mm)

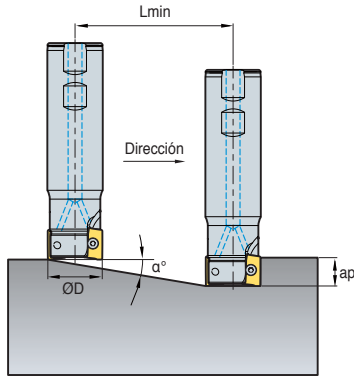
| Codigo      | Diametro Herramienta ØD(min) | ap  | 1. Plano Inclinado         |       | 2. Operacion Helicoidal                   |                        |   | 3. Operacion Helicoidal |   |                        |
|-------------|------------------------------|-----|----------------------------|-------|---|------------------------|---|-------------------------|---|------------------------|
|             |                              |     | Angulo maximo $\alpha$ (°) | Lmin  | Diámetro mínimo deseado de agujero ØDHmin | Diametro max. del paso | Diámetro máximo deseado de agujero ØDHmax | Diametro max. del paso  | Diámetro mínimo deseado de agujero ØDHmin | Diametro max. del paso |
| AMS1010HS   | 10                           | 5   | 6.5                        | 44    | 17.6                                      | 2.0                    | 18.8                                      | 2.1                     | 13  | 1.5                    |
| AMS1011HS   | 11                           |     | 5.6                        | 51    | 19.6                                      | 1.9                    | 20.8                                      | 2.0                     | 15  | 1.5                    |
| AMS1012HS   | 12                           |     | 4.9                        | 58    | 21.6                                      | 1.9                    | 22.8                                      | 2.0                     | 17  | 1.5                    |
| AMS1014HS   | 14                           |     | 3.9                        | 73    | 25.6                                      | 1.8                    | 26.8                                      | 1.8                     | 21  | 1.4                    |
| AMS1015HS   | 15                           |     | 3.6                        | 80    | 27.6                                      | 1.7                    | 28.8                                      | 1.8                     | 23  | 1.4                    |
| AMS1016HS   | 16                           |     | 3.3                        | 87    | 29.6                                      | 1.7                    | 30.8                                      | 1.8                     | 25  | 1.4                    |
| AMS1017HS   | 17                           |     | 3.0                        | 94    | 31.6                                      | 1.7                    | 32.8                                      | 1.7                     | 27  | 1.4                    |
| AMS1018HS   | 18                           |     | 2.8                        | 101   | 33.6                                      | 1.7                    | 34.8                                      | 1.7                     | 29  | 1.4                    |
| AMS1020HS   | 20                           |     | 2.5                        | 115   | 37.6                                      | 1.6                    | 38.8                                      | 1.7                     | 33  | 1.4                    |
| AMS1021HS   | 21                           |     | 2.3                        | 123   | 39.6                                      | 1.6                    | 40.8                                      | 1.7                     | 35  | 1.4                    |
| AMS1022HS   | 22                           |     | 2.2                        | 130   | 41.6                                      | 1.6                    | 42.8                                      | 1.6                     | 37  | 1.4                    |
| AMS1025HS   | 25                           |     | 1.9                        | 151   | 47.6                                      | 1.6                    | 48.8                                      | 1.6                     | 43  | 1.4                    |
| AMS1026HS   | 26                           |     | 1.8                        | 158   | 49.6                                      | 1.6                    | 50.8                                      | 1.6                     | 45  | 1.4                    |
| AMS1032HS   | 32                           |     | 1.4                        | 201   | 61.6                                      | 1.5                    | 62.8                                      | 1.6                     | 57  | 1.4                    |
| AMS1033HS   | 33                           |     | 1.4                        | 208   | 63.6                                      | 1.5                    | 64.8                                      | 1.6                     | 59  | 1.4                    |
| AMCM1032HS  | 32                           |     | 1.4                        | 201   | 61.6                                      | 1.5                    | 62.8                                      | 1.6                     | 57  | 1.4                    |
| AMCM1040HS  | 40                           |     | 1.1                        | 258   | 77.6                                      | 1.5                    | 78.8                                      | 1.5                     | 73  | 1.4                    |
| AMCM1050HS  | 50                           |     | 0.9                        | 330   | 97.6                                      | 1.5                    | 98.8                                      | 1.5                     | 93  | 1.4                    |
| AMCM1063HS  | 63                           | 0.7 | 423                        | 123.6 | 1.5                                       | 124.8                  | 1.5                                       | 119                     | 1.4                                       |                        |
| AMS1510HS   | 10                           | 9   | 7.5                        | 68    | 17.4                                      | 2.3                    | 18.8                                      | 2.5                     | 11  | 1.5                    |
| AMS1512HS   | 12                           |     | 6.5                        | 79    | 21.4                                      | 2.4                    | 22.8                                      | 2.6                     | 15  | 1.7                    |
| AMS1513HS   | 13                           |     | 5.7                        | 90    | 23.4                                      | 2.3                    | 24.8                                      | 2.5                     | 17  | 1.7                    |
| AMS1514HS   | 14                           |     | 6.3                        | 82    | 25.4                                      | 2.8                    | 26.8                                      | 2.9                     | 19  | 2.1                    |
| AMS1516HS   | 16                           |     | 5.0                        | 102   | 29.4                                      | 2.6                    | 30.8                                      | 2.7                     | 23  | 2.0                    |
| AMS1517HS   | 17                           |     | 4.6                        | 112   | 31.4                                      | 2.5                    | 32.8                                      | 2.6                     | 25  | 2.0                    |
| AMS1518HS   | 18                           |     | 4.2                        | 122   | 33.4                                      | 2.5                    | 34.8                                      | 2.6                     | 27  | 2.0                    |
| AMS1519HS   | 19                           |     | 3.9                        | 132   | 35.4                                      | 2.4                    | 36.8                                      | 2.5                     | 29  | 2.0                    |
| AMS1520HS   | 20                           |     | 3.6                        | 142   | 37.4                                      | 2.4                    | 38.8                                      | 2.5                     | 31  | 2.0                    |
| AMS1521HS   | 21                           |     | 3.4                        | 152   | 39.4                                      | 2.3                    | 40.8                                      | 2.4                     | 33  | 2.0                    |
| AMS1522HS   | 22                           |     | 3.2                        | 162   | 41.4                                      | 2.3                    | 42.8                                      | 2.4                     | 35  | 1.9                    |
| AMS1524HS   | 24                           |     | 2.8                        | 182   | 45.4                                      | 2.2                    | 46.8                                      | 2.3                     | 39  | 1.9                    |
| AMS1525HS   | 25                           |     | 2.7                        | 192   | 47.4                                      | 2.2                    | 48.8                                      | 2.3                     | 41  | 1.9                    |
| AMS1528HS   | 28                           |     | 2.3                        | 222   | 53.4                                      | 2.2                    | 54.8                                      | 2.2                     | 47  | 1.9                    |
| AMS1530HS   | 30                           |     | 2.1                        | 242   | 57.4                                      | 2.1                    | 58.8                                      | 2.2                     | 51  | 1.9                    |
| AMS1532HS   | 32                           |     | 2.0                        | 262   | 61.4                                      | 2.1                    | 62.8                                      | 2.2                     | 55  | 1.9                    |
| AMS1535HS   | 35                           |     | 1.8                        | 292   | 67.4                                      | 2.1                    | 68.8                                      | 2.1                     | 61  | 1.9                    |
| AMS1540HS   | 40                           |     | 1.5                        | 342   | 77.4                                      | 2.0                    | 78.8                                      | 2.1                     | 71  | 1.9                    |
| AMCM15040HS | 40                           |     | 1.5                        | 342   | 77.4                                      | 2.0                    | 78.8                                      | 2.1                     | 71  | 1.9                    |
| AMCM15050HS | 50                           |     | 1.2                        | 442   | 97.4                                      | 2.0                    | 98.8                                      | 2.0                     | 91  | 1.9                    |
| AMCM15063HS | 63                           |     | 0.9                        | 572   | 123.4                                     | 1.9                    | 124.8                                     | 2.0                     | 117                                       | 1.8                    |
| AMCM15080HS | 80                           |     | 0.7                        | 742   | 157.4                                     | 1.9                    | 158.8                                     | 1.9                     | 151                                       | 1.8                    |
| AMCM15100HS | 100                          |     | 0.5                        | 942   | 197.4                                     | 1.9                    | 198.8                                     | 1.9                     | 191                                       | 1.8                    |

$$Lmin = \frac{ap}{\tan \alpha} \text{ (mm)}$$

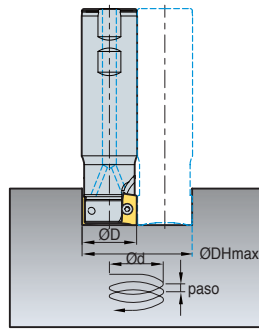


➤ Condición de corte para operación de Plano Inclinado & Operación Helicoidal

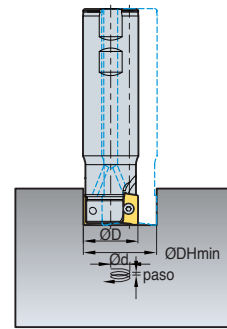
1. Plano Inclinado



2. Operacion Helicoidal



3. Operacion Helicoidal



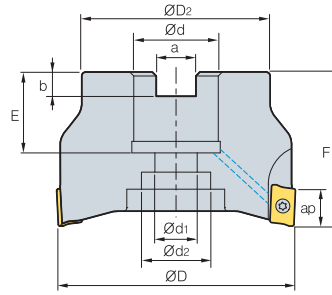
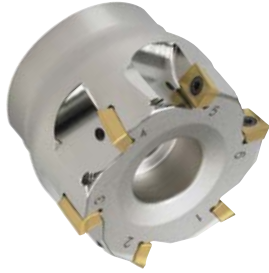
(mm)

| Codigo     | Diametro Herramienta ØD(min) | ap | 1. Plano Inclinado         |      | 2. Operacion Helicoidal                               |                        |   | 3. Operacion Helicoidal |   |                        |
|------------|------------------------------|----|----------------------------|------|---|------------------------|---|-------------------------|---|------------------------|
|            |                              |    | Angulo maximo $\alpha$ (°) | Lmin | Diámetro mínimo deseado de agujero ØD <sub>Hmin</sub> | Diámetro max. del paso | Diámetro máximo deseado de agujero ØD <sub>Hmax</sub> | Diametro max. del paso  | Diámetro mínimo deseado de agujero ØD <sub>Hmin</sub> | Diametro max. del paso |
| AMS2010HS  | 10                           | 10 | 16.82                      | 33   | 16.4  | 5.0                    | 18  | 5.4                     | 11  | 3.3                    |
| AMS2012HS  | 12                           |    | 11.69                      | 48   | 20.4  | 4.2                    | 22  | 4.6                     | 15  | 3.1                    |
| AMS2014HS  | 14                           |    | 7.55                       | 75   | 24.4  | 3.2                    | 26  | 3.4                     | 19  | 2.5                    |
| AMS2016HS  | 16                           |    | 10.30                      | 55   | 28  | 5.1                    | 30  | 5.5                     | 23  | 4.2                    |
| AMS2018HS  | 18                           |    | 8.23                       | 69   | 32  | 4.6                    | 34  | 4.9                     | 27  | 3.9                    |
| AMS2020HS  | 20                           |    | 5.60                       | 102  | 36  | 3.5                    | 38  | 3.7                     | 31  | 3.0                    |
| AMS2022HS  | 22                           |    | 5.15                       | 111  | 40  | 3.6                    | 42  | 3.8                     | 35  | 3.2                    |
| AMS2025HS  | 25                           |    | 3.92                       | 146  | 46  | 3.2                    | 48  | 3.3                     | 41  | 2.8                    |
| AMS2032HS  | 32                           |    | 2.70                       | 212  | 60  | 2.8                    | 62  | 2.9                     | 55  | 2.6                    |
| AMS2040HS  | 40                           |    | 1.98                       | 289  | 76  | 2.6                    | 78  | 2.7                     | 71  | 2.5                    |
| AMS2050HS  | 50                           |    | 1.48                       | 386  | 96  | 2.5                    | 98  | 2.5                     | 91  | 2.4                    |
| AMS2063HS  | 63                           |    | 1.11                       | 514  | 122   | 2.4                    | 124   | 2.4                     | 117   | 2.3                    |
| AMCM2040HS | 40                           |    | 1.29                       | 445  | 76  | 2.5                    | 78  | 2.6                     | 71  | 2.1                    |
| AMCM2050HS | 50                           |    | 0.36                       | 1576 | 96  | 0.6                    | 98  | 0.6                     | 91  | 0.6                    |
| AMCM2063HS | 63                           |    | 0.27                       | 2104 | 122   | 0.6                    | 124   | 0.6                     | 117   | 0.6                    |
| AMCM2080HS | 80                           |    | 0.21                       | 2784 | 156   | 0.6                    | 158   | 0.6                     | 151   | 0.5                    |
| AMCM2100HS | 100                          |    | 0.16                       | 3584 | 196   | 0.5                    | 198   | 0.6                     | 191   | 0.5                    |
| AMS3025HS  | 25                           | 10 | 4.72                       | 121  | 46  | 3.8                    | 48  | 4.0                     | 36  | 3.0                    |
| AMS3032HS  | 32                           |    | 3.00                       | 191  | 60  | 3.1                    | 62  | 3.2                     | 50  | 2.6                    |
| AMS3040HS  | 40                           |    | 2.29                       | 250  | 76  | 3.0                    | 78  | 3.1                     | 66  | 2.6                    |
| AMS3050HS  | 50                           |    | 1.64                       | 350  | 96  | 2.7                    | 98  | 2.8                     | 86  | 2.5                    |
| AMS3063HS  | 63                           |    | 1.22                       | 470  | 122   | 2.6                    | 124   | 2.6                     | 112   | 2.4                    |
| AMCM3040HS | 40                           |    | 1.99                       | 288  | 76  | 2.6                    | 78  | 2.7                     | 66  | 2.3                    |
| AMCM3050HS | 50                           |    | 1.67                       | 343  | 96  | 2.8                    | 98  | 2.9                     | 86  | 2.5                    |
| AMCM3063HS | 63                           |    | 1.22                       | 470  | 122   | 2.6                    | 124   | 2.6                     | 112   | 2.4                    |
| AMCM3080HS | 80                           |    | 0.90                       | 636  | 156   | 2.5                    | 158   | 2.5                     | 146   | 2.3                    |
| AMCM3100HS | 100                          |    | 0.69                       | 830  | 196   | 2.4                    | 198   | 2.4                     | 186   | 2.2                    |
| AMS2025MH  | 25                           | 10 | 1.50                       | 764  | 46  | 1.2                    | 48  | 1.3                     | -   | -                      |
| AMS2032MH  | 32                           |    | 1.50                       | 1146 | 60  | 1.6                    | 62  | 1.6                     | -   | -                      |
| AMS3040MH  | 40                           | 16 | 1.50                       | 1528 | 76  | 2.0                    | 78  | 2.0                     | -   | -                      |
| AMS4020HS  | 20                           | 16 | 9.5                        | 98   | 37.4  | 6.2                    | 38.8  | 6.5                     | 31  | 5.2                    |
| AMS4021HS  | 21                           |    | 5.2                        | 179  | 39.4  | 3.6                    | 40.8  | 3.7                     | 33  | 3.0                    |
| AMS4025HS  | 25                           |    | 7.6                        | 122  | 47.4  | 6.3                    | 48.8  | 6.5                     | 41  | 5.5                    |
| AMS4026HS  | 26                           |    | 7.1                        | 130  | 49.4  | 6.2                    | 50.8  | 6.4                     | 43  | 5.4                    |
| AMS4032HS  | 32                           |    | 3.4                        | 276  | 61.4  | 3.6                    | 62.8  | 3.7                     | 55  | 3.3                    |
| AMS4033HS  | 33                           |    | 3.2                        | 288  | 63.4  | 3.6                    | 64.8  | 3.7                     | 57  | 3.2                    |
| AMS4040HS  | 40                           |    | 2.5                        | 376  | 77.4  | 3.4                    | 78.8  | 3.4                     | 71  | 3.1                    |
| AMS4050HS  | 50                           |    | 1.9                        | 502  | 97.4  | 3.2                    | 98.8  | 3.2                     | 91  | 3.0                    |
| AMS4063HS  | 63                           |    | 1.4                        | 665  | 123.4   | 3.0                    | 124.8   | 3.1                     | 117   | 2.9                    |
| AMCM4050HS | 50                           |    | 1.9                        | 502  | 97.4  | 3.2                    | 98.8  | 3.2                     | 91  | 3.0                    |
| AMCM4063HS | 63                           |    | 1.4                        | 665  | 123.4   | 3.0                    | 124.8   | 3.1                     | 117   | 2.9                    |
| AMCM4080HS | 80                           |    | 1.1                        | 878  | 157.4   | 2.9                    | 158.8   | 2.9                     | 151   | 2.8                    |
| AMCM4100HS | 100                          |    | 0.8                        | 1128 | 197.4   | 2.9                    | 198.8   | 2.9                     | 191   | 2.8                    |
| AMCM4125HS | 125                          |    | 0.6                        | 1442 | 247.4   | 2.8                    | 248.8   | 2.8                     | 241   | 2.7                    |

$$Lmin = \frac{ap}{\tan \alpha^\circ} \text{ (mm)}$$



## AMC(M)1000S



AA  
90°  
• AR: 9°~13°  
• RR: -14°~5°

(mm)

| Codigo      | ØD | ØD2 | Ød | Ød1 | Ød2 | a    | b   | E  | F  | ap  | $\frac{Q}{kg}$ |
|-------------|----|-----|----|-----|-----|------|-----|----|----|-----|----------------|
| AMCM 1032HS | 32 | 30  | 16 | 9   | 14  | 8.4  | 5.6 | 19 | 40 | 5.6 | 0.15           |
| 1040HS-16   | 40 | 34  | 16 | 9   | 14  | 8.4  | 5.6 | 19 | 40 | 5.6 | 0.24           |
| 1040HS-22   | 40 | 34  | 22 | 11  | 18  | 10.4 | 6.3 | 21 | 40 | 5.6 | 0.24           |
| 1050HS      | 50 | 42  | 22 | 11  | 18  | 10.4 | 6.3 | 21 | 40 | 5.6 | 0.36           |
| 1063HS      | 63 | 49  | 22 | 11  | 18  | 10.4 | 6.3 | 21 | 40 | 5.6 | 0.61           |

### Insertos disponibles

APMT-MA APMT-MM



| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|                  | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT 0602PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     | ●   |
| 060208PDFR-MA    |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
| 060202PDSR-MM    |        |      |            | ●      |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
| 0602PDSR-MM      |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●      |        | ●        | ●      |      |     |     |
| 060208PDSR-MM    |        |      |            | ●      |        |        |        | ●      | ●      |        |        |        |        | ●        | ●      |      |     |     |
| 060212R-MM       |        |      |            | ●      |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |

### Adaptadores disponibles

| Codigo      | Ød | Adaptadores NC |
|-------------|----|----------------|
| AMCM 1032HS | 16 | BT□□-FMC16-□□  |
| 1040HS-16   |    |                |
| 1040HS-22   |    |                |
| 1050HS      | 22 | BT□□-FMC22-□□  |
| 1063HS      |    |                |

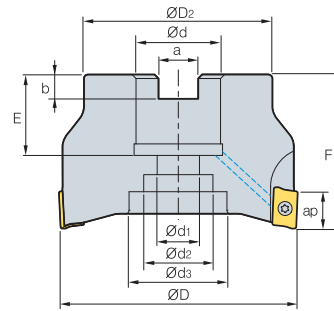
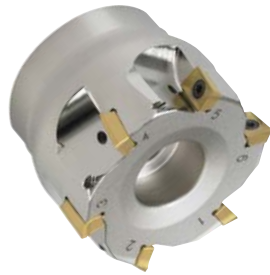
### Partes

| Especificaciones | Tornillo  | Llave   |
|------------------|-----------|---------|
| Ø32~Ø63          | FTKA01842 | TW06S-A |

Insertos disponibles E05 Detalles del cortador E400~E402



# AMC(M)1500S



AA 90°  
 • AR: 9°~13°  
 • RR: -14°~5°

(mm)

| Codigo     | ØD      | ØD2 | Ød | Ød1        | Ød2 | Ød3 | a  | b           | E     | F       | ap | kg |      |
|------------|---------|-----|----|------------|-----|-----|----|-------------|-------|---------|----|----|------|
| AMCM       | 15040HS | 40  | 34 | 16         | 9   | 14  | -  | 8.4         | 5.6   | 19      | 40 | 9  | 0.22 |
|            | 15050HS | 50  | 42 | 22         | 11  | 18  | -  | 10.4        | 6.3   | 21      | 40 | 9  | 0.34 |
|            | 15063HS | 63  | 49 | 22         | 11  | 18  | -  | 10.4        | 6.3   | 21      | 40 | 9  | 0.57 |
| AMC (AMCM) | 15080HS | 80  | 57 | 25.4 (27)  | 14  | 25  | 35 | 9.5 (12.4)  | 6 (7) | 24 (23) | 50 | 9  | 1.10 |
|            | 15100HS | 100 | 67 | 31.75 (32) | 18  | 26  | 42 | 12.7 (14.4) | 8 (8) | 32 (26) | 63 | 9  | 2.10 |

( )Tamaño métrico

## Insertos disponibles

APMT-MA APMT-ML APMT-MM



| Codigo | Cermet        |      | Recubierta |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |     | pag. |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-----|------|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | G10 |      | H01 |
| APMT   | 0903PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     | ●    | E05 |
|        | 090308PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        | 0903PDER-ML   |      |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        |     |      |     |
|        | 090308PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        |     |      |     |
|        | 0903PDSR-MM   |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      |        |        | ●      | ●        |     |      |     |
|        | 090308PDSR-MM |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
|        | 090312R-MM    |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
|        | 090316R-MM    |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
|        | 090320R-MM    |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |

## Adaptadores disponibles

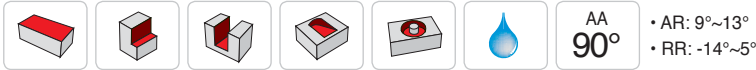
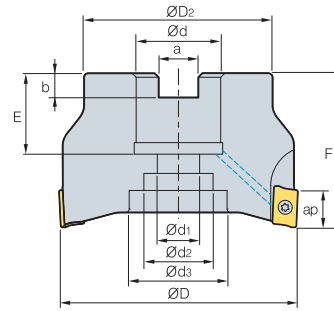
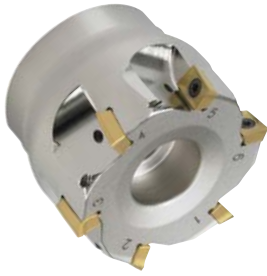
| Codigo     | Ød      | Adaptadores NC   |
|------------|---------|------------------|
| AMCM       | 15040HS | BT□□-FMC16-□□    |
|            | 15050HS | BT□□-FMC22-□□    |
|            | 15063HS |                  |
| AMC (AMCM) | 15080HS | BT□□-FMA25.4-□□  |
|            |         | BT□□-FMC27-□□    |
|            | 15100HS | BT□□-FMA31.75-□□ |
|            |         | BT□□-FMC32-□□    |

## Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø40~Ø100         | FTKA02565S | TW08S |

Insertos disponibles E05 Detalles del cortador E400~E402

## AMC(M)2000S



AA  
90°  
• AR: 9°~13°  
• RR: -14°~5°

(mm)

| Codigo     | ØD     | ØD2 | Ød | Ød1        | Ød2 | Ød3 | a  | b           | E     | F       | ap | kg |      |
|------------|--------|-----|----|------------|-----|-----|----|-------------|-------|---------|----|----|------|
| AMCM       | 2040HS | 40  | 34 | 16         | 9   | 14  | -  | 8.4         | 5.6   | 18      | 40 | 11 | 0.22 |
|            | 2050HS | 50  | 42 | 22         | 11  | 18  | -  | 10.4        | 6.3   | 20      | 40 | 11 | 0.34 |
|            | 2063HS | 63  | 49 | 22         | 11  | 18  | -  | 10.4        | 6.3   | 20      | 40 | 11 | 0.57 |
| AMC (AMCM) | 2080HS | 80  | 57 | 25.4 (27)  | 14  | 25  | 35 | 9.5 (12.4)  | 6 (7) | 25 (22) | 50 | 11 | 1.10 |
|            | 2100HS | 100 | 67 | 31.75 (32) | 18  | 26  | 42 | 12.7 (14.4) | 8 (8) | 32 (28) | 63 | 11 | 2.10 |

( ) Tamaño métrico

### Insertos disponibles



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT   | 11T3PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     | ●   |
|        | 11T308PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        | 11T3PDER-ML   |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
|        | 11T308PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
|        | 11T3PDSR-MM   |      |            | ●      | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      |      |     |     |
|        | 11T3PDSR-MF   |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |      |     |     |
|        | 11T308PDSR-MM |      |            |        | ●      |        |        |        |        | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
|        | 11T312PDSR-MM |      |            |        | ●      |        |        |        |        | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
|        | 11T316R-MM    |      |            |        | ●      |        |        |        |        | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
|        | 11T318R-MM    |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
|        | 11T324R-MM    |      |            |        | ●      |        |        |        |        | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
|        | 11T3PDSR-MN2  |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |      |     |     |
|        | 11T3PDSR-MN3  |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |      |     |     |

E05

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 ※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

### Adaptadores disponibles

| Codigo     | Ød     | Adaptadores NC |                  |
|------------|--------|----------------|------------------|
| AMCM       | 2040HS | 16             | BT□□-FMC16-□□    |
|            | 2050HS | 22             | BT□□-FMC22-□□    |
|            | 2063HS |                |                  |
| AMC (AMCM) | 2080HS | 25.4           | BT□□-FMA25.4-□□  |
|            |        | 27             | BT□□-FMC27-□□    |
|            | 2100HS | 31.75          | BT□□-FMA31.75-□□ |
|            |        | 32             | BT□□-FMC32-□□    |

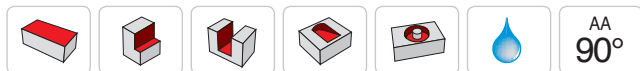
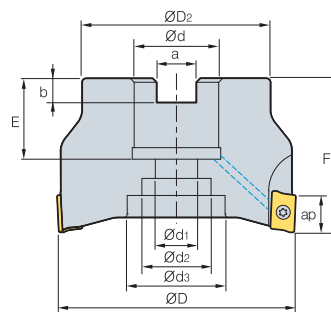
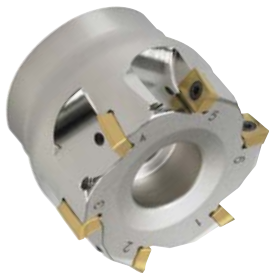
### Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø40~Ø100         | FTKA02565S | TW08S |

Insertos disponibles E05 Detalles del cortador E400~E402



# AMC(M)3000S



AA 90°  
• AR: 14°  
• RR: -12°~8°

(mm)

| Codigo     | ØD     | ØD2 | Ød | Ød1        | Ød2 | Ød3 | a           | b     | E       | F  | ap | kg   |
|------------|--------|-----|----|------------|-----|-----|-------------|-------|---------|----|----|------|
| AMCM       | 3040HS | 40  | 34 | 16         | 9   | 14  | 8.4         | 5.6   | 18      | 40 | 16 | 0.18 |
|            | 3050HS | 50  | 42 | 22         | 11  | 18  | 10.4        | 6.3   | 20      | 40 | 16 | 0.28 |
|            | 3063HS | 63  | 49 | 22         | 11  | 18  | 10.4        | 6.3   | 20      | 40 | 16 | 0.50 |
| AMC (AMCM) | 3080HS | 80  | 57 | 25.4 (27)  | 14  | 25  | 9.5 (12.4)  | 6 (7) | 25 (22) | 50 | 16 | 1.02 |
|            | 3100HS | 100 | 67 | 31.75 (32) | 18  | 26  | 12.7 (14.4) | 8 (8) | 32 (28) | 63 | 16 | 2.05 |

( )Tamaño métrico

## Insertos disponibles



| Codigo | Cermet        |      | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT   | 1604PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        | 160404PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        | 1604PDER-ML   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        | 160404PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        | 1604PDSR-MM   |      |            | •      | •      | •      |        | •      | •      | •      | •      | •      | •      | •        | •      |      |     |     |
|        | 1604PDSR-MF   |      |            |        | •      |        |        |        | •      | •      | •      |        |        | •        | •      |      |     |     |
|        | 160410PDSR-MM |      |            |        |        |        |        |        |        | •      |        |        |        | •        | •      |      |     |     |
|        | 160416PDSR-MM |      |            |        | •      |        |        |        |        |        |        |        |        | •        | •      |      |     |     |
|        | 160424R-MM    |      |            |        | •      |        |        |        |        |        |        |        |        | •        | •      |      |     |     |
|        | 160430R-MM    |      |            |        |        |        |        |        |        |        |        |        |        | •        | •      |      |     |     |
|        | 160432R-MM    |      |            |        | •      |        |        |        |        |        |        |        |        | •        | •      |      |     |     |
|        | 1604PDSR-MN3  |      |            |        |        |        |        |        |        |        |        |        |        | •        |        |      |     |     |
|        | 1604PDSR-MN4  |      |            |        |        |        |        |        |        |        |        |        |        | •        |        |      |     |     |

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

## Adaptadores disponibles

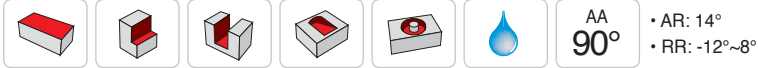
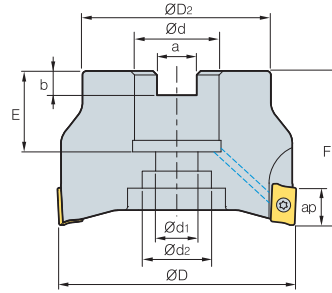
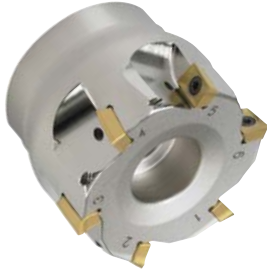
| Codigo     | Ød     | Adaptadores NC   |
|------------|--------|------------------|
| AMCM       | 3040HS | BT□□-FMC16-□□    |
|            | 3050HS |                  |
|            | 3063HS | BT□□-FMC22-□□    |
| AMC (AMCM) | 3080HS | BT□□-FMA25.4-□□  |
|            |        | BT□□-FMC27-□□    |
|            |        | BT□□-FMA31.75-□□ |
|            | 3100HS | BT□□-FMC32-□□    |

## Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø40-Ø100         | FTKA0410 | TW15S |

Insertos disponibles E05 Detalles del cortador E400~E402

## AMC(M)3000S-K



(mm)

| Codigo     | ØD       | ØD2 | Ød | Ød1        | Ød2 | a  | b           | E     | F       | ap | $\frac{m}{kg}$ |      |
|------------|----------|-----|----|------------|-----|----|-------------|-------|---------|----|----------------|------|
| AMCM       | 3040HS-K | 40  | 34 | 16         | 9   | 14 | 8.4         | 5.6   | 18      | 40 | 16             | 0.15 |
|            | 3050HS-K | 50  | 42 | 22         | 11  | 18 | 10.4        | 6.3   | 20      | 40 | 16             | 0.24 |
|            | 3063HS-K | 63  | 49 | 22         | 11  | 18 | 10.4        | 6.3   | 20      | 40 | 16             | 0.24 |
| AMC (AMCM) | 3080HS-K | 80  | 57 | 25.4 (27)  | 14  | 20 | 9.5 (12.4)  | 6 (7) | 25 (22) | 50 | 16             | 0.36 |
|            | 3100HS-K | 100 | 67 | 31.75 (32) | 18  | 26 | 12.7 (14.4) | 8 (8) | 32 (28) | 63 | 16             | 0.61 |

( ) Tamaño métrico

### Insertos disponibles

|        |              | APKT | APKT-MF    | APKT-MM | APKT-MM1 | APKT-MA | APKT-MA2 | APKT-MA3 |        |        |        |        |          |        |        |      |     |     |     |
|--------|--------------|------|------------|---------|----------|---------|----------|----------|--------|--------|--------|--------|----------|--------|--------|------|-----|-----|-----|
|        |              |      |            |         |          |         |          |          |        |        |        |        |          |        |        |      |     |     |     |
| Codigo | Cermet       |      | Recubierto |         |          |         |          |          |        |        |        |        | Sin Rec. |        |        | pag. |     |     |     |
|        | CN2000       | CN30 | NCM325     | NCM335  | NCM535   | NCM545  | PC2505   | PC2510   | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | PD2000 |      | G10 | H01 | H05 |
| APKT   | 1604PDSR     |      |            | ●       |          |         |          |          | ●      | ●      |        |        |          |        |        |      |     |     | E05 |
|        | 1604PDSR-MF  |      |            | ●       |          |         |          |          |        |        |        |        |          |        |        |      |     |     |     |
|        | 1604PDSR-MM  |      |            | ●       | ●        |         |          |          | ●      | ●      | ●      | ●      |          |        |        |      |     |     |     |
|        | 160432R-MM1  |      |            |         |          |         |          |          |        |        |        |        |          |        |        |      |     |     |     |
|        | 1604PDFR-MA  |      |            |         |          |         |          |          |        |        |        |        |          | ●      |        |      | ●   | ●   |     |
|        | 1604PDFR-MA2 |      |            |         |          |         |          |          |        |        |        |        |          |        |        |      | ●   |     |     |
|        | 160416FR-MA2 |      |            |         |          |         |          |          |        |        |        |        |          |        |        |      |     |     |     |
|        | 160432FR-MA2 |      |            |         |          |         |          |          |        |        |        |        |          |        |        |      |     |     |     |
|        | 1604PDFR-MA3 |      |            |         |          |         |          |          |        |        |        |        |          |        |        |      | ●   | ●   |     |
|        | 160420FR-MA3 |      |            |         |          |         |          |          |        |        |        |        |          |        |        |      |     |     |     |

### Adaptadores disponibles

| Codigo     | Ød       | Adaptadores NC            |
|------------|----------|---------------------------|
| AMCM       | 3040HS-K | 16<br>BT□□-FMC16-□□       |
|            | 3050HS-K | 22<br>BT□□-FMC22-□□       |
|            | 3063HS-K | 22<br>BT□□-FMC22-□□       |
| AMC (AMCM) | 3080HS-K | 25.4<br>BT□□-FMA25.4-□□   |
|            |          | 27<br>BT□□-FMC27-□□       |
|            | 3100HS-K | 31.75<br>BT□□-FMA31.75-□□ |
|            |          | 32<br>BT□□-FMC32-□□       |

### Partes

| Especificaciones |                      |                |
|------------------|----------------------|----------------|
| Ø40~Ø100         | Tornillo<br>FTKA0410 | Llave<br>TW15S |

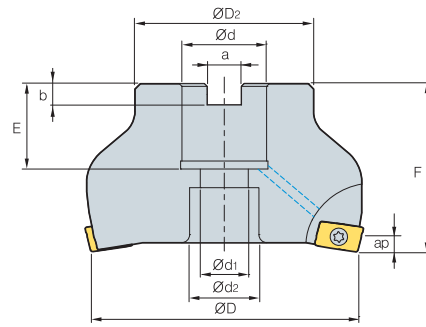
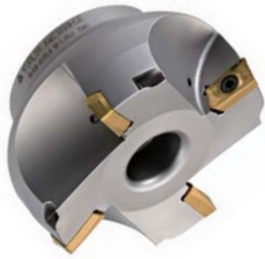
Insertos disponibles E05 Detalles del cortador E400~E402







## AMC(M)1000SE/2000SE



(mm)

| Codigo             | ØD | ØD2 | Ød | Ød1        | Ød2 | a  | b           | E         | F       | ap | $\frac{Q}{kg}$ |      |
|--------------------|----|-----|----|------------|-----|----|-------------|-----------|---------|----|----------------|------|
| AMCM 1040HSE       | 4  | 40  | 34 | 16         | 9   | 14 | 8.4         | 5.6       | 19      | 40 | 2.5            | 0.26 |
|                    | 5  | 50  | 42 | 22         | 11  | 18 | 10.4        | 6.3       | 21      | 40 | 2.5            | 0.39 |
| AMC (AMCM) 2080HSE | 5  | 80  | 57 | 25.4 (27)  | 14  | 20 | 9.5 (12.4)  | 6.0 (7.0) | 25 (22) | 50 | 4              | 1.2  |
|                    | 6  | 100 | 67 | 31.75 (32) | 18  | 26 | 12.7 (14.4) | 8.0 (8.0) | 32 (28) | 63 | 4              | 2.33 |

( ) Tamaño métrico

### Insertos disponibles

APMT-MM APMT-MF



| Tipo      | Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |
|-----------|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|
|           |                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 |
| 1000 Tipo | APMT 060202PDSR-MM |        |      |            | ●      |        |        |        |        |        | ●      |        |        |        | ●        | ●      |      |     |
|           | 0602PDSR-MM        |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        |        | ●        | ●      |      |     |
|           | 060208PDSR-MM      |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |
|           | 060212R-MM         |        |      |            | ●      |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |
| 2000 Tipo | APMT 11T3PDSR-MM   |        |      | ●          | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      |        |        | ●        | ●      |      |     |
|           | 11T3PDSR-MF        |        |      |            | ●      |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |      |     |
|           | 11T308PDSR-MM      |        |      |            | ●      |        |        |        |        | ●      | ●      |        | ●      | ●      | ●        | ●      |      |     |
|           | 11T312PDSR-MM      |        |      |            | ●      |        |        |        |        | ●      | ●      |        | ●      |        | ●        | ●      |      |     |
|           | 11T316R-MM         |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |
|           | 11T318R-MM         |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |
|           | 11T324R-MM         |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |

### Adaptadores disponibles

| Tipo      | Codigo             | Ød    | Adaptadores NC   |
|-----------|--------------------|-------|------------------|
| 1000 Tipo | AMC 1040HSE        | 16    | BT□□-FMC16-□□    |
|           | (AMCM) 1050HSE     | 22    | BT□□-FMC22-□□    |
| 2000 Tipo | AMC (AMCM) 2080HSE | 25.4  | BT□□-FMA25.4-□□  |
|           |                    | 27    | BT□□-FMC27-□□    |
|           | 2100HSE            | 31.75 | BT□□-FMA31.75-□□ |
|           |                    | 32    | BT□□-FMC32-□□    |

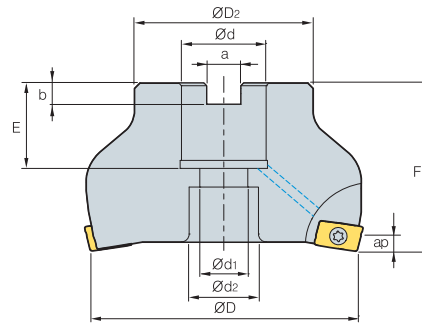
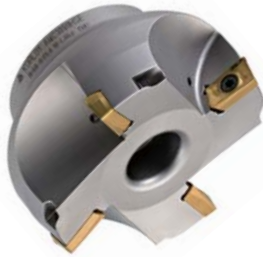
### Partes

| Especificaciones     | Tornillo   | Llave | Llave   |
|----------------------|------------|-------|---------|
| Ø40~Ø50 (1000 Tipo)  | FTKA01842  | -     | TW06S-A |
| Ø80~Ø100 (2000 Tipo) | FTKA02565S | TW08S | -       |

Insertos disponibles E05 Detalles del cortador E400-E402



# AMC(M)3000SE



(mm)

| Codigo         |   | ØD  | ØD2 | Ød         | Ød1 | Ød2 | a           | b         | E       | F  | ap |     |
|----------------|---|-----|-----|------------|-----|-----|-------------|-----------|---------|----|----|-----|
| AMC 3080HSE    | 4 | 80  | 57  | 25.4 (27)  | 14  | 20  | 9.5 (12.4)  | 6.0 (7.0) | 25 (22) | 50 | 6  | 1.3 |
| (AMCM) 3100HSE | 5 | 100 | 67  | 31.75 (32) | 18  | 26  | 12.7 (14.4) | 8.0 (8.0) | 32 (28) | 63 | 6  | 2.3 |

( ) Tamaño métrico

## ➤ Insertos disponibles

APMT-MM      APMT-MF



| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|                  | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC8510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT 1604PDSR-MM |        |      | ●          | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      |      |     | E05 |
| 1604PDSR-MF      |        |      |            | ●      |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |      |     |     |
| 160410PDSR-MM    |        |      |            |        |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |
| 160416PDSR-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 160424R-MM       |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 160430R-MM       |        |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 160432R-MM       |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |

## ➤ Adaptadores disponibles

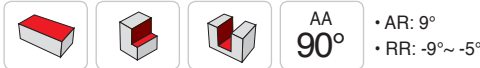
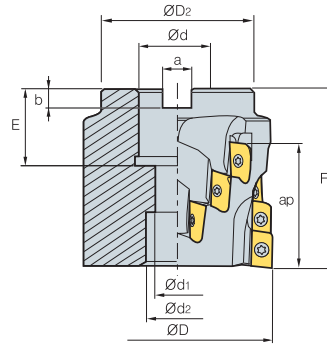
| Codigo         | Ød    | Adaptadores NC   |
|----------------|-------|------------------|
| AMC 3080HSE    | 25.4  | BT□□-FMA25.4-□□  |
|                | 27    | BT□□-FMC27-□□    |
| (AMCM) 3100HSE | 31.75 | BT□□-FMA31.75-□□ |
|                | 32    | BT□□-FMC32-□□    |

## ➤ Partes

| Especificaciones |                      |                |
|------------------|----------------------|----------------|
| Ø80-Ø100         | Tornillo<br>FTKA0410 | Llave<br>TW08S |

➤ Insertos disponibles E05      ➤ Detalles del cortador E400~E402

## AMC(M)2000M



(mm)

| Codigo           | ØD | ØD2 | Ød | Ød1        | Ød2  | a  | b           | E      | F       | No. de Flautas | ap | kg |      |
|------------------|----|-----|----|------------|------|----|-------------|--------|---------|----------------|----|----|------|
| AMCM 2050M       | 16 | 50  | 40 | 22         | 11   | 18 | 10.4        | 6.3    | 21      | 58             | 4  | 39 | 0.7  |
| AMC (AMCM) 2063M | 16 | 63  | 50 | 25.4 (27)  | 13.5 | 20 | 9.5 (12.4)  | 6 (7)  | 25 (25) | 58             | 4  | 39 | 0.8  |
| 2080M            | 20 | 80  | 60 | 31.75 (32) | -    | 45 | 12.7 (14.4) | 8 (8)  | 35 (28) | 63             | 5  | 39 | 0.96 |
| 2100M            | 24 | 100 | 80 | 38.1 (40)  | -    | 56 | 15.9 (16.4) | 10 (9) | 38 (30) | 63             | 6  | 39 | 1.2  |

( ) Tamaño métrico

### Insertos disponibles



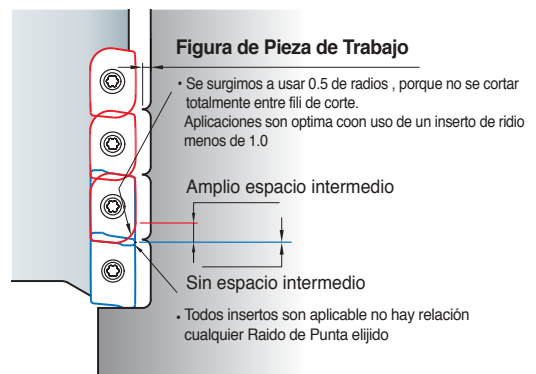
| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|                  | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT 11T3PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
| 11T308PDFR-MA    |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
| 11T3PDER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
| 11T308PDER-ML    |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
| 11T3PDSR-MM      |        |      | ●          | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      |        | ●        | ●      |      |     |     |
| 11T3PDSR-MF      |        |      |            | ●      |        |        |        | ●      | ●      | ●      | ●      |        |        | ●        | ●      |      |     |     |
| 11T308PDSR-MM    |        |      |            | ●      |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
| 11T312PDSR-MM    |        |      |            | ●      |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
| 11T316R-MM       |        |      |            | ●      |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
| 11T318R-MM       |        |      |            | ●      |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
| 11T324R-MM       |        |      |            | ●      |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
| 11T3PDSR-MN2     |        |      |            |        |        |        |        |        |        |        |        |        | ●      | ●        |        |      |     |     |
| 11T3PDSR-MN3     |        |      |            |        |        |        |        |        |        |        |        |        | ●      | ●        |        |      |     |     |

\* Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 \* Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

### Adaptadores disponibles

| Codigo           | Ød    | Adaptadores NC   |                  |
|------------------|-------|------------------|------------------|
| AMC (AMCM) 2050M | 22    | BT□□-FMC22-□□    | BT□□-SMC22-□□    |
| 2063M            | 25.4  | BT□□-FMA25.4-□□  | BT□□-SMA25.4-□□  |
|                  | 27    | BT□□-FMC27-□□    | BT□□-SMC27-□□    |
| 2080M            | 31.75 | BT□□-FMA31.75-□□ | BT□□-SMA31.75-□□ |
|                  | 32    | BT□□-FMC32-□□    | BT□□-SMC32-□□    |
| 2100M            | 38.1  | BT□□-FMA38.1-□□  | BT□□-SMA38.1-□□  |
|                  | 40    | BT□□-FMC40-□□    | BT□□-SMC40-□□    |

### Cuidado cuando se aplica insertos al cortador



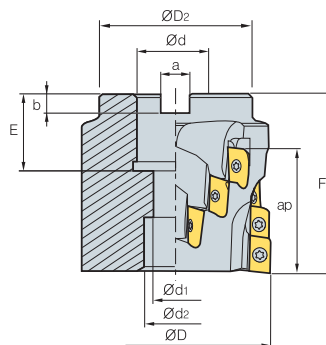
### Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø50~Ø100         | FTKA02565S | TW08S |

Insertos disponibles E05 Detalles del cortador E400~E402



# AMC(M)3000M



AA  
90°  
• AR: 9°  
• RR: -9° ~ -5°

(mm)

| Codigo       | ØD  | ØD2 | Ød         | Ød1 | Ød2 | a           | b      | E       | F   | No. de Flautas | ap | kg   |
|--------------|-----|-----|------------|-----|-----|-------------|--------|---------|-----|----------------|----|------|
| AMC 3063M    | 63  | 57  | 25.4 (27)  | 14  | 20  | 9.5 (12.4)  | 6 (7)  | 38 (38) | 85  | 4              | 57 | 1.1  |
| (AMCM) 3080M | 80  | 67  | 31.75 (32) | 14  | 26  | 12.7 (14.4) | 8 (8)  | 40 (40) | 100 | 4              | 71 | 2.23 |
| 3100M        | 100 | 87  | 38.1 (40)  | 22  | 32  | 15.9 (16.4) | 10 (9) | 40 (40) | 100 | 6              | 71 | 3.59 |

( ) Tamaño métrico

## Insertos disponibles



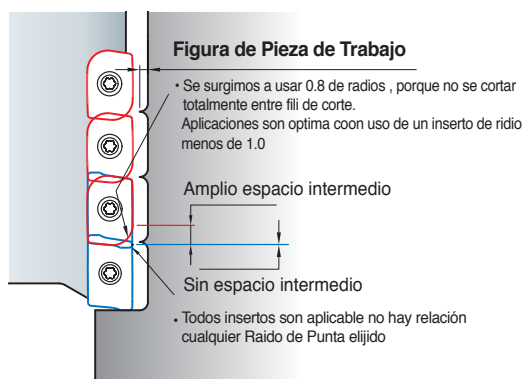
| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|                  | CN2000 | CN30 | NCM325     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT 1604PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     | ●   |
| 160404PDFR-MA    |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
| 1604PDER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
| 160404PDER-ML    |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
| 1604PDSR-MM      |        |      | ●          | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      |      |     |     |
| 1604PDSR-MF      |        |      |            | ●      |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |
| 160410PDSR-MM    |        |      |            |        |        |        |        | ●      |        |        |        |        |        | ●        | ●      |      |     |     |
| 160416PDSR-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 160424R-MM       |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 160430R-MM       |        |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 160432R-MM       |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 1604PDSR-MN3     |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |      |     |     |
| 1604PDSR-MN4     |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |      |     |     |

\* Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
\* Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

## Adaptadores disponibles

| Codigo           | Ød    | Adaptadores NC   |                  |
|------------------|-------|------------------|------------------|
| AMC (AMCM) 3063M | 25.4  | BT□□-FMA25.4-□□  | BT□□-SMA25.4-□□  |
|                  | 27    | BT□□-FMC27-□□    | BT□□-SMC27-□□    |
| 3080M            | 31.75 | BT□□-FMA31.75-□□ | BT□□-SMA31.75-□□ |
|                  | 32    | BT□□-FMC32-□□    | BT□□-SMC32-□□    |
| 3100M            | 38.1  | BT□□-FMA38.1-□□  | BT□□-SMA38.1-□□  |
|                  | 40    | BT□□-FMC40-□□    | BT□□-SMC40-□□    |

## Cuidado cuando se aplica insertos al cortador

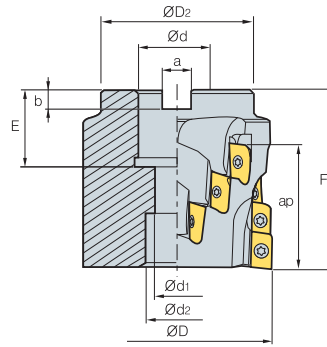


## Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø63-Ø100         | FTKA0410 | TW15S |

Insertos disponibles E05    Detalles del cortador E400~E402

# AMC(M)4000M



AA **90°**  
 • AR: 9°  
 • RR: -9°~ -5°

(mm)

| Codigo       | ØD  | ØD <sub>2</sub> | Ød         | Ød <sub>1</sub> | Ød <sub>2</sub> | a           | b      | E       | F   | No. de Flautas | ap   | kg   |
|--------------|-----|-----------------|------------|-----------------|-----------------|-------------|--------|---------|-----|----------------|------|------|
| AMC 4063M    | 63  | 57              | 25.4 (27)  | 14              | 20              | 9.5 (12.4)  | 6 (7)  | 38 (38) | 85  | 4              | 61.1 | 1.1  |
| (AMCM) 4080M | 80  | 67              | 31.75 (32) | 14              | 26              | 12.7 (14.4) | 8 (8)  | 40 (40) | 100 | 4              | 76.1 | 2.23 |
| 4100M        | 100 | 87              | 38.1 (40)  | 22              | 32              | 15.9 (16.4) | 10 (9) | 40 (40) | 100 | 6              | 76.1 | 3.59 |
| 4125M        | 125 | 87              | 38.1 (40)  | 22              | 32              | 15.9 (16.4) | 10 (9) | 36 (29) | 68  | 6              | 46.1 | 4.0  |

## Insertos disponibles

( ) Tamaño métrico



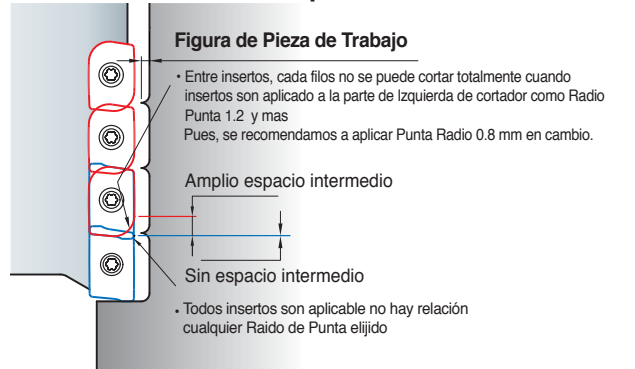
| Codigo           | Recubierta |      |        |        |        |        |        | Sin Rec. | pag. | Codigo             | Recubierta |        |        |        |        |        |        | Sin Rec. | pag. |        |
|------------------|------------|------|--------|--------|--------|--------|--------|----------|------|--------------------|------------|--------|--------|--------|--------|--------|--------|----------|------|--------|
|                  | CN2000     | CN30 | NCM325 | NC5330 | NCM535 | NCM545 | PC2505 |          |      |                    | PC2010     | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 |          |      | PC5400 |
| APMT 1806PDFR-MA |            |      |        |        |        |        |        |          | ●    | APMT 180624PDER-ML |            |        |        |        |        |        |        |          |      | ●      |
| 180604PDFR-MA    |            |      |        |        |        |        |        |          | ●    | 180630R-ML         |            |        |        |        |        |        |        |          |      | ●      |
| 180612PDFR-MA    |            |      |        |        |        |        |        |          | ●    | 1806PDSR-MM        |            | ●      |        | ●      | ●      | ●      | ●      | ●        | ●    | ●      |
| 180616PDFR-MA    |            |      |        |        |        |        |        |          | ●    | 1806PDSR-MF        |            | ●      |        | ●      | ●      | ●      | ●      | ●        | ●    | ●      |
| 180620PDFR-MA    |            |      |        |        |        |        |        |          | ●    | 180612PDSR-MM      |            | ●      |        | ●      | ●      | ●      | ●      | ●        | ●    | ●      |
| 180624PDFR-MA    |            |      |        |        |        |        |        |          | ●    | 180616PDSR-MM      |            | ●      |        |        | ●      | ●      | ●      | ●        | ●    | ●      |
| 180630R-MA       |            |      |        |        |        |        |        |          | ●    | 180620PDSR-MM      |            | ●      |        |        |        | ●      | ●      | ●        | ●    | ●      |
| 1806PDER-ML      |            |      |        |        |        |        |        |          | ●    | 180624PDSR-MM      |            | ●      |        | ●      | ●      |        | ●      | ●        | ●    | ●      |
| 180604PDER-ML    |            |      |        |        |        |        |        |          | ●    | 180630R-MM         |            | ●      |        |        | ●      | ●      | ●      | ●        | ●    | ●      |
| 180612PDER-ML    |            |      |        |        |        |        |        |          | ●    | 180632R-MM         |            | ●      |        |        | ●      | ●      | ●      | ●        | ●    | ●      |
| 180616PDER-ML    |            |      |        |        |        |        |        |          | ●    | 1806PDSR-MN3       |            |        |        |        |        |        |        |          | ●    | ●      |
| 180620PDER-ML    |            |      |        |        |        |        |        |          | ●    | 1806PDSR-MN4       |            |        |        |        |        |        |        |          | ●    | ●      |

\* Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 \* Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

## Adaptadores disponibles

| Codigo           | Ød    | Adaptadores NC   |                  |
|------------------|-------|------------------|------------------|
| AMC (AMCM) 4063M | 25.4  | BT□□-FMA25.4-□□  | BT□□-SMA25.4-□□  |
|                  | 27    | BT□□-FMC27-□□    | BT□□-SMC27-□□    |
| 4080M            | 31.75 | BT□□-FMA31.75-□□ | BT□□-SMA31.75-□□ |
|                  | 32    | BT□□-FMC32-□□    | BT□□-SMC32-□□    |
| 4100M            | 38.1  | BT□□-FMA38.1-□□  | BT□□-SMA38.1-□□  |
|                  | 40    | BT□□-FMC40-□□    | BT□□-SMC40-□□    |
| 4125M            | 38.1  | BT□□-FMA38.1-□□  | BT□□-SMA38.1-□□  |
|                  | 40    | BT□□-FMC40-□□    | BT□□-SMC40-□□    |

## Cuidado cuando se aplica insertos al cortador



## Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø63~Ø125         | FTKA0410 | TW15S |

Insertos disponibles E05 Detalles del cortador E400~E402



# AMS1000S

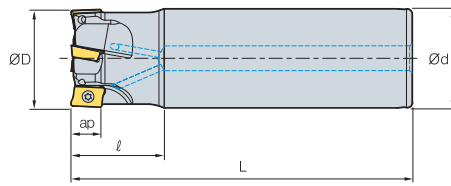


Fig. 1

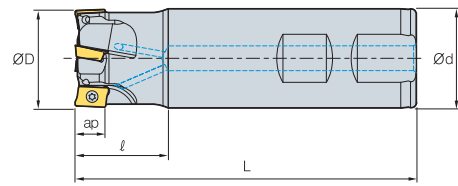


Fig. 2



AA **90°**  
 • AR: 7.5°~13°  
 • RR: -17°~ -6°

(mm)

| Codigo |             | ØD | Ød | ℓ  | L  | ap  |      | Fig. |
|--------|-------------|----|----|----|----|-----|------|------|
| AMS    | 1010HS      | 2  | 10 | 10 | 20 | 80  | 0.04 | 2    |
|        | 1011HS      | 2  | 11 | 10 | 20 | 80  | 0.04 | 2    |
|        | 1012HS-2    | 2  | 12 | 12 | 25 | 80  | 0.06 | 2    |
|        | 1012HS-2L12 | 2  | 12 | 12 | 25 | 120 | 0.09 | 1    |
|        | 1012HS-3    | 3  | 12 | 12 | 25 | 80  | 0.06 | 2    |
|        | 1014HS-2    | 2  | 14 | 16 | 25 | 90  | 0.11 | 2    |
|        | 1014HS-2L16 | 2  | 14 | 16 | 25 | 140 | 0.18 | 1    |
|        | 1014HS-3    | 3  | 14 | 16 | 25 | 90  | 0.11 | 2    |
|        | 1015HS      | 3  | 15 | 16 | 25 | 90  | 0.11 | 2    |
|        | 1015HS-3L16 | 3  | 15 | 16 | 25 | 140 | 0.18 | 1    |
|        | 1016HS-3    | 3  | 16 | 16 | 25 | 90  | 0.12 | 2    |
|        | 1016HS-3L16 | 3  | 16 | 16 | 25 | 160 | 0.22 | 1    |
|        | 1016HS-4    | 4  | 16 | 16 | 25 | 90  | 0.12 | 2    |
|        | 1017HS      | 4  | 17 | 16 | 25 | 90  | 0.12 | 2    |
|        | 1017HS-3L16 | 3  | 17 | 16 | 25 | 160 | 0.22 | 1    |
|        | 1018HS      | 4  | 18 | 16 | 25 | 90  | 0.12 | 2    |
|        | 1018HS-4L16 | 4  | 18 | 16 | 25 | 180 | 0.25 | 1    |
|        | 1020HS-4    | 4  | 20 | 20 | 30 | 110 | 0.23 | 2    |
|        | 1020HS-4L20 | 4  | 20 | 20 | 30 | 200 | 0.43 | 1    |
|        | 1020HS-5    | 5  | 20 | 20 | 30 | 110 | 0.23 | 2    |
|        | 1021HS      | 5  | 21 | 20 | 30 | 110 | 0.24 | 2    |
|        | 1021HS-4L20 | 4  | 21 | 20 | 30 | 200 | 0.43 | 1    |
|        | 1022HS      | 5  | 22 | 20 | 30 | 110 | 0.27 | 2    |
|        | 1025HS      | 7  | 25 | 25 | 30 | 120 | 0.39 | 2    |
|        | 1026HS      | 7  | 26 | 25 | 30 | 120 | 0.39 | 2    |
|        | 1032HS      | 8  | 32 | 32 | 35 | 120 | 0.65 | 2    |
|        | 1033HS      | 8  | 33 | 32 | 35 | 120 | 0.65 | 2    |

## Insertos disponibles

APMT-MA APMT-MM



| Codigo | Cermet        |      | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT   | 0602PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   | E05 |
|        | 060208PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        | 060202PDSR-MM |      |            | ●      |        |        |        |        |        | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 0602PDSR-MM   |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        |        | ●        | ●      |      |     |     |
|        | 060208PDSR-MM |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 060212R-MM    |      |            | ●      |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |
|        | 060216R-MM    |      |            |        |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |

## Partes

| Especificaciones |           |         |
|------------------|-----------|---------|
| Ø10~Ø33          | FTKA01842 | TW06S-A |

Insertos disponibles E05

## AMS1500S

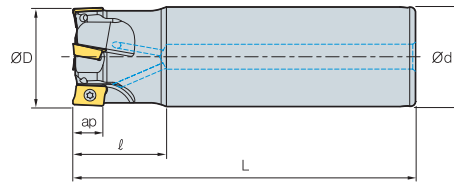


Fig. 1

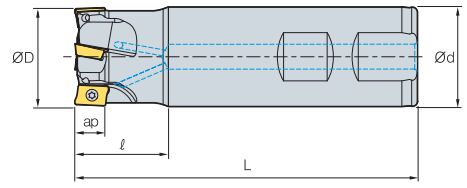


Fig. 2



AA  
90°

• AR: 7.5°~12.5°  
• RR: -28°~-14°

(mm)

| Codigo       | ØD | Ød | ℓ  | L   | ap | kg   | Fig. |
|--------------|----|----|----|-----|----|------|------|
| AMS 15010HS  | 10 | 10 | 25 | 80  | 9  | 0.04 | 2    |
| 15010HS-1L16 | 10 | 16 | 30 | 160 | 9  | 0.21 | 1    |
| 15012HS      | 12 | 16 | 25 | 80  | 9  | 0.10 | 2    |
| 15012HS-1L16 | 12 | 16 | 30 | 160 | 9  | 0.21 | 1    |
| 15013HS      | 13 | 16 | 25 | 80  | 9  | 0.10 | 2    |
| 15014HS      | 14 | 16 | 25 | 80  | 9  | 0.10 | 2    |
| 15014HS-1L16 | 14 | 16 | 30 | 160 | 9  | 0.21 | 1    |
| 15016HS      | 16 | 16 | 30 | 90  | 9  | 0.11 | 2    |
| 15016HS-2L16 | 16 | 16 | 30 | 160 | 9  | 0.21 | 1    |
| 15017HS      | 17 | 16 | 30 | 90  | 9  | 0.12 | 2    |
| 15017HS-2L16 | 17 | 16 | 30 | 160 | 9  | 0.21 | 1    |
| 15018HS      | 18 | 16 | 30 | 90  | 9  | 0.14 | 2    |
| 15018HS-2L16 | 18 | 16 | 30 | 160 | 9  | 0.21 | 1    |
| 15019HS      | 19 | 16 | 30 | 90  | 9  | 0.16 | 2    |
| 15020HS      | 20 | 20 | 30 | 90  | 9  | 0.18 | 2    |
| 15020HS-2L20 | 20 | 20 | 30 | 160 | 9  | 0.34 | 1    |
| 15020HS-3    | 20 | 20 | 30 | 90  | 9  | 0.18 | 2    |
| 15021HS      | 21 | 20 | 30 | 90  | 9  | 0.20 | 2    |
| 15021HS-2L20 | 21 | 20 | 30 | 160 | 9  | 0.34 | 1    |
| 15021HS-3    | 21 | 20 | 30 | 90  | 9  | 0.20 | 2    |
| 15022HS      | 22 | 20 | 30 | 110 | 9  | 0.23 | 2    |
| 15022HS-3L20 | 22 | 20 | 30 | 180 | 9  | 0.38 | 1    |
| 15024HS      | 24 | 20 | 30 | 110 | 9  | 0.30 | 2    |
| 15024HS-4    | 24 | 20 | 30 | 110 | 9  | 0.30 | 2    |
| 15025HS-3S20 | 25 | 20 | 30 | 110 | 9  | 0.35 | 2    |
| 15025HS      | 25 | 25 | 30 | 110 | 9  | 0.35 | 2    |
| 15025HS-3L25 | 25 | 25 | 30 | 180 | 9  | 0.59 | 1    |

### Insertos disponibles



| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-----|-----|
|                  | CN2000 | CN30 | NCM325     | NC5330 | NCM635 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | G10 | H01 |
| APMT 0903PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        | ●   | E05 |
| 090308PDFR-MA    |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
| 0903PDER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
| 090308PDER-ML    |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
| 0903PDSR-MM      |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      |        |        |          | ●      | ●    |        |     |     |
| 090308PDSR-MM    |        |      |            | ●      |        |        |        | ●      | ●      | ●      |        |        |          | ●      | ●    |        |     |     |
| 090312R-MM       |        |      |            |        |        |        |        |        | ●      | ●      |        |        |          | ●      | ●    |        |     |     |
| 090316R-MM       |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |          | ●      | ●    |        |     |     |
| 090320R-MM       |        |      |            |        |        |        |        |        | ●      | ●      |        |        |          | ●      | ●    |        |     |     |

### Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø10~Ø14          | FTKA02555S | TW08S |
| Ø16~Ø25          | FTKA02565S |       |

Insertos disponibles E05





# AMS1500S

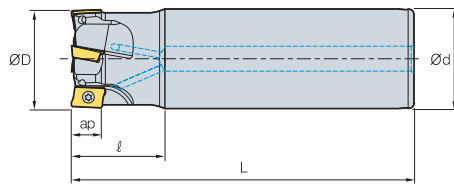


Fig. 1

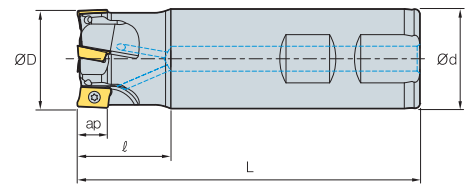


Fig. 2



AA **90°**  
 • AR: 7.5°~12.5°  
 • RR: -28°~-14°

(mm)

| Codigo |              | ØD | Ød | l  | L  | ap  |      | Fig. |
|--------|--------------|----|----|----|----|-----|------|------|
| AMS    | 15025HS-4S20 | 4  | 25 | 20 | 30 | 110 | 0.25 | 2    |
|        | 15025HS-4S25 | 4  | 25 | 25 | 30 | 110 | 0.25 | 2    |
|        | 15028HS      | 4  | 28 | 25 | 30 | 110 | 0.36 | 2    |
|        | 15028HS-4L25 | 4  | 28 | 25 | 30 | 180 | 0.61 | 1    |
|        | 15028HS-5    | 5  | 28 | 25 | 30 | 110 | 0.36 | 2    |
|        | 15030HS      | 4  | 30 | 25 | 30 | 110 | 0.38 | 2    |
|        | 15030HS-4L25 | 4  | 30 | 25 | 30 | 180 | 0.62 | 1    |
|        | 15030HS-5    | 5  | 30 | 25 | 30 | 110 | 0.38 | 2    |
|        | 15032HS      | 4  | 32 | 32 | 30 | 110 | 0.60 | 2    |
|        | 15032HS-4L32 | 4  | 32 | 32 | 30 | 180 | 1.00 | 1    |
|        | 15032HS-5    | 5  | 32 | 32 | 30 | 110 | 0.60 | 2    |
|        | 15035HS      | 5  | 35 | 32 | 30 | 110 | 0.70 | 2    |
|        | 15035HS-6    | 6  | 35 | 32 | 30 | 110 | 0.70 | 2    |
|        | 15040HS-S32  | 5  | 40 | 32 | 35 | 130 | 0.80 | 2    |
|        | 15040HS-5L32 | 5  | 40 | 32 | 35 | 200 | 1.20 | 1    |
|        | 15040HS-6S32 | 6  | 40 | 32 | 35 | 130 | 0.80 | 2    |
|        | 15040HS-S40  | 5  | 40 | 40 | 35 | 130 | 1.13 | 2    |
|        | 15040HS-6S40 | 6  | 40 | 40 | 35 | 130 | 1.13 | 2    |
|        | 15040HS-S42  | 5  | 40 | 42 | 35 | 130 | 1.23 | 2    |
|        | 15040HS-6S42 | 6  | 40 | 42 | 35 | 130 | 1.23 | 2    |

## Insertos disponibles

APMT-MA APMT-ML APMT-MM



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT   | 0903PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   |     |
|        | 090308PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        | 0903PDER-ML   |      |            |        |        |        |        |        |        |        |        |        | ●      | ●        |        |      |     |     |
|        | 090308PDER-ML |      |            |        |        |        |        |        |        |        |        |        | ●      | ●        |        |      |     |     |
|        | 0903PDSR-MM   |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        |        | ●        | ●      |      |     |     |
|        | 090308PDSR-MM |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 090312R-MM    |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 090316R-MM    |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 090320R-MM    |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |

## Partes

| Especificaciones |            |       |
|------------------|------------|-------|
| Ø25~Ø40          | FTKA02565S | TW08S |

Insertos disponibles E05

## AMS2000S

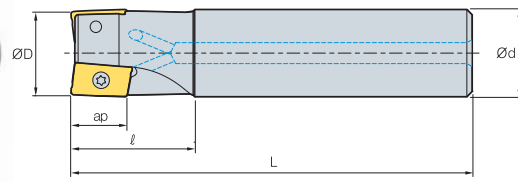


Fig. 1

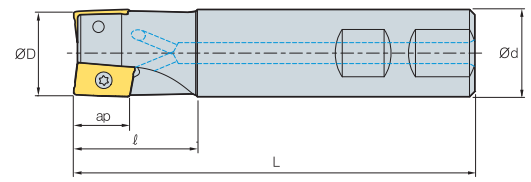


Fig. 2



AA  
90°  
• AR: 3°~14°  
• RR: -25°~-18°

(mm)

| Codigo | Icono       | ØD | Ød | ℓ  | L  | ap  | kg | Fig. |   |
|--------|-------------|----|----|----|----|-----|----|------|---|
| AMS    | 2010HS      | 1  | 10 | 10 | 20 | 85  | 11 | 0.04 | 2 |
|        | 2010HS-1L16 | 1  | 10 | 16 | 30 | 160 | 11 | 0.21 | 1 |
|        | 2012HS      | 1  | 12 | 16 | 25 | 85  | 11 | 0.10 | 2 |
|        | 2012HS-1L16 | 1  | 12 | 16 | 30 | 160 | 11 | 0.21 | 1 |
|        | 2014HS      | 1  | 14 | 16 | 25 | 90  | 11 | 0.12 | 2 |
|        | 2014HS-1L16 | 1  | 14 | 16 | 30 | 160 | 11 | 0.21 | 1 |
|        | 2016HS      | 2  | 16 | 16 | 25 | 90  | 11 | 0.12 | 2 |
|        | 2016HS-2L16 | 2  | 16 | 16 | 30 | 180 | 11 | 0.21 | 1 |
|        | 2018HS      | 2  | 18 | 16 | 25 | 90  | 11 | 0.12 | 2 |
|        | 2018HS-2L16 | 2  | 18 | 16 | 30 | 180 | 11 | 0.21 | 1 |
|        | 2020HS      | 2  | 20 | 20 | 30 | 100 | 11 | 0.21 | 2 |
|        | 2020HS-2L20 | 2  | 20 | 20 | 30 | 210 | 11 | 0.49 | 1 |
|        | 2022HS      | 3  | 22 | 20 | 35 | 115 | 11 | 0.25 | 2 |
|        | 2022HS-3L20 | 3  | 22 | 20 | 35 | 180 | 11 | 0.38 | 1 |
|        | 2025HS      | 3  | 25 | 25 | 35 | 115 | 11 | 0.40 | 2 |
|        | 2025HS-3L25 | 3  | 25 | 25 | 40 | 180 | 11 | 0.59 | 1 |
|        | 2032HS      | 4  | 32 | 32 | 40 | 125 | 11 | 0.70 | 2 |
|        | 2032HS-4L32 | 4  | 32 | 32 | 50 | 180 | 11 | 1.00 | 1 |
|        | 2040HS      | 5  | 40 | 32 | 42 | 130 | 11 | 0.84 | 2 |
|        | 2040HS-5L32 | 5  | 40 | 32 | 50 | 200 | 11 | 1.20 | 1 |
|        | 2040HS-S40  | 5  | 40 | 40 | 42 | 130 | 11 | 1.15 | 2 |
|        | 2040HS-S42  | 5  | 40 | 42 | 42 | 130 | 11 | 2.00 | 2 |
|        | 2050HS      | 6  | 50 | 32 | 45 | 135 | 11 | 1.06 | 2 |
|        | 2050HS-S40  | 6  | 50 | 40 | 45 | 135 | 11 | 1.38 | 2 |
|        | 2050HS-S42  | 6  | 50 | 42 | 45 | 135 | 11 | 1.50 | 2 |
|        | 2063HS      | 8  | 63 | 32 | 45 | 135 | 11 | 1.31 | 2 |
|        | 2063HS-S40  | 8  | 63 | 40 | 45 | 135 | 11 | 1.62 | 2 |
|        | 2063HS-S42  | 8  | 63 | 42 | 45 | 135 | 11 | 1.70 | 2 |

### Insertos disponibles



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |     |     |  |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-----|-----|--|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | G10 | H01 |  |
| APMT   | 11T3PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |  |
|        | 11T308PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |  |
|        | 11T3PDER-ML   |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |  |
|        | 11T308PDER-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |  |
|        | 11T3PDSR-MM   |      |            | ●      | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |  |
|        | 11T3PDSR-MF   |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |  |
|        | 11T308PDSR-MM |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |  |
|        | 11T312PDSR-MM |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |  |
|        | 11T316R-MM    |      |            |        | ●      |        |        | ●      | ●      |        |        |        |          | ●      | ●    |        |     |     |  |
|        | 11T318R-MM    |      |            |        | ●      |        |        | ●      | ●      |        |        |        |          | ●      | ●    |        |     |     |  |
|        | 11T324R-MM    |      |            |        | ●      |        |        | ●      | ●      |        |        |        |          | ●      | ●    |        |     |     |  |
|        | 11T3PDSR-MN2  |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |  |
|        | 11T3PDSR-MN3  |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |  |

### Partes

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 ※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø10-Ø14          | FTKA02555S | TW08S |
| Ø16-Ø63          | FTKA02565S |       |



# AMS3000S

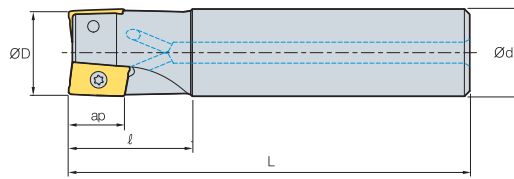


Fig. 1

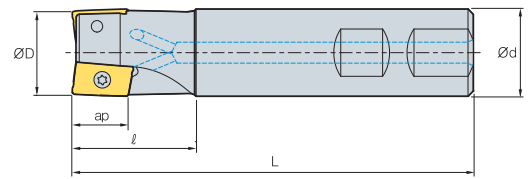


Fig. 2



AA  
90°  
• AR: 3°~14°  
• RR: -18°~-10°

(mm)

| Codigo      |   | ØD | Ød | l  | L   | ap |      | Fig. |
|-------------|---|----|----|----|-----|----|------|------|
| AMS         |   |    |    |    |     |    |      |      |
| 3025HS      | 2 | 25 | 25 | 35 | 115 | 16 | 0.40 | 2    |
| 3025HS-2M25 | 2 | 25 | 25 | 35 | 180 | 16 | 0.65 | 1    |
| 3025HS-2L25 | 2 | 25 | 25 | 60 | 220 | 16 | 0.75 | 1    |
| 3032HS      | 3 | 32 | 32 | 40 | 125 | 16 | 0.69 | 2    |
| 3032HS-2M32 | 2 | 32 | 32 | 40 | 200 | 16 | 1.13 | 1    |
| 3032HS-2L32 | 2 | 32 | 32 | 65 | 260 | 16 | 1.52 | 1    |
| 3032HS-3M32 | 3 | 32 | 32 | 40 | 200 | 16 | 1.12 | 1    |
| 3032HS-3L32 | 3 | 32 | 32 | 65 | 260 | 16 | 1.48 | 1    |
| 3040HS      | 4 | 40 | 32 | 42 | 130 | 16 | 0.80 | 2    |
| 3040HS-3M32 | 3 | 40 | 32 | 42 | 200 | 16 | 1.24 | 1    |
| 3040HS-3L32 | 3 | 40 | 32 | 42 | 260 | 16 | 1.61 | 1    |
| 3040HS-4M32 | 4 | 40 | 32 | 42 | 200 | 16 | 1.21 | 1    |
| 3040HS-4L32 | 4 | 40 | 32 | 42 | 260 | 16 | 1.58 | 1    |
| 3040HS-S40  | 4 | 40 | 40 | 42 | 130 | 16 | 1.10 | 2    |
| 3040HS-S42  | 4 | 40 | 42 | 42 | 130 | 16 | 1.20 | 2    |
| 3050HS      | 5 | 50 | 32 | 45 | 135 | 16 | 1.00 | 2    |
| 3050HS-S40  | 5 | 50 | 40 | 45 | 135 | 16 | 1.30 | 2    |
| 3050HS-S42  | 5 | 50 | 42 | 45 | 135 | 16 | 1.40 | 2    |
| 3063HS      | 6 | 63 | 32 | 45 | 135 | 16 | 1.25 | 2    |
| 3063HS-S40  | 6 | 63 | 40 | 45 | 135 | 16 | 1.50 | 2    |
| 3063HS-S42  | 6 | 63 | 42 | 45 | 135 | 16 | 1.54 | 2    |

## Insertos disponibles

APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN



| Codigo        | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |     |
|---------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-----|
|               | CN2000 | CN30 | NCM325     | NC5330 | NCM635 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | G10 |
| APMT          |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |
| 1604PDFR-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        | ●   |
| 160404PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |
| 1604PDER-ML   |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |
| 160404PDER-ML |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |
| 1604PDSR-MM   |        |      | ●          | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |
| 1604PDSR-MF   |        |      |            | ●      |        |        |        | ●      | ●      | ●      |        |        |          | ●      | ●    |        |     |
| 160410PDSR-MM |        |      |            |        |        |        |        |        | ●      | ●      |        |        |          | ●      | ●    |        |     |
| 160416PDSR-MM |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |          | ●      | ●    |        |     |
| 160424R-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |          | ●      | ●    |        |     |
| 160430R-MM    |        |      |            |        |        |        |        |        | ●      | ●      |        |        |          | ●      | ●    |        |     |
| 160432R-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |          | ●      | ●    |        |     |
| 1604PDSR-MN3  |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |
| 1604PDSR-MN4  |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |

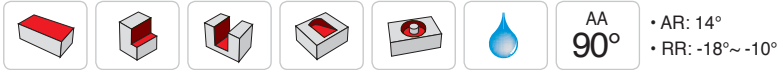
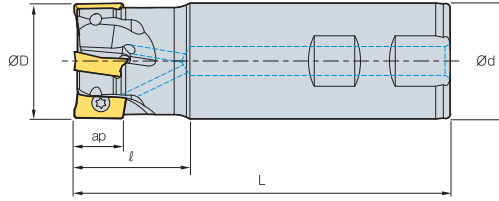
\* Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
\* Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

## Partes

| Especificaciones |                      |                |
|------------------|----------------------|----------------|
| Ø25<br>Ø32-Ø63   | FTKA0408<br>FTKA0410 | Llave<br>TW15S |

Insertos disponibles E05

## AMS3000S-K



(mm)

|              | Codigo       |    | ØD | Ød | l   | L   | ap   |      |
|--------------|--------------|----|----|----|-----|-----|------|------|
| AMS          | 3025HS-K     | 2  | 25 | 25 | 35  | 115 | 16   | 0.4  |
|              | 3032HS-K     | 3  | 32 | 32 | 40  | 125 | 16   | 0.69 |
|              | 3040HS-K     | 4  | 40 | 32 | 42  | 130 | 16   | 0.8  |
|              | 3040HS-K-S40 | 4  | 40 | 40 | 42  | 130 | 16   | 1.1  |
|              | 3040HS-K-S42 | 4  | 40 | 42 | 42  | 130 | 16   | 1.2  |
|              | 3050HS-K     | 5  | 50 | 32 | 45  | 135 | 16   | 1.0  |
|              | 3050HS-K-S40 | 5  | 50 | 40 | 45  | 135 | 16   | 1.3  |
|              | 3050HS-K-S42 | 5  | 50 | 42 | 45  | 135 | 16   | 1.4  |
|              | 3063HS-K     | 6  | 63 | 32 | 45  | 135 | 16   | 1.25 |
|              | 3063HS-K-S40 | 6  | 63 | 40 | 45  | 135 | 16   | 1.5  |
| 3063HS-K-S42 | 6            | 63 | 42 | 45 | 135 | 16  | 1.54 |      |

### Insertos disponibles



| Codigo        | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |     |     |
|---------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-----|-----|
|               | CN2000 | CN30 | NCM325     | NCM335 | NCM535 | NCM545 | PC2505 | PC2510 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | PD2000 |      | G10 | H01 |
| APKT 1604PDSR |        |      | ●          |        |        |        |        |        | ●      | ●      |        |        |          |        |        |      |     |     |
| 1604PDSR-MF   |        |      | ●          |        |        |        |        |        |        |        |        |        | ●        |        |        |      |     |     |
| 1604PDSR-MM   |        |      | ●          | ●      |        |        |        |        | ●      | ●      | ●      | ●      |          |        |        |      |     |     |
| 160432R-MM1   |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |     |     |
| 1604PDFR-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      |        |      | ●   | ●   |
| 1604PDFR-MA2  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      | ●   |     |
| 160416FR-MA2  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |     |     |
| 160432FR-MA2  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |     |     |
| 1604PDFR-MA3  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      | ●   | ●   |

### Partes

| Especificaciones |                      |                |
|------------------|----------------------|----------------|
| Ø25<br>Ø32-Ø63   | FTKA0408<br>FTKA0410 | Llave<br>TW15S |

Insertos disponibles E05



# AMS4000S

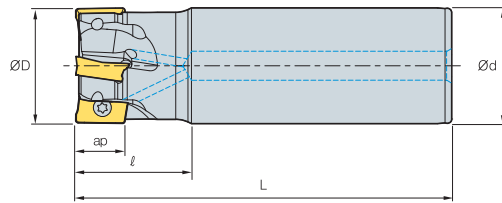


Fig. 1

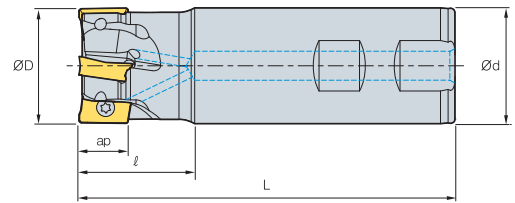


Fig. 2



AA  
90°  
• AR: 7°~13°  
• RR: -20°~-6°

(mm)

| Codigo      | ØD | Ød | ℓ  | L   | ap | kg   | Fig. |
|-------------|----|----|----|-----|----|------|------|
| AMS 4020HS  | 20 | 20 | 30 | 90  | 17 | 0.18 | 2    |
| 4020HS-M    | 20 | 20 | 30 | 160 | 17 | 0.17 | 1    |
| 4021HS      | 21 | 20 | 30 | 90  | 17 | 0.19 | 2    |
| 4021HS-M    | 21 | 20 | 30 | 160 | 17 | 0.34 | 1    |
| 4025HS      | 25 | 25 | 40 | 110 | 17 | 0.35 | 2    |
| 4025HS-2M25 | 25 | 25 | 40 | 180 | 17 | 0.58 | 1    |
| 4025HS-2L25 | 25 | 25 | 40 | 230 | 17 | 0.80 | 1    |
| 4026HS      | 26 | 25 | 40 | 110 | 17 | 0.37 | 2    |
| 4026HS-2M25 | 26 | 25 | 40 | 180 | 17 | 0.60 | 1    |
| 4026HS-2L25 | 26 | 25 | 40 | 230 | 17 | 0.82 | 1    |
| 4032HS      | 32 | 32 | 40 | 125 | 17 | 0.65 | 2    |
| 4032HS-2M32 | 32 | 32 | 50 | 200 | 17 | 1.17 | 1    |
| 4032HS-2L32 | 32 | 32 | 50 | 260 | 17 | 1.50 | 1    |
| 4032HS-3M32 | 32 | 32 | 50 | 200 | 17 | 1.10 | 1    |
| 4032HS-3L32 | 32 | 32 | 50 | 260 | 17 | 1.48 | 1    |
| 4033HS      | 33 | 32 | 40 | 125 | 17 | 0.68 | 2    |
| 4033HS-2M32 | 33 | 32 | 50 | 200 | 17 | 1.12 | 1    |
| 4033HS-2L32 | 33 | 32 | 50 | 260 | 17 | 1.55 | 1    |
| 4033HS-3M32 | 33 | 32 | 50 | 200 | 17 | 1.12 | 1    |
| 4033HS-3L32 | 33 | 32 | 50 | 260 | 17 | 1.55 | 1    |

## Insertos disponibles



| Codigo             | Recubierta |      |        |        |        |        |        |        |        |        | Sin Rec. | pag. | Codigo | Recubierta |        |        |     |     |        |      |        |        |        | Sin Rec. | pag. |        |        |        |        |        |        |
|--------------------|------------|------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------|--------|------------|--------|--------|-----|-----|--------|------|--------|--------|--------|----------|------|--------|--------|--------|--------|--------|--------|
|                    | CN2000     | CN30 | NCM325 | NC5330 | NCM535 | NCM545 | PC2505 | PC3600 | PC6510 | PC9530 |          |      |        | PC9540     | PC5300 | PC5400 | G10 | H01 | CN2000 | CN30 | NCM325 | NC5330 | NCM535 |          |      | NCM545 | PC2505 | PC3600 | PC6510 | PC9530 | PC9540 |
| APMT 1806PDR-MA    |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180604PDR-MA       |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180612PDR-MA       |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180616PDR-MA       |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180620PDR-MA       |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180624PDR-MA       |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180630R-MA         |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 1806PDER-ML        |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180604PDER-ML      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180612PDER-ML      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180616PDER-ML      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180620PDER-ML      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| APMT 180624PDER-ML |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180630R-ML         |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 1806PDSR-MM        |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 1806PDSR-MF        |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180612PDSR-MM      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180616PDSR-MM      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180620PDSR-MM      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180624PDSR-MM      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180630R-MM         |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 180632R-MM         |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 1806PDSR-MN3       |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |
| 1806PDSR-MN4       |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |     |     |        |      |        |        |        |          |      |        |        |        |        |        |        |

\* Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
\* Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

## Partes

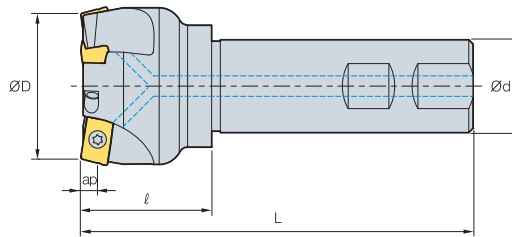
| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø20~Ø21          | FTKA0408 | TW15S |
| Ø25~Ø33          | FTKA0410 | TW15S |

Insertos disponibles E05





# AMS1000SE/2000SE



• AR: -4.5°~-1°  
• RR: -3°~0°

(mm)

| Codigo      |   | ØD | Ød | ℓ  | L   | ap  |      |
|-------------|---|----|----|----|-----|-----|------|
| AMS 1025HSE | 3 | 25 | 25 | 30 | 115 | 2.5 | 0.41 |
| AMS 2025HSE | 2 | 25 | 25 | 30 | 115 | 4   | 0.4  |
| 2032HSE     | 3 | 32 | 32 | 40 | 125 | 4   | 0.72 |
| 2040HSE     | 3 | 40 | 32 | 40 | 130 | 4   | 0.86 |
| 2040HSE-S40 | 3 | 40 | 40 | 40 | 130 | 4   | 1.2  |
| 2040HSE-S42 | 3 | 40 | 42 | 40 | 130 | 4   | 1.3  |
| 2050HSE     | 4 | 50 | 32 | 40 | 135 | 4   | 0.98 |
| 2050HSE-S40 | 4 | 50 | 40 | 40 | 135 | 4   | 1.3  |
| 2050HSE-S42 | 4 | 50 | 42 | 40 | 135 | 4   | 1.4  |
| 2063HSE     | 5 | 63 | 32 | 40 | 135 | 4   | 1.24 |
| 2063HSE-S40 | 5 | 63 | 40 | 40 | 135 | 4   | 1.57 |
| 2063HSE-S42 | 5 | 63 | 42 | 40 | 135 | 4   | 1.62 |

## Insertos disponibles

APMT-MF      APMT-MM



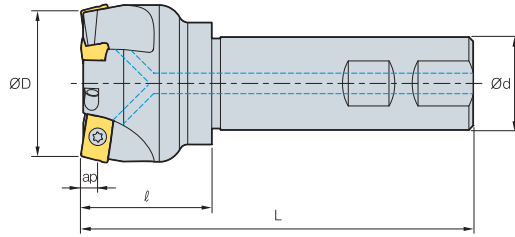
| Tipo      | Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |
|-----------|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|
|           |                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 |
| 1000 Tipo | APMT 060202PDSR-MM |        |      |            | ●      |        |        |        |        |        |        |        |        |        |          |        |      |     |
|           | 0602PDSR-MM        |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        |        | ●        | ●      |      |     |
|           | 060208PDSR-MM      |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |
|           | 060212R-MM         |        |      |            | ●      |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |
|           | 060216R-MM         |        |      |            |        |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |
| 2000 Tipo | APMT 11T3PDSR-MM   |        |      | ●          | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      |        |        | ●        | ●      |      |     |
|           | 11T3PDSR-MF        |        |      |            | ●      |        |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |      |     |
|           | 11T308PDSR-MM      |        |      |            | ●      |        |        |        |        | ●      | ●      |        | ●      |        | ●        | ●      |      |     |
|           | 11T312PDSR-MM      |        |      |            | ●      |        |        |        |        | ●      | ●      |        | ●      |        | ●        | ●      |      |     |
|           | 11T316R-MM         |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |
|           | 11T318R-MM         |        |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |
|           | 11T324R-MM         |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |

## Partes

| Especificaciones    |            |       |         |
|---------------------|------------|-------|---------|
|                     | Tornillo   | Llave | Llave   |
| Ø25 (1000 Tipo)     | FTKA01842  | -     | TW06S-A |
| Ø25~Ø63 (2000 Tipo) | FTKA02565S | TW08S | -       |

Insertos disponibles E05

## AMS3000SE



• AR: -4.5°~ -1°  
• RR: -3°~ 0°

(mm)

| Codigo |             | ØD | Ød | l  | L  | ap  |     |
|--------|-------------|----|----|----|----|-----|-----|
| AMS    | 3050HSE     | 3  | 50 | 32 | 45 | 135 | 1.0 |
|        | 3050HSE-S40 | 3  | 50 | 40 | 45 | 135 | 1.3 |
|        | 3050HSE-S42 | 3  | 50 | 42 | 45 | 135 | 1.4 |
|        | 3063HSE     | 4  | 63 | 32 | 45 | 135 | 1.3 |
|        | 3063HSE-S40 | 4  | 63 | 40 | 45 | 135 | 1.6 |
|        | 3063HSE-S42 | 4  | 63 | 42 | 45 | 135 | 1.7 |

### Insertos disponibles

APMT-MF      APMT-MM



| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|                  | CN2000 | CN80 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT 1604PDSR-MM |        |      | ●          | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      |      |     | E05 |
| 1604PDSR-MF      |        |      |            | ●      |        |        |        |        |        | ●      |        |        |        | ●        | ●      |      |     |     |
| 160410PDSR-MM    |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
| 160416PDSR-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 160424R-MM       |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 160430R-MM       |        |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 160432R-MM       |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |

### Partes

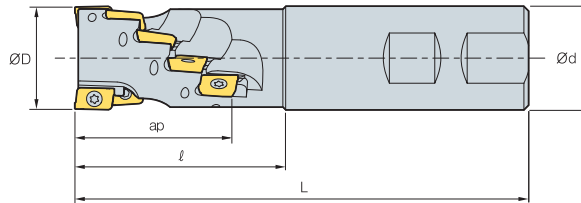
| Especificaciones |                      |                |
|------------------|----------------------|----------------|
| Ø50~Ø63          | Tornillo<br>FTKA0410 | Llave<br>TW15S |

Insertos disponibles E05





# AMS1000M/1500M



AA  
**90°**  
• AR: 7°~9°  
• RR: -13°~ -10°

(mm)

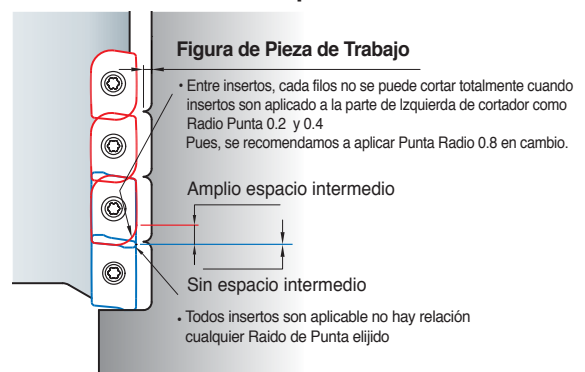
| Codigo     | Flutes | ØD | Ød | l  | L   | No. de Flautas | ap   | kg  |
|------------|--------|----|----|----|-----|----------------|------|-----|
| AMS 1016M  | 6      | 16 | 16 | 30 | 80  | 2              | 15.5 | 0.3 |
|            | 12     | 20 | 20 | 32 | 85  | 3              | 20.5 | 0.3 |
|            | 20     | 25 | 25 | 39 | 95  | 4              | 25.5 | 0.3 |
| AMS 15020M | 3      | 20 | 20 | 42 | 105 | 1              | 26.5 | 0.3 |
|            | 8      | 25 | 25 | 50 | 110 | 2              | 35   | 0.3 |
|            | 10     | 32 | 32 | 60 | 120 | 2              | 44   | 0.3 |

## Insertos disponibles



| Tipo            | Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|-----------------|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|                 |                    | CN2000 | CN30 | NCM325     | NC5330 | NCM635 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| 1000 Tipo       | APMT 0602PDFR-MA   |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   | E05 |
|                 | APMT 060208PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|                 | APMT 060202PDSR-MM |        |      |            | ●      |        |        |        |        |        | ●      |        |        |        | ●        | ●      |      |     |     |
|                 | APMT 0602PDSR-MM   |        |      |            | ●      |        |        | ●      | ●      |        | ●      | ●      | ●      |        | ●        | ●      |      |     |     |
|                 | APMT 060208PDSR-MM |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|                 | APMT 060212R-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 1500 Tipo       | APMT 060216R-MM    |        |      |            |        |        |        |        | ●      |        |        |        |        | ●      | ●        |        |      |     |     |
|                 | APMT 0903PDFR-MA   |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        | ●    |     |     |
|                 | APMT 090308PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|                 | APMT 0903PDER-ML   |        |      |            |        |        |        |        |        |        |        |        |        | ●      | ●        |        |      |     |     |
|                 | APMT 090308PDER-ML |        |      |            |        |        |        |        |        |        |        |        |        | ●      | ●        |        |      |     |     |
|                 | APMT 0903PDSR-MM   |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        | ●      | ●        |        |      |     |     |
|                 | APMT 090308PDSR-MM |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        | ●      | ●        |        |      |     |     |
|                 | APMT 090312R-MM    |        |      |            |        |        |        |        |        | ●      | ●      |        |        | ●      | ●        |        |      |     |     |
| APMT 090316R-MM |                    |        |      | ●          |        |        |        |        | ●      | ●      |        |        | ●      | ●      |          |        |      |     |     |
| APMT 090320R-MM |                    |        |      |            |        |        |        |        | ●      | ●      |        |        | ●      | ●      |          |        |      |     |     |

## Cuidado cuando se aplica insertos al cortador

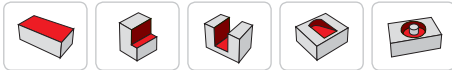
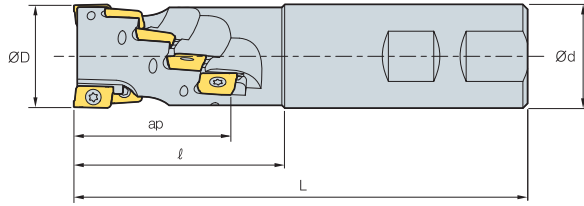


## Partes

| Especificaciones    | Tornillo   | Llave | Llave   |
|---------------------|------------|-------|---------|
| Ø16~Ø25 (1000 Tipo) | FTKA01842  | -     | TW06S-A |
| Ø20~Ø32 (1500 Tipo) | FTKA02565S | TW08S | -       |

Insertos disponibles E05

## AMS2000M



AA  
90°

• AR: 7°~9°  
• RR: -13°~ -10°

(mm)

| Codigo |       | ØD | Ød | l  | L  | No. de Flautas | ap   | kg   |
|--------|-------|----|----|----|----|----------------|------|------|
| AMS    | 2020M | 3  | 20 | 20 | 45 | 1              | 29.4 | 0.32 |
|        | 2025M | 8  | 25 | 25 | 55 | 2              | 38.9 | 0.40 |
|        | 2032M | 10 | 32 | 32 | 65 | 2              | 48.5 | 0.65 |
|        | 2040M | 14 | 40 | 40 | 75 | 2              | 58   | 0.75 |

### Insertos disponibles

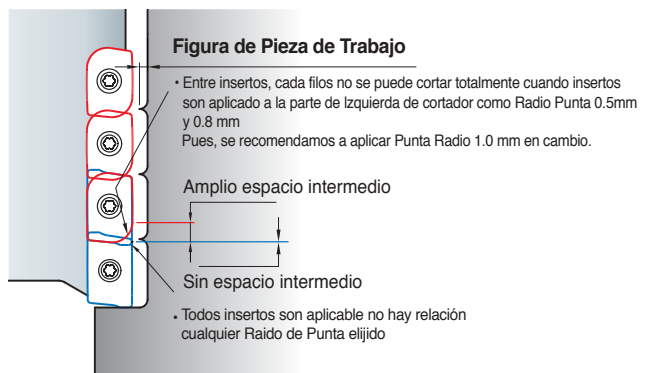
APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN



| Codigo | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|        | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT   |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 ※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

### Cuidado cuando se aplica insertos al cortador



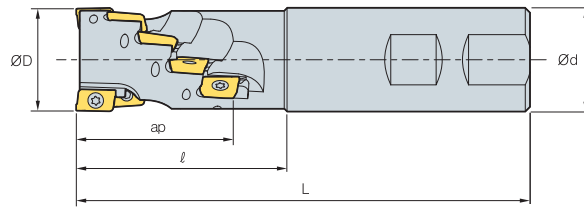
### Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø20~Ø40          | FTKA02565S | TW08S |

Insertos disponibles E05



# AMS4000M



AA  
90°  
• AR: 7°~9°  
• RR: -13°~-10°

(mm)

| Codigo |           | ØD | Ød | l  | L  | No. de Flautas | ap |      |
|--------|-----------|----|----|----|----|----------------|----|------|
| AMS    | 4032M     | 4  | 32 | 32 | 60 | 130            | 2  | 0.65 |
|        | 4040M     | 6  | 40 | 40 | 70 | 140            | 2  | 1.11 |
|        | 4050M-S40 | 6  | 50 | 40 | 55 | 125            | 2  | 1.22 |
|        | 4050M     | 8  | 50 | 40 | 70 | 140            | 2  | 1.37 |

## Insertos disponibles

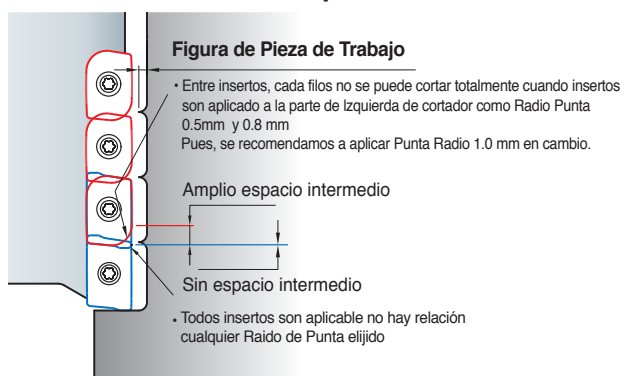
APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN



| Codigo       | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|              | CN2000        | CN30 | NCM325     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT         | 1806PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   |     |
|              | 180604PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   |     |
|              | 180612PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   |     |
|              | 180616PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   |     |
|              | 180620PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   |     |
|              | 180624PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   |     |
|              | 180630R-MA    |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   |     |
|              | 1806PDER-ML   |      |            |        |        |        |        |        |        |        |        |        |        |          | ●      | ●    |     |     |
|              | 180604PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          | ●      | ●    |     |     |
|              | 180612PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          | ●      | ●    |     |     |
|              | 180616PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          | ●      | ●    |     |     |
|              | 180620PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          | ●      | ●    |     |     |
|              | 180624PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        |          | ●      | ●    |     |     |
|              | 180630R-ML    |      |            |        |        |        |        |        |        |        |        |        |        |          | ●      | ●    |     |     |
|              | 1806PDSR-MM   |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |     |     |
|              | 1806PDSR-MF   |      |            |        | ●      |        |        |        |        | ●      |        |        |        |          | ●      | ●    |     |     |
|              | 180612PDSR-MM |      |            |        | ●      |        |        |        |        | ●      |        |        |        |          | ●      | ●    |     |     |
|              | 180616PDSR-MM |      |            |        | ●      |        |        |        |        | ●      |        |        |        |          | ●      | ●    |     |     |
|              | 180620PDSR-MM |      |            |        | ●      |        |        |        |        | ●      |        |        |        |          | ●      | ●    |     |     |
|              | 180624PDSR-MM |      |            |        | ●      |        |        |        |        | ●      |        |        |        |          | ●      | ●    |     |     |
| 180630R-MM   |               |      |            | ●      |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |
| 180632R-MM   |               |      |            | ●      |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |
| 1806PDSR-MN3 |               |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |      |     |     |
| 1806PDSR-MN4 |               |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |      |     |     |

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 ※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

## Cuidado cuando se aplica insertos al cortador

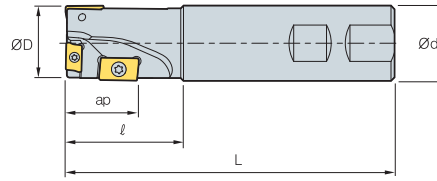


## Partes

| Especificaciones |                     |                |
|------------------|---------------------|----------------|
| Ø32~Ø50          | Tomillo<br>FTKA0410 | Llave<br>TW15S |

Insertos disponibles E05

## AMS1000MH/1500MH



AA 90°  
 • AR: 9°~12°  
 • RR: -12°~-10°

(mm)

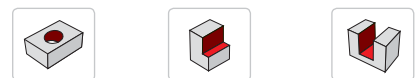
| Codigo | Icono   | ØD | Ød | l  | L  | ap  | kg | APMT 0602 | APMT 0903 | APM(X)T 11T3 - | APMT 1604 | APKT 1604 - |
|--------|---------|----|----|----|----|-----|----|-----------|-----------|----------------|-----------|-------------|
| AMS    | 1014MH  | 3  | 14 | 12 | 30 | 120 | 11 | 0.16      | 3         | -              | -         | -           |
|        | 1016MH  | 3  | 16 | 14 | 30 | 140 | 11 | 0.20      | 3         | -              | -         | -           |
|        | 1018MH  | 3  | 18 | 16 | 30 | 140 | 11 | 0.21      | 3         | -              | -         | -           |
| AMS    | 15020MH | 3  | 20 | 20 | 35 | 140 | 17 | 0.31      | 1         | 2              | -         | -           |

### Insertos disponibles



| Tipo          | Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|---------------|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|               |                  | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| 1000 Tipo     | APMT 0602PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   | E05 |
|               | 060208PDFR-MA    |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|               | 060202PDSR-MM    |        |      |            | ●      |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|               | 0602PDSR-MM      |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●      |        | ●        | ●      |      |     |     |
|               | 060208PDSR-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 1500 Tipo     | APMT 0903PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   |     |
|               | 090308PDFR-MA    |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|               | 0903PDER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
|               | 090308PDER-ML    |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
|               | 0903PDSR-MM      |        |      |            | ●      |        |        |        | ●      | ●      | ●      | ●      | ●      |        | ●        | ●      |      |     |     |
| 090308PDSR-MM |                  |        |      | ●          |        |        |        |        | ●      | ●      |        |        |        | ●      | ●        |        |      |     |     |

### Condiciones de corte recomendadas



|                | Barrenado | Planeado  | Mortajado |
|----------------|-----------|-----------|-----------|
| vc (m/min)     | 80~200    | 80~200    | 80~200    |
| fz (mm/diente) | 0.03~0.06 | 0.05~0.25 | 0.05~0.20 |

• Por favor, tenga la profundidad de taladro menor de 0.25 D cuando está en perforación  
 • Por favor, tenga la profundidad del paso en 0.2 a 0.3 mm

### Partes

| Especificaciones    | Tornillo   | Llave | Llave   |
|---------------------|------------|-------|---------|
| Ø14~Ø18 (1000 Tipo) | FTKA01842  | -     | TW06S-A |
| Ø20 (1500 Tipo)     | FTKA02565S | TW08S | -       |

Insertos disponibles E05



# AMS2000MH/3000MH(-K)

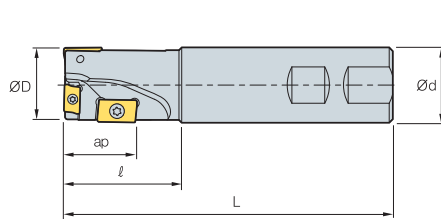


Fig. 1

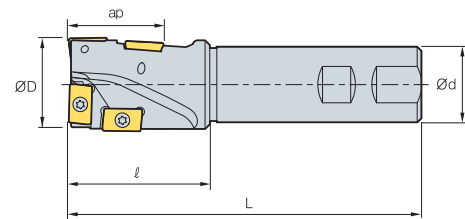


Fig. 2



• AR: 9°~12°  
• RR: -12°~-10°

(mm)

| Codigo       | ØD | Ød | l  | L   | ap | kg   | APMT 0602 | APMT 0903 | APM(X)T 11T3 - | APMT 1604 | APKT 1604 - | Fig. |
|--------------|----|----|----|-----|----|------|-----------|-----------|----------------|-----------|-------------|------|
| AMS 2025MH   | 25 | 25 | 40 | 130 | 20 | 0.45 | -         | -         | 3              | -         | -           | 1    |
| AMS 2032MH   | 32 | 32 | 50 | 140 | 30 | 0.75 | -         | -         | 1              | 2         | -           | 1    |
| AMS 3040MH   | 40 | 32 | 60 | 150 | 40 | 0.90 | -         | -         | -              | 4         | -           | 2    |
| AMS 3040MH-K | 40 | 32 | 60 | 150 | 40 | 0.90 | -         | -         | -              | -         | 4           | 2    |

## Insertos disponibles



| Tipo        | Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. | pag. |        |        |        |            |
|-------------|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------|--------|--------|--------|------------|
|             |                  | CN2000 | CN30 | NCM325     | NCM335 | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 |          |      | PC9530 | PC9540 | PC5300 | PC5400     |
| 2000 Tipo   | APMT 11T3PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |      |        |        | ●      | E04<br>E05 |
|             | 11T308PDFR-MA    |        |      |            |        |        |        |        |        |        |        |        |        |          |      |        |        |        |            |
|             | 11T3PDER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |          |      |        |        |        |            |
|             | 11T308PDER-ML    |        |      |            |        |        |        |        |        |        |        |        |        |          |      |        |        |        |            |
|             | 11T3PDSR-MM      |        |      | ●          |        | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      |          | ●    | ●      |        |        |            |
|             | 11T3PDSR-MF      |        |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |          | ●    | ●      |        |        |            |
|             | 11T308PDSR-MM    |        |      |            |        | ●      |        |        |        | ●      | ●      |        | ●      | ●        | ●    | ●      |        |        |            |
|             | 11T312PDSR-MM    |        |      |            |        | ●      |        |        |        | ●      | ●      |        | ●      | ●        | ●    | ●      |        |        |            |
|             | 11T316R-MM       |        |      |            |        | ●      |        |        |        |        | ●      | ●      |        |          | ●    | ●      |        |        |            |
|             | 11T318R-MM       |        |      |            |        | ●      |        |        |        |        |        |        |        |          | ●    | ●      |        |        |            |
| 11T324R-MM  |                  |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        | ●        | ●    |        |        |        |            |
| 3000 Tipo   | APMT 1604PDSR-MM |        |      | ●          |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●    | ●      |        |        |            |
|             | 1604PDSR-MF      |        |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        | ●        | ●    |        |        |        |            |
| 3000-K Tipo | APKT 1604PDSR-MM |        |      | ●          | ●      |        |        |        |        |        |        | ●      | ●      | ●        |      |        |        |        |            |
|             | 1604PDSR-MF      |        |      | ●          |        |        |        |        |        |        |        |        | ●      | ●        |      |        |        |        |            |

## Partes

| Especificaciones | Tornillo            | Llave       | Llave |
|------------------|---------------------|-------------|-------|
| Ø25 (2000 Tipo)  | FTKA02565S          | TW08S       | -     |
| Ø32 (2000 Tipo)  | FTKA02565S+FTKA0410 | TW08S+TW15S | -     |
| Ø40 (3000 Tipo)  | FTKA0410            | TW15S       | -     |

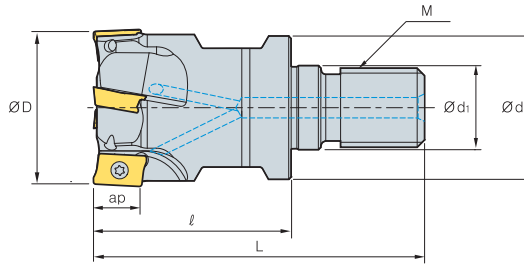
Insertos disponibles E04, E05

## Condiciones de corte recomendadas

|                | Barrenado | Planeado  | Mortajado |
|----------------|-----------|-----------|-----------|
| vc (m/min)     | 80~200    | 80~200    | 80~200    |
| fz (mm/diente) | 0.03~0.06 | 0.05~0.25 | 0.05~0.20 |

• Por favor, tenga la profundidad de taladro menor de 0.25 D cuando está en perforación  
• Por favor, tenga la profundidad del paso en 0.2 a 0.3 mm

## AMM1000



AA  
90°  
• AR: 7.5°~12.5°  
• RR: -28°~-6°

(mm)

| Codigo         |   | ØD | Ød   | Ød1  | l  | L  | M   | ap  |      |
|----------------|---|----|------|------|----|----|-----|-----|------|
| AMM 1012HR-M06 | 3 | 12 | 11   | 6.5  | 25 | 40 | M06 | 5.6 | 0.02 |
| 1016HR-M08     | 4 | 16 | 14.5 | 8.5  | 25 | 42 | M08 | 5.6 | 0.03 |
| 1020HR-M10     | 5 | 20 | 18   | 10.5 | 30 | 51 | M10 | 5.6 | 0.07 |
| 1025HR-M12     | 7 | 25 | 23   | 12.5 | 35 | 59 | M12 | 5.6 | 0.12 |
| 1032HR-M16     | 8 | 32 | 29   | 17   | 40 | 67 | M16 | 5.6 | 0.23 |

### Insertos disponibles

APMT-MA APMT-MM



| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|                  | CN2000 | CN30 | NCN325     | NC5330 | NCN535 | NCN545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT 0602PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     | ●   |
| 060208PDFR-MA    |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
| 060202PDSR-MM    |        |      |            | ●      |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |
| 0602PDSR-MM      |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        |        | ●        | ●      |      |     |     |
| 060208PDSR-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 060212R-MM       |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 060216R-MM       |        |      |            |        |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |

### Adaptador modular disponible

| Codigo         | Adaptador modular disponible |
|----------------|------------------------------|
| AMM 1012HR-M06 | MAT-M06                      |
| 1016HR-M08     | MAT-M08                      |
| 1020HR-M10     | MAT-M10                      |
| 1025HR-M12     | MAT-M12                      |
| 1032HR-M16     | MAT-M16                      |

Codigo: AMM1032HR-M16  
Especificacion de la Cabeza Modulos (M16)

II

Codigo del Zanco: MAT-M16-035-S32S  
Especificacion del Zanco (M16)

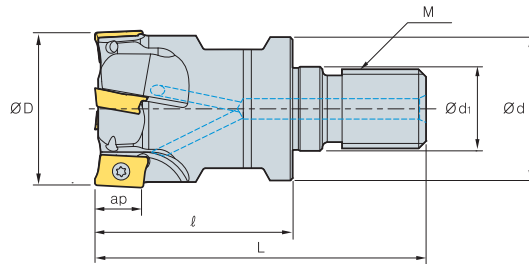
### Partes

| Especificaciones |                       |                  |
|------------------|-----------------------|------------------|
| Ø12~Ø32          | Tornillo<br>FTKA01842 | Llave<br>TW06S-A |

Insertos disponibles E05 Adaptador modular disponible E371~E372



# AMM1500



• AR: 7.5°~12.5°  
• RR: -28°~-6°

(mm)

| Codigo          | ØD | Ød   | Ød1  | l  | L  | M   | ap | kg   |
|-----------------|----|------|------|----|----|-----|----|------|
| AMM 15010HR-M06 | 10 | 9.5  | 6.5  | 25 | 40 | M06 | 9  | 0.01 |
| 15012HR-M06     | 12 | 11   | 6.5  | 25 | 40 | M06 | 9  | 0.02 |
| 15016HR-M08     | 16 | 14.5 | 8.5  | 25 | 42 | M08 | 9  | 0.03 |
| 15020HR-M10     | 20 | 18   | 10.5 | 30 | 51 | M10 | 9  | 0.06 |
| 15025HR-M12     | 25 | 23   | 12.5 | 35 | 59 | M12 | 9  | 0.12 |
| 15032HR-M16     | 32 | 29   | 17   | 40 | 67 | M16 | 9  | 0.22 |

## Insertos disponibles

APMT-MA APMT-ML APMT-MM



| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |     | pag. |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-----|------|-----|
|                  | CN2000 | CN30 | NCM825     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC8510 | PC9530 | PC9540 | PC5300 | PC5400   | G10 |      | H01 |
| APMT 0903PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | ●   |
| 090308PDFR-MA    |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
| 0903PDER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        |     |      |     |
| 090308PDER-ML    |        |      |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        |     |      |     |
| 0903PDSR-MM      |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        |        | ●      | ●        |     |      |     |
| 090308PDSR-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
| 090312R-MM       |        |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
| 090316R-MM       |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
| 090320R-MM       |        |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |

## Adaptador modular disponible

| Codigo          | Adaptador modular disponible |
|-----------------|------------------------------|
| AMM 15010HR-M06 | MAT-M06                      |
| 15012HR-M06     |                              |
| 15016HR-M08     | MAT-M08                      |
| 15020HR-M10     | MAT-M10                      |
| 15025HR-M12     | MAT-M12                      |
| 15032HR-M16     | MAT-M16                      |

Codigo: AMM1032HR-M16  
Especificacion de la Cabeza Modulos (M16)

II

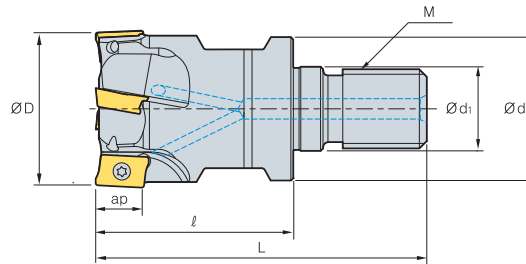
Codigo del Zanco: MAT-M16-035-S32S  
Especificacion del Zanco (M16)

## Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø10~Ø14          | FTKA02555S | TW08S |
| Ø16~Ø100         | FTKA02565S | TW08S |

Insertos disponibles E05 Adaptador modular disponible E371~E372

## AMM2000



AA  
90°  
• AR: 7.5°~12.5°  
• RR: -28°~-6°

(mm)

| Codigo |            | ØD | Ød | Ød1  | l    | L  | M   | ap |      |
|--------|------------|----|----|------|------|----|-----|----|------|
| AMM    | 2016HR-M08 | 2  | 16 | 14.5 | 8.5  | 25 | M08 | 11 | 0.04 |
|        | 2020HR-M10 | 2  | 20 | 18   | 10.5 | 30 | M10 | 11 | 0.07 |
|        | 2025HR-M12 | 3  | 25 | 23   | 12.5 | 35 | M12 | 11 | 0.04 |
|        | 2032HR-M16 | 4  | 32 | 29   | 17   | 40 | M16 | 11 | 0.23 |
|        | 2040HR-M16 | 5  | 40 | 29   | 17   | 40 | M16 | 11 | 0.25 |

### Insertos disponibles

APMT-MA

APMT-ML

APMT-MM

APMT-MF

APMT-MN



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |     | pag. |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-----|------|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | G10 |      | H01 |
| APMT   | 11T3PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | ●   |
|        | 11T308PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        | 11T3PDER-ML   |      |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        |     |      |     |
|        | 11T308PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        |     |      |     |
|        | 11T3PDSR-MM   |      |            | ●      | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      |        | ●      | ●        |     |      |     |
|        | 11T3PDSR-MF   |      |            |        | ●      |        |        | ●      | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
|        | 11T308PDSR-MM |      |            |        | ●      |        |        | ●      | ●      | ●      |        | ●      | ●      | ●      | ●        |     |      |     |
|        | 11T312PDSR-MM |      |            |        | ●      |        |        | ●      | ●      |        |        | ●      |        | ●      | ●        |     |      |     |
|        | 11T316R-MM    |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
|        | 11T318R-MM    |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        | 11T324R-MM    |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
|        | 11T3PDSR-MN2  |      |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        |     |      |     |
|        | 11T3PDSR-MN3  |      |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        |     |      |     |

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).

※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

### Adaptador modular disponible

| Codigo | Adaptador modular disponible |         |
|--------|------------------------------|---------|
| AMM    | 2016HR-M08                   | MAT-M08 |
|        | 2020HR-M10                   | MAT-M10 |
|        | 2025HR-M12                   | MAT-M12 |
|        | 2032HR-M16                   | MAT-M16 |
|        | 2040HR-M16                   |         |

Codigo: AMM1032HR-M16  
Especificacion de la Cabeza Modulos (M16)

II

Codigo del Zanco: MAT-M16-035-S32S  
Especificacion del Zanco (M16)

### Partes

| Especificaciones |            |       |
|------------------|------------|-------|
| Ø16~Ø40          | FTKA02565S | TW08S |

Insertos disponibles E05 Adaptador modular disponible E371~E372





Garantía de aplicación de la fuerza fuerte por la aplicación la cara 2

# Herramientales BT/HSK

## ➤ Sistema de codificación (Simple ó Multiple)

|                               |                       |   |                 |   |                                      |  |
|-------------------------------|-----------------------|---|-----------------|---|--------------------------------------|--|
| BT50 HAT 4 063 114 - 4 F      |                       |   |                 |   |                                      |  |
| <b>Tipo Eje</b>               | <b>Nombre de ítem</b> | <b>Tipo</b>   | <b>Diametro</b> | <b>Longitud (ap)</b>                      | <b>No. de Flautas</b>                | <b>Pieza Frontal ó Longitud Frontal</b>                      |
| BT30/40/50<br>HSK40/50/63/100 | AM<br>HAT<br>RM       | 1000 tipo<br>1500 tipo<br>2000 tipo<br>3000 tipo<br>4000 tipo | 063: Ø63        | Longitud: 114<br>HS: refrigerante + único | No.de Flautas: 4<br>No. de Diente: 4 | Pieza Frontal (Y/N)<br>Y: F<br>No marca: No<br>L: Tipo largo |

## ➤ Sistema de codificación (Modulos tipo)

|                               |                          |                      |                           |
|-------------------------------|--------------------------|----------------------|---------------------------|
| BT50 MAT M16 092              |                          |                      |                           |
| <b>Tipo Eje</b>               | <b>Categoría de ítem</b> | <b>M Dimensiones</b> | <b>Longitud Total (L)</b> |
| BT30/40/50<br>HSK40/50/63/100 | MAT                      | M16                  | 092: 92                   |

## Sistema DBT

### ➤ Características de los adaptadores (D)BT

- Garantiza una mayor fuerza de de acoplamiento con el agarre a dos caras
- Garantizar fortalecer el corte a alta velocidad.
- Garantiza una mejor textura superficial

|   |   |
|---|---|
| <b>DBT (Fuerza Restrictiva, Mejorado Corte)</b>                                     | <b>BT</b>   |
| Doble lados Restrictivos (Conico, 1 parte)  | Un lado restrictivo (Conico)  |
|  |  |
| DBT Pieza Trabajo<br>Ra = 0.3 µm  | BT Pieza Trabajo<br>Ra = 0.5 µm   |

## Sistema HSK

### ➤ Características de los adaptadores HSK

- Garantía de aplicación de la fuerza fuerte por la aplicación la cara 2
- Garantía de fortalecimiento de corte a alta velocidad
- Garantía de rugosidad superficial superior
- Garantía de la exactitud en la dirección del eje y la dirección repetida

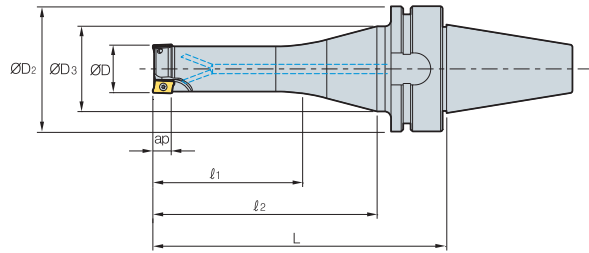
### ➤ HSK Compatción de Tolerancia

| Arbor tipo | Max. tolerancia | Min. tolerancia | Disponible instalación |
|------------|-----------------|-----------------|------------------------|
| HSK-T      | 0.075           | 0.035           | Maquinas Multi-Tareas  |
| HSK-A      | 0.33            | 0.08 (General)  | MCT                    |

### HSK A: HSK T Compatción de Tolerancia



## BT30 AM1000HS



AA  
90°  
• AR: 7.5°~13°  
• RR: -28°~-7°

(mm)

| Codigo |            | ØD | ØD2 | ØD3 | l1 | l2 | L  | ap  |     |
|--------|------------|----|-----|-----|----|----|----|-----|-----|
| BT30   | AM1010HS-2 | 2  | 10  | 46  | 41 | 35 | 83 | 112 | 5.6 |
|        | AM1012HS-2 | 2  | 12  | 46  | 41 | 35 | 83 | 112 | 5.6 |
|        | AM1012HS-3 | 3  | 12  | 46  | 41 | 35 | 83 | 112 | 5.6 |
|        | AM1016HS-3 | 3  | 16  | 46  | 41 | 35 | 83 | 112 | 5.6 |
|        | AM1016HS-4 | 4  | 16  | 46  | 41 | 35 | 83 | 112 | 5.6 |
|        | AM1020HS-4 | 4  | 20  | 46  | 41 | 45 | 98 | 127 | 5.6 |
|        | AM1020HS-5 | 5  | 20  | 46  | 41 | 45 | 98 | 127 | 5.6 |

### Insertos disponibles

APMT-MA APMT-MM



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | G10 | H01 |
| APMT   | 0602PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
|        | 060208PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        | 060202PDSR-MM |      |            | ●      |        |        |        |        |        | ●      |        |        |          | ●      | ●    |        |     |     |
|        | 0602PDSR-MM   |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●      |          | ●      | ●    |        |     |     |
|        | 060208PDSR-MM |      |            | ●      |        |        |        |        |        | ●      | ●      |        |          | ●      | ●    |        |     |     |
|        | 060212R-MM    |      |            | ●      |        |        |        |        |        | ●      |        |        |          | ●      | ●    |        |     |     |
|        | 060216R-MM    |      |            |        |        |        |        |        | ●      |        |        |        |          | ●      | ●    |        |     |     |

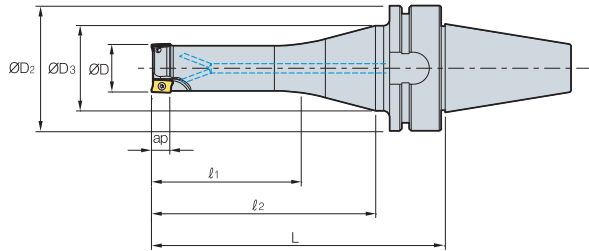
### Partes

| Especificaciones |                       |            |                  |
|------------------|-----------------------|------------|------------------|
| Ø10~Ø20          | Tornillo<br>FTKA01842 | Llave<br>- | Llave<br>TW06S-A |

Insertos disponibles E05



# BT40 AM1500HS



AA  
90°  
• AR: 7.5°~13°  
• RR: -28°~ -7°

(mm)

| Codigo       |   | ØD | ØD2 | ØD3 | l1 | l2  | L   | ap |
|--------------|---|----|-----|-----|----|-----|-----|----|
| <b>BT40</b>  |   |    |     |     |    |     |     |    |
| AM15016HS-2  | 2 | 16 | 63  | 50  | 45 | 83  | 117 | 9  |
| AM15016HS-2L | 2 | 16 | 63  | 50  | 35 | 118 | 152 | 9  |
| AM15020HS-2  | 2 | 20 | 63  | 50  | 60 | 98  | 132 | 9  |
| AM15020HS-3  | 3 | 20 | 63  | 50  | 60 | 98  | 132 | 9  |
| AM15020HS-2L | 2 | 20 | 63  | 50  | 50 | 118 | 152 | 9  |
| AM15025HS-3  | 3 | 25 | 63  | 50  | 75 | 113 | 147 | 9  |
| AM15025HS-4  | 4 | 25 | 63  | 50  | 75 | 113 | 147 | 9  |
| AM15025HS-3L | 3 | 25 | 63  | 50  | 65 | 133 | 167 | 9  |
| AM15032HS-4  | 4 | 32 | 63  | 50  | 80 | 113 | 147 | 9  |
| AM15032HS-5  | 5 | 32 | 63  | 50  | 80 | 113 | 147 | 9  |
| AM15032HS-4L | 4 | 32 | 63  | 50  | 70 | 133 | 167 | 9  |
| AM15040HS-5  | 5 | 40 | 63  | 50  | 60 | 98  | 132 | 9  |
| AM15040HS-6  | 6 | 40 | 63  | 50  | 60 | 98  | 132 | 9  |
| AM15040HS-5L | 5 | 40 | 63  | 50  | 50 | 118 | 152 | 9  |

## Insertos disponibles

APMT-MA APMT-ML APMT-MM



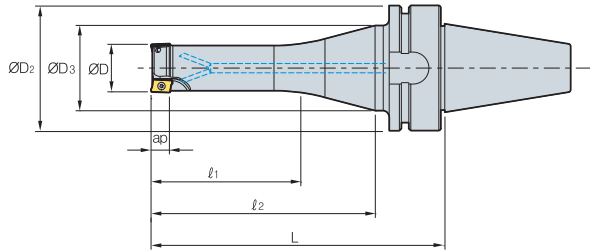
| Codigo        | Cermet |      | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|---------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|               | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT          |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
| 0903PDFR-MA   |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     | ●   |
| 090308PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
| 0903PDER-ML   |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
| 090308PDER-ML |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
| 0903PDSR-MM   |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        |        | ●        | ●      |      |     |     |
| 090308PDSR-MM |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 090312R-MM    |        |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 090316R-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
| 090320R-MM    |        |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |

## Partes

| Especificaciones |            |       |   |
|------------------|------------|-------|---|
| Ø16~Ø40          | FTKA02565S | TW08S | - |

Insertos disponibles E05

## BT40 AM2000HS



AA  
90°  
• AR: 7°~10°  
• RR: -20°~-7°

(mm)

| Codigo |             | ØD | ØD2 | ØD3 | ℓ1 | ℓ2 | L   | ap  |    |
|--------|-------------|----|-----|-----|----|----|-----|-----|----|
| BT40   | AM2016HS-2  | 2  | 16  | 63  | 50 | 45 | 83  | 117 | 11 |
|        | AM2016HS-2L | 2  | 16  | 63  | 50 | 35 | 118 | 152 | 11 |
|        | AM2020HS-2  | 2  | 20  | 63  | 50 | 60 | 98  | 132 | 11 |
|        | AM2020HS-2L | 2  | 20  | 63  | 50 | 50 | 118 | 152 | 11 |
|        | AM2025HS-3  | 3  | 25  | 63  | 50 | 75 | 113 | 147 | 11 |
|        | AM2025HS-3L | 3  | 25  | 63  | 50 | 65 | 133 | 167 | 11 |
|        | AM2032HS-4  | 4  | 32  | 63  | 50 | 80 | 113 | 147 | 11 |
|        | AM2032HS-4L | 4  | 32  | 63  | 50 | 70 | 133 | 167 | 11 |
|        | AM2040HS-5  | 5  | 40  | 63  | 50 | 60 | 98  | 132 | 11 |
|        | AM2040HS-5L | 5  | 40  | 63  | 50 | 50 | 118 | 152 | 11 |
|        | AM2050HS-6  | 6  | 50  | 63  | 50 | 60 | 98  | 132 | 11 |
|        | AM2050HS-6L | 6  | 50  | 63  | 50 | 50 | 118 | 152 | 11 |

### Insertos disponibles

APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN



| Codigo       | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|              | CN2000        | CN30 | NCM825     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT         | 11T3PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|              | 11T308PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|              | 11T3PDER-ML   |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
|              | 11T308PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
|              | 11T3PDSR-MM   |      |            | ●      | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      |      |     |     |
|              | 11T3PDSR-MF   |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |      |     |     |
|              | 11T308PDSR-MM |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        | ●      | ●        | ●      |      |     |     |
|              | 11T312PDSR-MM |      |            |        | ●      |        |        |        | ●      | ●      |        | ●      |        | ●        | ●      |      |     |     |
|              | 11T316R-MM    |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|              | 11T318R-MM    |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|              | 11T324R-MM    |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|              | 11T3PDSR-MN2  |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |      |     |     |
| 11T3PDSR-MN3 |               |      |            |        |        |        |        |        |        |        |        |        | ●      |          |        |      |     |     |

E05

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 ※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

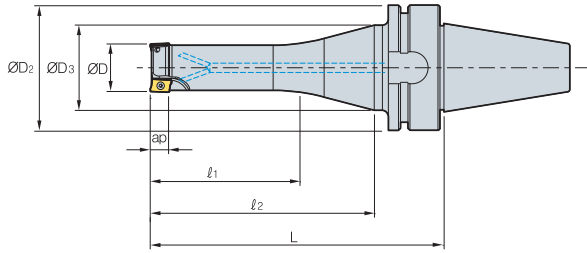
### Partes

| Especificaciones |                        |                |
|------------------|------------------------|----------------|
| Ø16-Ø50          | Tornillo<br>FTKA02565S | Llave<br>TW08S |

Insertos disponibles E05



# BT50 AM3000HS



• AR: 7°~10°  
• RR: -20°~-7°

(mm)

| Codigo |             | ØD | ØD2 | ØD3 | l1 | l2 | L   | ap  |    |
|--------|-------------|----|-----|-----|----|----|-----|-----|----|
| BT50   | AM3025HS-2  | 2  | 25  | 100 | 80 | 65 | 113 | 158 | 16 |
|        | AM3025HS-2L | 2  | 25  | 100 | 80 | 55 | 123 | 168 | 16 |
|        | AM3032HS-3  | 3  | 32  | 100 | 80 | 70 | 113 | 158 | 16 |
|        | AM3032HS-3L | 3  | 32  | 100 | 80 | 60 | 123 | 168 | 16 |
|        | AM3040HS-4  | 4  | 40  | 100 | 80 | 50 | 98  | 143 | 16 |
|        | AM3040HS-4L | 4  | 40  | 100 | 80 | 40 | 108 | 153 | 16 |
|        | AM3050HS-5  | 5  | 50  | 100 | 80 | 50 | 98  | 143 | 16 |
|        | AM3050HS-5L | 5  | 50  | 100 | 80 | 40 | 108 | 153 | 16 |

## Insertos disponibles

APMT-MA APMT-ML APMT-MM APMT-MF APMT-MN



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC8510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT   | 1604PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     | ●   |
|        | 160404PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        | 1604PDER-ML   |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
|        | 160404PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
|        | 1604PDSR-MM   |      |            | ●      | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      |      |     |     |
|        | 1604PDSR-MF   |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |      |     |     |
|        | 160410PDSR-MM |      |            |        |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |
|        | 160416PDSR-MM |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 160424R-MM    |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 160430R-MM    |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 160432R-MM    |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 1604PDSR-MN3  |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |      |     |     |
|        | 1604PDSR-MN4  |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |      |     |     |

\* Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
\* Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

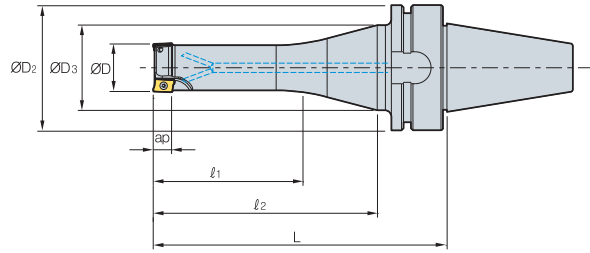
## Partes

| Especificaciones |                      |                |
|------------------|----------------------|----------------|
| Ø25<br>Ø32-Ø50   | FTKA0408<br>FTKA0410 | Llave<br>TW15S |

Insertos disponibles E05

# E Adaptadores BT (un solo filo de corte)

## BT50 AM4000HS



AA  
90°  
• AR: 7°~10°  
• RR: -20°~-7°

(mm)

| Codigo |             | ØD | ØD2 | ØD3 | l1 | l2 | L   | ap  |    |
|--------|-------------|----|-----|-----|----|----|-----|-----|----|
| BT50   | AM4020HS-1  | 1  | 20  | 100 | 80 | 50 | 98  | 143 | 17 |
|        | AM4025HS-2  | 2  | 25  | 100 | 80 | 65 | 113 | 158 | 17 |
|        | AM4032HS-3  | 3  | 32  | 100 | 80 | 70 | 113 | 158 | 17 |
|        | AM4032HS-3L | 3  | 32  | 100 | 80 | 60 | 123 | 168 | 17 |
|        | AM4040HS-4  | 4  | 40  | 100 | 80 | 50 | 98  | 143 | 17 |
|        | AM4040HS-4L | 4  | 40  | 100 | 80 | 40 | 108 | 153 | 17 |
|        | AM4050HS-5  | 5  | 50  | 100 | 80 | 50 | 98  | 143 | 17 |
|        | AM4050HS-5L | 5  | 50  | 100 | 80 | 40 | 108 | 153 | 17 |

### Insertos disponibles



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | G10 | H01 |
| APMT   | 1806PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
|        | 180604PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
|        | 180612PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
|        | 180616PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
|        | 180620PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
|        | 180624PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
|        | 180630R-MA    |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
|        | 1806PDER-ML   |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
|        | 180604PDER-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
|        | 180612PDER-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
|        | 180616PDER-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
|        | 180620PDER-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
|        | 180624PDER-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
|        | 180630R-ML    |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
|        | 1806PDSR-MM   |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
|        | 1806PDSR-MF   |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
|        | 180612PDSR-MM |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
|        | 180616PDSR-MM |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
|        | 180620PDSR-MM |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
|        | 180624PDSR-MM |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
|        | 180630R-MM    |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
|        | 180632R-MM    |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
|        | 1806PDSR-MN3  |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
|        | 1806PDSR-MN4  |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |

E05

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 ※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

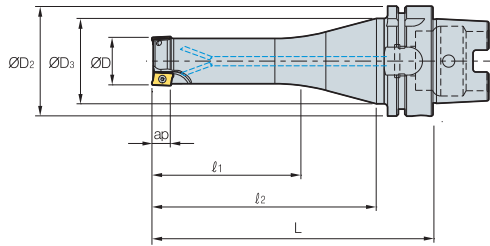
### Partes

| Especificaciones |          |       |
|------------------|----------|-------|
| Ø20~Ø25          | FTKA0408 | Llave |
| Ø32~Ø50          | FTKA0410 | TW15S |

Insertos disponibles E05



# HSK63A AM1000HS



AA  
90°  
• AR: 7.5°~13°  
• RR: -28°~-7°

(mm)

| Codigo |            | ØD | ØD2 | ØD3 | l1 | l2 | L  | ap  |     |
|--------|------------|----|-----|-----|----|----|----|-----|-----|
| HSK63A | AM1010HS-2 | 2  | 10  | 63  | 53 | 35 | 83 | 116 | 5.6 |
|        | AM1012HS-2 | 2  | 12  | 63  | 53 | 35 | 83 | 116 | 5.6 |
|        | AM1012HS-3 | 3  | 12  | 63  | 53 | 35 | 83 | 116 | 5.6 |
|        | AM1016HS-3 | 3  | 16  | 63  | 53 | 35 | 83 | 116 | 5.6 |
|        | AM1016HS-4 | 4  | 16  | 63  | 53 | 35 | 83 | 116 | 5.6 |
|        | AM1020HS-4 | 4  | 20  | 63  | 53 | 45 | 98 | 131 | 5.6 |
|        | AM1020HS-5 | 5  | 20  | 63  | 53 | 45 | 98 | 131 | 5.6 |

## Insertos disponibles

APMT-MA APMT-MM



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |     | pag. |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-----|------|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | G10 |      | H01 |
| APMT   | 0602PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | ●   |
|        | 060208PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        | 060202PDSR-MM |      |            |        | ●      |        |        |        |        | ●      |        |        |        |        | ●        | ●   |      |     |
|        | 0602PDSR-MM   |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        |        | ●        | ●   |      |     |
|        | 060208PDSR-MM |      |            |        | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●   |      |     |
|        | 060212R-MM    |      |            |        | ●      |        |        |        |        | ●      |        |        |        |        | ●        | ●   |      |     |
|        | 060216R-MM    |      |            |        |        |        |        |        |        | ●      |        |        |        |        | ●        | ●   |      |     |

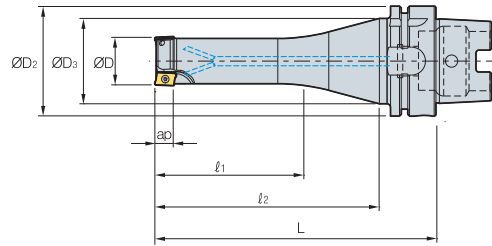
## Partes

| Especificaciones |                       |            |                  |
|------------------|-----------------------|------------|------------------|
| Ø10~Ø20          | Tornillo<br>FTKA01842 | Llave<br>- | Llave<br>TW06S-A |

Insertos disponibles E05

# E Adaptadores HSK (un solo filo de corte)

## HSK63A AM1500HS



AA  
90°  
• AR: 7.5°~13°  
• RR: -28°~-7°

(mm)

| Codigo              | ØD | ØD2 | ØD3 | l1 | l2  | L   | ap |
|---------------------|----|-----|-----|----|-----|-----|----|
| HSK63A AM15016HS-2  | 16 | 63  | 53  | 45 | 83  | 116 | 9  |
| HSK63A AM15016HS-2L | 16 | 63  | 53  | 35 | 118 | 151 | 9  |
| HSK63A AM15020HS-2  | 20 | 63  | 53  | 60 | 98  | 131 | 9  |
| HSK63A AM15020HS-3  | 20 | 63  | 53  | 60 | 98  | 131 | 9  |
| HSK63A AM15020HS-2L | 20 | 63  | 53  | 50 | 118 | 151 | 9  |
| HSK63A AM15025HS-3  | 25 | 63  | 53  | 75 | 113 | 146 | 9  |
| HSK63A AM15025HS-4  | 25 | 63  | 53  | 75 | 113 | 146 | 9  |
| HSK63A AM15025HS-3L | 25 | 63  | 53  | 65 | 133 | 166 | 9  |
| HSK63A AM15032HS-4  | 32 | 63  | 53  | 80 | 113 | 146 | 9  |
| HSK63A AM15032HS-5  | 32 | 63  | 53  | 80 | 113 | 146 | 9  |
| HSK63A AM15032HS-4L | 32 | 63  | 53  | 70 | 133 | 166 | 9  |
| HSK63A AM15040HS-5  | 40 | 63  | 53  | 60 | 98  | 131 | 9  |
| HSK63A AM15040HS-6  | 40 | 63  | 53  | 60 | 98  | 131 | 9  |
| HSK63A AM15040HS-5L | 40 | 63  | 53  | 50 | 118 | 151 | 9  |

### Insertos disponibles



| Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |     |     |     |     |     |     |     |     |     |     |
|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | G10 | H01 |     |     |     |     |     |     |     |     |
| APMT 0903PDFR-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        | ●   | E05 |     |     |     |     |     |     |     |     |
| APMT 090308PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     | E05 |     |     |     |     |     |     |     |
| APMT 0903PDER-ML   |        |      |            |        |        |        |        |        |        |        |        |        | ●        | ●      |      |        |     |     |     | E05 |     |     |     |     |     |     |
| APMT 090308PDER-ML |        |      |            |        |        |        |        |        |        |        |        |        | ●        | ●      |      |        |     |     |     |     | E05 |     |     |     |     |     |
| APMT 0903PDSR-MM   |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        | ●        | ●      |      |        |     |     |     |     |     | E05 |     |     |     |     |
| APMT 090308PDSR-MM |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        | ●        | ●      |      |        |     |     |     |     |     |     | E05 |     |     |     |
| APMT 090312R-MM    |        |      |            |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |      |        |     |     |     |     |     |     |     | E05 |     |     |
| APMT 090316R-MM    |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        | ●        | ●      |      |        |     |     |     |     |     |     |     |     | E05 |     |
| APMT 090320R-MM    |        |      |            |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |      |        |     |     |     |     |     |     |     |     |     | E05 |

### Partes

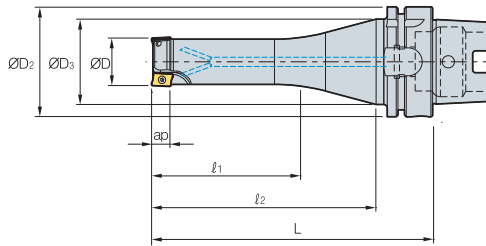
| Especificaciones | Tornillo   | Llave | Llave |
|------------------|------------|-------|-------|
| Ø16~Ø40          | FTKA02565S | TW08S | -     |

Insertos disponibles E05





# HSK63A AM2000HS



AA  
90°  
• AR: 7°~10°  
• RR: -20°~-7°

(mm)

| Codigo |             | ØD | ØD2 | ØD3 | l1 | l2 | L   | ap  |    |
|--------|-------------|----|-----|-----|----|----|-----|-----|----|
| HSK63A | AM2016HS-2  | 2  | 16  | 63  | 53 | 45 | 83  | 116 | 11 |
|        | AM2016HS-2L | 2  | 16  | 63  | 53 | 35 | 118 | 151 | 11 |
|        | AM2020HS-2  | 2  | 20  | 63  | 53 | 60 | 98  | 131 | 11 |
|        | AM2020HS-2L | 2  | 20  | 63  | 53 | 50 | 118 | 151 | 11 |
|        | AM2025HS-3  | 3  | 25  | 63  | 53 | 75 | 113 | 146 | 11 |
|        | AM2025HS-3L | 3  | 25  | 63  | 53 | 65 | 133 | 166 | 11 |
|        | AM2032HS-4  | 4  | 32  | 63  | 53 | 80 | 113 | 146 | 11 |
|        | AM2032HS-4L | 4  | 32  | 63  | 53 | 70 | 133 | 166 | 11 |
|        | AM2040HS-5  | 5  | 40  | 63  | 53 | 60 | 98  | 131 | 11 |
|        | AM2040HS-5L | 5  | 40  | 63  | 53 | 50 | 118 | 151 | 11 |
|        | AM2050HS-6  | 6  | 50  | 63  | 53 | 60 | 98  | 131 | 11 |
|        | AM2050HS-6L | 6  | 50  | 63  | 53 | 50 | 118 | 151 | 11 |

## Insertos disponibles



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC8510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT   | 11T3PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     | ●   |
|        | 11T308PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        | 11T3PDER-ML   |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
|        | 11T308PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
|        | 11T3PDSR-MM   |      |            | ●      | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      |      |     |     |
|        | 11T3PDSR-MF   |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |        | ●        | ●      |      |     |     |
|        | 11T308PDSR-MM |      |            |        | ●      |        |        |        | ●      | ●      |        | ●      | ●      | ●        | ●      |      |     |     |
|        | 11T312PDSR-MM |      |            |        | ●      |        |        |        | ●      | ●      |        | ●      |        | ●        | ●      |      |     |     |
|        | 11T316R-MM    |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 11T318R-MM    |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        | 11T324R-MM    |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 11T3PDSR-MN2  |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |      |     |     |
|        | 11T3PDSR-MN3  |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |      |     |     |

\* Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
\* Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

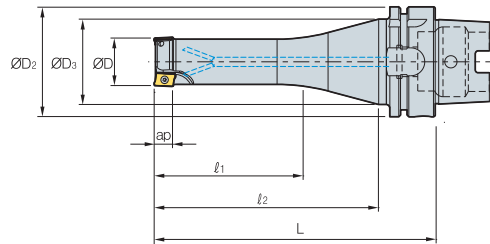
## Partes

| Especificaciones |            |       |
|------------------|------------|-------|
| Ø16~Ø50          | FTKA02565S | TW08S |

Insertos disponibles E05

# E Adaptadores HSK (un solo filo de corte)

## HSK63A AM3000HS



AA 90°  
• AR: 7°~10°  
• RR: -20°~-7°

(mm)

| Codigo |             | ØD | ØD2 | ØD3 | l1 | l2 | L   | ap  |    |
|--------|-------------|----|-----|-----|----|----|-----|-----|----|
| HSK63A | AM3025HS-2  | 2  | 25  | 63  | 53 | 65 | 113 | 146 | 16 |
|        | AM3025HS-2L | 2  | 25  | 63  | 53 | 55 | 123 | 156 | 16 |
|        | AM3032HS-3  | 3  | 32  | 63  | 53 | 70 | 113 | 146 | 16 |
|        | AM3032HS-3L | 3  | 32  | 63  | 53 | 60 | 123 | 156 | 16 |
|        | AM3040HS-4  | 4  | 40  | 63  | 53 | 50 | 98  | 131 | 16 |
|        | AM3040HS-4L | 4  | 40  | 63  | 53 | 40 | 108 | 141 | 16 |
|        | AM3050HS-5  | 5  | 50  | 63  | 53 | 50 | 98  | 131 | 16 |
|        | AM3050HS-5L | 5  | 50  | 63  | 53 | 40 | 108 | 141 | 16 |

### Insertos disponibles



| Codigo | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |     | pag. |     |
|--------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-----|------|-----|
|        | CN2000 | CN30 | NCM325     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | G10 |      | H01 |
| APMT   |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

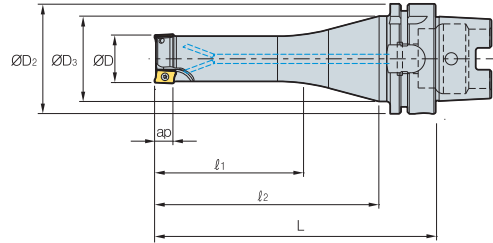
### Partes

| Especificaciones | Tornillo             | Llave |
|------------------|----------------------|-------|
| Ø25<br>Ø32~Ø50   | FTKA0408<br>FTKA0410 | TW15S |

Insertos disponibles E05



# HSK63A AM4000HS



• AR: 7°~10°  
• RR: -20°~-7°

(mm)

| Codigo | Teeth       | ØD | ØD2 | ØD3 | l1 | l2 | L   | ap  |    |
|--------|-------------|----|-----|-----|----|----|-----|-----|----|
| HSK63A | AM4020HS-1  | 1  | 20  | 63  | 53 | 50 | 98  | 131 | 17 |
|        | AM4025HS-2  | 2  | 25  | 63  | 53 | 65 | 113 | 146 | 17 |
|        | AM4032HS-3  | 3  | 32  | 63  | 53 | 70 | 113 | 146 | 17 |
|        | AM4032HS-3L | 3  | 32  | 63  | 53 | 60 | 123 | 156 | 17 |
|        | AM4040HS-4  | 4  | 40  | 63  | 53 | 50 | 98  | 131 | 17 |
|        | AM4040HS-4L | 4  | 40  | 63  | 53 | 40 | 108 | 141 | 17 |
|        | AM4050HS-5  | 5  | 50  | 63  | 53 | 50 | 98  | 131 | 17 |
|        | AM4050HS-5L | 5  | 50  | 63  | 53 | 40 | 108 | 141 | 17 |

## Insertos disponibles



| Codigo       | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |     | pag. |     |
|--------------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-----|------|-----|
|              | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | G10 |      | H01 |
| APMT         | 1806PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | ●   |
|              | 180604PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | ●   |
|              | 180612PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | ●   |
|              | 180616PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | ●   |
|              | 180620PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | ●   |
|              | 180624PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | ●   |
|              | 180630R-MA    |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | ●   |
|              | 1806PDER-ML   |      |            |        |        |        |        |        |        |        |        |        |        |        | ●        | ●   |      |     |
|              | 180604PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        |        | ●        | ●   |      |     |
|              | 180612PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        |        | ●        | ●   |      |     |
|              | 180616PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        |        | ●        | ●   |      |     |
|              | 180620PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        |        | ●        | ●   |      |     |
|              | 180624PDER-ML |      |            |        |        |        |        |        |        |        |        |        |        |        | ●        | ●   |      |     |
|              | 180630R-ML    |      |            |        |        |        |        |        |        |        |        |        |        |        | ●        | ●   |      |     |
|              | 1806PDSR-MM   |      |            |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●      |        | ●        | ●   |      |     |
|              | 1806PDSR-MF   |      |            |        | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●   |      |     |
|              | 180612PDSR-MM |      |            |        | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●   |      |     |
|              | 180616PDSR-MM |      |            |        | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●   |      |     |
|              | 180620PDSR-MM |      |            |        | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●   |      |     |
|              | 180624PDSR-MM |      |            |        | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●   |      |     |
| 180630R-MM   |               |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
| 180632R-MM   |               |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
| 1806PDSR-MN3 |               |      |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        |     |      |     |
| 1806PDSR-MN4 |               |      |            |        |        |        |        |        |        |        |        |        |        | ●      | ●        |     |      |     |

\* Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).

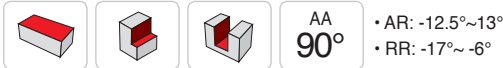
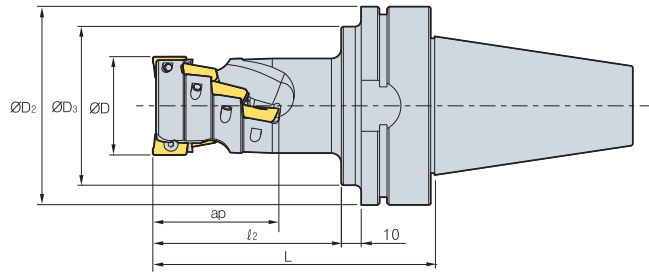
\* Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

## Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø20~Ø25          | FTKA0408 |       |
| Ø32~Ø50          | FTKA0410 | TW15S |

Insertos disponibles E05

## BT30/40 AM1000



(mm)

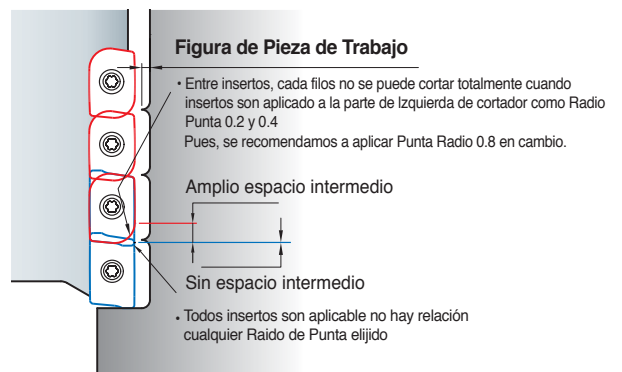
| Codigo | Flutes      | ØD | ØD2 | ØD3 | l2 | L  | No. de Flautas | ap   |
|--------|-------------|----|-----|-----|----|----|----------------|------|
| BT30   | AM1016015-2 | 6  | 16  | 46  | 41 | 30 | 2              | 15.5 |
|        | AM1020020-3 | 12 | 20  | 46  | 41 | 32 | 3              | 20.5 |
|        | AM1025025-4 | 20 | 25  | 46  | 41 | 39 | 4              | 25.5 |
| BT40   | AM1016015-2 | 6  | 16  | 63  | 50 | 30 | 2              | 15.5 |
|        | AM1020020-3 | 12 | 20  | 63  | 50 | 32 | 3              | 20.5 |
|        | AM1025025-4 | 20 | 25  | 63  | 50 | 39 | 4              | 25.5 |

### Insertos disponibles



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT   | 0602PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●   | E05 |
|        | 060208PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        | 060202PDSR-MM |      |            | ●      |        |        |        |        |        | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 0602PDSR-MM   |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●      |        | ●        | ●      |      |     |     |
|        | 060208PDSR-MM |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |
|        | 060212R-MM    |      |            | ●      |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |
|        | 060216R-MM    |      |            |        |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |

### Cuidado cuando se aplica insertos al cortador



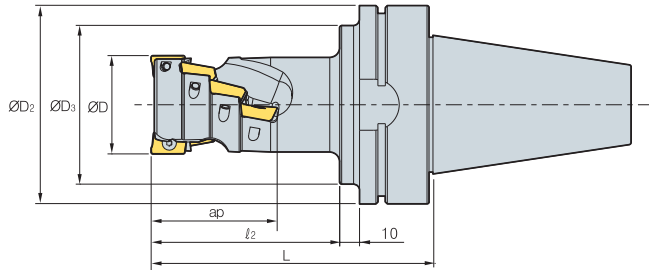
### Partes

| Especificaciones | Tornillo  | Llave | Llave   |
|------------------|-----------|-------|---------|
| Ø16~Ø25          | FTKA01842 | -     | TW06S-A |

Insertos disponibles E05



# BT30/40 AM1500



AA  
90°  
• AR: -12.5°~13°  
• RR: -17°~-6°

(mm)

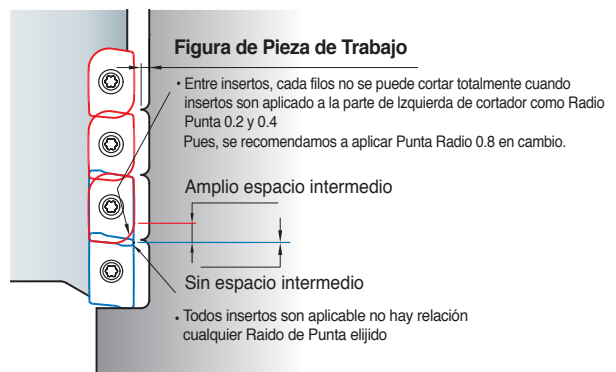
| Codigo | Flutes       | ØD | ØD2 | ØD3 | l2 | L  | No. de Flautas | ap |      |
|--------|--------------|----|-----|-----|----|----|----------------|----|------|
| BT30   | AM15020026-1 | 3  | 20  | 46  | 41 | 42 | 74             | 1  | 26.5 |
|        | AM15025035-2 | 8  | 25  | 46  | 41 | 50 | 62             | 2  | 35   |
|        | AM15032044-2 | 10 | 32  | 46  | 41 | 60 | 92             | 2  | 44   |
| BT40   | AM15020026-1 | 3  | 20  | 63  | 50 | 42 | 79             | 1  | 26.5 |
|        | AM15025035-2 | 8  | 25  | 63  | 50 | 50 | 87             | 2  | 35   |
|        | AM15032044-2 | 10 | 32  | 63  | 50 | 60 | 97             | 2  | 44   |

## Insertos disponibles



| Codigo | Cermet        |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-----|-----|
|        | CN2000        | CN30 | NCM825     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | G10 | H01 |
| APMT   | 0903PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        | 090308PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        | 0903PDER-ML   |      |            |        |        |        |        |        |        |        |        |        |          | •      | •    |        |     |     |
|        | 090308PDER-ML |      |            |        |        |        |        |        |        |        |        |        |          | •      | •    |        |     |     |
|        | 0903PDSR-MM   |      |            |        | •      |        |        | •      | •      | •      | •      |        |          | •      | •    |        |     |     |
|        | 090308PDSR-MM |      |            |        | •      |        |        |        |        |        |        |        |          | •      | •    |        |     |     |
|        | 090312R-MM    |      |            |        |        |        |        |        |        |        |        |        |          | •      | •    |        |     |     |
|        | 090316R-MM    |      |            |        | •      |        |        |        |        |        |        |        |          | •      | •    |        |     |     |
|        | 090320R-MM    |      |            |        |        |        |        |        |        |        |        |        |          | •      | •    |        |     |     |

## Cuidado cuando se aplica insertos al cortador

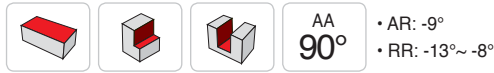
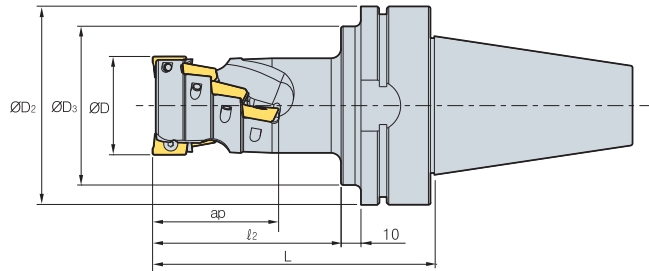


## Partes

| Especificaciones | Tornillo   | Llave | Llave |
|------------------|------------|-------|-------|
| Ø20~Ø32          | FTKA02565S | TW08S | -     |

Insertos disponibles E05

## BT30/40 AM2000



(mm)

| Codigo      | Flautas     | ØD  | ØD2 | ØD3 | l2 | L   | No. de Flautas | ap   |
|-------------|-------------|-----|-----|-----|----|-----|----------------|------|
| BT30        | AM2020029-1 | 3   | 20  | 46  | 41 | 45  | 77             | 29.4 |
|             | AM2025038-2 | 8   | 25  | 46  | 45 | 55  | 87             | 38.9 |
|             | AM2032048-2 | 10  | 32  | 46  | 45 | 65  | 97             | 48.5 |
|             | AM2040058-2 | 14  | 40  | 46  | 45 | 75  | 107            | 58   |
|             | AM2050039-4 | 16  | 50  | 46  | 45 | 58  | 90             | 39   |
|             | AM2063039-4 | 16  | 63  | 46  | 45 | 58  | 90             | 39   |
|             | AM2080039-5 | 20  | 80  | 46  | 45 | 63  | 95             | 39   |
| AM2100039-6 | 24          | 100 | 46  | 45  | 63 | 95  | 39             |      |
| BT40        | AM2020029-1 | 3   | 20  | 63  | 50 | 45  | 82             | 29.4 |
|             | AM2025038-2 | 8   | 25  | 63  | 50 | 55  | 92             | 38.9 |
|             | AM2032048-2 | 10  | 32  | 63  | 50 | 65  | 102            | 48.5 |
|             | AM2040058-2 | 14  | 40  | 63  | 50 | 75  | 112            | 58   |
|             | AM2050039-4 | 16  | 50  | 63  | 50 | 58  | 95             | 39   |
|             | AM2063039-4 | 16  | 63  | 63  | 50 | 58  | 95             | 39   |
|             | AM2080039-5 | 20  | 80  | 63  | 50 | 63  | 100            | 39   |
| AM2100039-6 | 24          | 100 | 63  | 50  | 63 | 100 | 39             |      |

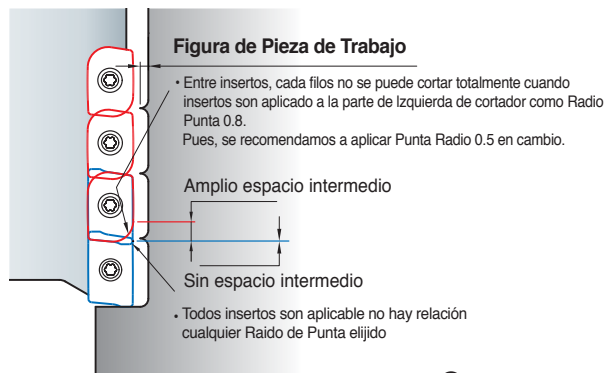
### Insertos disponibles



| Codigo | Cermet |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |     |     |
|--------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-----|-----|
|        | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | G10 | H01 |
| APMT   |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 ※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

### Cuidado cuando se aplica insertos al cortador



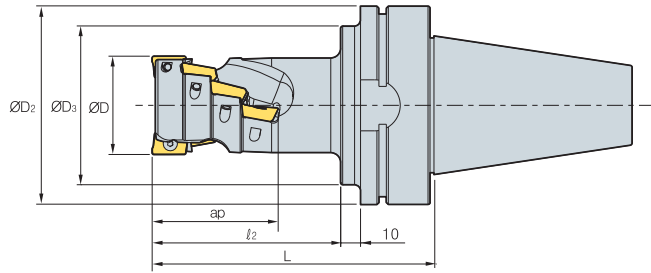
### Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø20~Ø100         | FTKA02565S | TW08S |

Insertos disponibles E05



# BT50 AM3000



AA  
90°  
• AR: 13°~15°  
• RR: -11°~-4°

(mm)

| Codigo | Flutes      | ØD | ØD2 | ØD3 | l2 | L   | No. de Flautas | ap |    |
|--------|-------------|----|-----|-----|----|-----|----------------|----|----|
| BT50   | AM3050043-2 | 6  | 50  | 100 | 80 | 72  | 120            | 2  | 43 |
|        | AM3063057-4 | 16 | 63  | 100 | 80 | 86  | 134            | 4  | 57 |
|        | AM3080071-4 | 20 | 80  | 100 | 80 | 100 | 148            | 4  | 71 |
|        | AM3100071-6 | 30 | 100 | 100 | 80 | 100 | 148            | 6  | 71 |

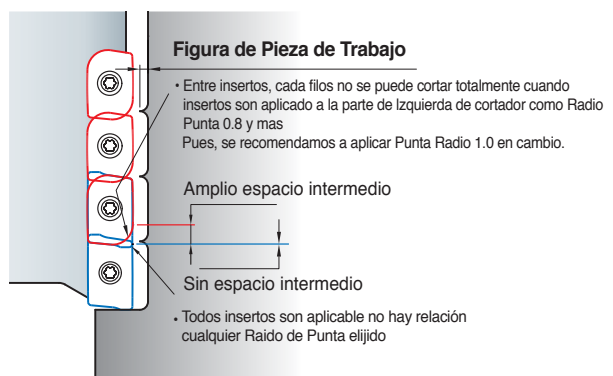
## Insertos disponibles



| Codigo | Cermet        |      | Recubierta |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |     | pag. |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-----|------|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | G10 |      | H01 |
| APMT   | 1604PDR-MA    |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | ●   |
|        | 160404PDR-MA  |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        | 1604PDR-ML    |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        | 160404PDR-ML  |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      |     |
|        | 1604PDSR-MM   |      |            | ●      | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        |     |      |     |
|        | 1604PDSR-MF   |      |            |        | ●      |        |        |        | ●      | ●      | ●      |        |        | ●      | ●        |     |      |     |
|        | 160410PDSR-MM |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
|        | 160416PDSR-MM |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
|        | 160424R-MM    |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
|        | 160430R-MM    |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
|        | 160432R-MM    |      |            |        | ●      |        |        |        | ●      | ●      |        |        |        | ●      | ●        |     |      |     |
|        | 1604PDSR-MN3  |      |            |        |        |        |        |        |        |        |        |        |        | ●      |          |     |      |     |
|        | 1604PDSR-MN4  |      |            |        |        |        |        |        |        |        |        |        |        | ●      |          |     |      |     |

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 ※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

## Cuidado cuando se aplica insertos al cortador



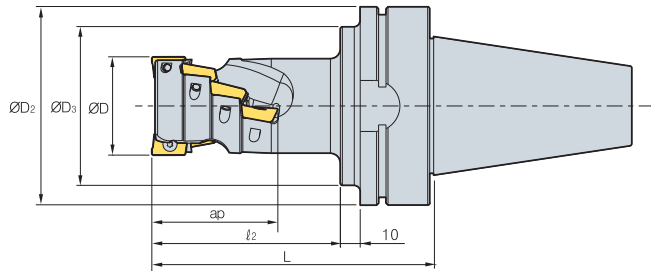
## Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø50~Ø100         | FTKA0410 | TW15S |

Insertos disponibles E05

# E Adaptadores BT (filo de corte múltiple)

## BT50 AM4000



(mm)

| Codigo |             | $\varnothing D$ | $\varnothing D_2$ | $\varnothing D_3$ | $l_2$ | L   | No. de Flautas | ap |    |
|--------|-------------|-----------------|-------------------|-------------------|-------|-----|----------------|----|----|
| BT50   | AM4040046-2 | 6               | 40                | 100               | 80    | 75  | 123            | 2  | 46 |
|        | AM4050061-2 | 8               | 50                | 100               | 80    | 95  | 143            | 2  | 61 |
|        | AM4063061-4 | 16              | 63                | 100               | 80    | 90  | 138            | 4  | 61 |
|        | AM4080076-4 | 20              | 80                | 100               | 80    | 105 | 153            | 4  | 76 |
|        | AM4100076-6 | 30              | 100               | 100               | 80    | 105 | 153            | 6  | 76 |

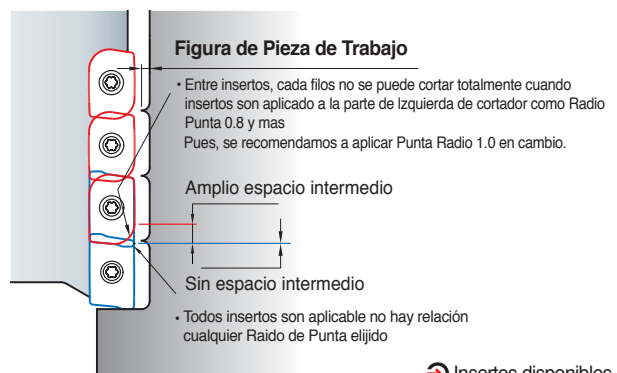
### Insertos disponibles



| Codigo        | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |     |     |
|---------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-----|-----|
|               | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9630 | PC9540   | PC5300 |      | PC5400 | G10 | H01 |
| APMT          |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
| 1806PDFR-MA   |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
| 180604PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
| 180612PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
| 180616PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
| 180620PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
| 180624PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
| 180630R-MA    |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     | ●   |
| 1806PDER-ML   |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
| 180604PDER-ML |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
| 180612PDER-ML |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
| 180616PDER-ML |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
| 180620PDER-ML |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
| 180624PDER-ML |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
| 180630R-ML    |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
| 1806PDSR-MM   |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
| 1806PDSR-MF   |        |      |            | ●      |        |        |        |        | ●      |        |        |        |          | ●      | ●    |        |     |     |
| 180612PDSR-MM |        |      |            | ●      |        |        |        |        | ●      | ●      |        |        |          | ●      | ●    |        |     |     |
| 180616PDSR-MM |        |      |            | ●      |        |        |        |        | ●      |        |        |        |          | ●      | ●    |        |     |     |
| 180620PDSR-MM |        |      |            | ●      |        |        |        |        | ●      |        |        |        |          | ●      | ●    |        |     |     |
| 180624PDSR-MM |        |      |            | ●      |        |        |        |        | ●      |        |        |        |          | ●      | ●    |        |     |     |
| 180630R-MM    |        |      |            | ●      |        |        |        |        | ●      |        |        |        |          | ●      | ●    |        |     |     |
| 180632R-MM    |        |      |            | ●      |        |        |        |        | ●      |        |        |        |          | ●      | ●    |        |     |     |
| 1806PDSR-MN3  |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      |      |        |     |     |
| 1806PDSR-MN4  |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      |      |        |     |     |

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 ※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

### Cuidado cuando se aplica insertos al cortador



### Partes

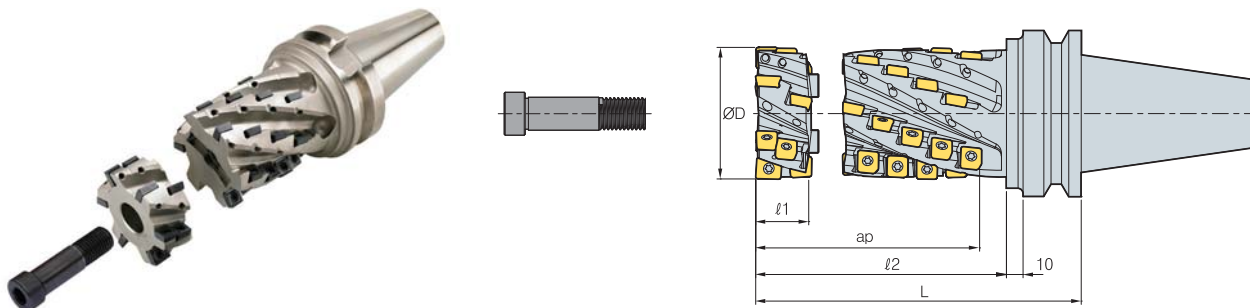
| Especificaciones                         |                      |                |
|--|----------------------|----------------|
| $\varnothing 40\text{--}\varnothing 100$ | Tornillo<br>FTKA0410 | Llave<br>TW15S |

Insertos disponibles E05





# BT50 HAT4000



(mm)

| Codigo          | Código        |      | ØD | l1 | l2  | L   | No. de Flautas | ap  | Aplicación |               |
|-----------------|---------------|------|----|----|-----|-----|----------------|-----|------------|---------------|
|                 | SPMT          | ZPMT |    |    |     |     |                |     |            |               |
| BT50-<br>(Set)  | HAT4050094-2F | 10   | 1  | 50 | 32  | 119 | 160            | 2   | 94         | HAT4050032-2F |
|                 | HAT4050104-2F | 11   | 1  | 50 | 32  | 129 | 170            | 2   | 104        |               |
|                 | HAT4050114-2F | 12   | 1  | 50 | 32  | 139 | 180            | 2   | 114        |               |
|                 | HAT4063094-4F | 20   | 2  | 63 | 32  | 119 | 160            | 4   | 94         | HAT4063032-4F |
|                 | HAT4063104-4F | 22   | 2  | 63 | 32  | 129 | 170            | 4   | 104        |               |
|                 | HAT4063114-4F | 24   | 2  | 63 | 32  | 139 | 180            | 4   | 114        |               |
|                 | HAT4080094-4F | 20   | 2  | 80 | 33  | 119 | 160            | 4   | 94         | HAT4080033-4F |
|                 | HAT4080104-4F | 22   | 2  | 80 | 33  | 129 | 170            | 4   | 104        |               |
| HAT4080114-4F   | 24            | 2    | 80 | 33 | 139 | 180 | 4              | 114 |            |               |
| (Pieza Frontal) | HAT4050032-2F | 3    | 1  | 50 | 32  | -   | -              | 2   | -          | -             |
|                 | HAT4063032-4F | 6    | 2  | 63 | 32  | -   | -              | 4   | -          |               |
|                 | HAT4080033-4F | 6    | 2  | 80 | 33  | -   | -              | 4   | -          |               |

## Insertos disponibles

SPMT-MM      ZPMT-MM



| Codigo | Cermet       |      | Recubierta |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |     | pag. |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-----|------|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | G10 |      | H01 |
| SPMT   | 120508-MMN   |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | E25 |
| ZPMT   | 1505PPSR-MMN |      |            |        |        |        |        |        |        |        |        |        |        |        |          |     |      | E31 |

## Set Especificaciones

| Set Denominación                                | Codigo  | Pieza Frontal | Clamping Perno |
|---|---|---------------|----------------|
| HAT4050094-2F<br>HAT4050104-2F<br>HAT4050114-2F | HAT4050062-2F<br>HAT4050072-2F<br>HAT4050082-2F | HAT4050032-2F | HSB1255        |
| HAT4063094-4F<br>HAT4063104-4F<br>HAT4063114-4F | HAT4063062-4F<br>HAT4063072-4F<br>HAT4063082-4F | HAT4063032-4F | HSB1670        |
| HAT4080094-4F<br>HAT4080104-4F<br>HAT4080114-4F | HAT4080061-4F<br>HAT4080071-4F<br>HAT4080081-4F | HAT4080033-4F | HSB1682        |

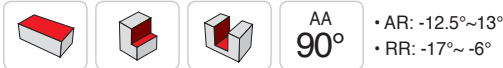
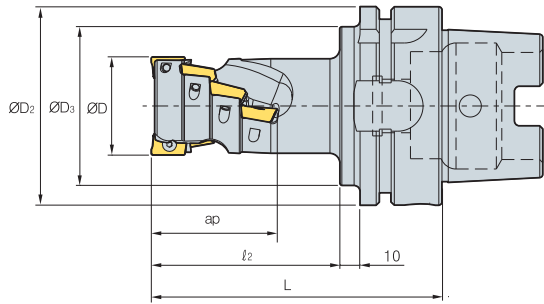
## Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø50-Ø80          | ETNA0511 | TW20  |

Insertos disponibles E25, E31

# E Adaptadores HSK (filo de corte múltiple)

## HSK63A AM1000



(mm)

| Codigo |             | ØD | ØD2 | ØD3 | Ø2 | L  | No. de Flautas | ap   |
|--------|-------------|----|-----|-----|----|----|----------------|------|
| HSK63A | AM1016015-2 | 6  | 16  | 63  | 53 | 30 | 2              | 15.5 |
|        | AM1020020-3 | 12 | 20  | 63  | 53 | 32 | 3              | 20.5 |
|        | AM1025025-4 | 20 | 25  | 63  | 53 | 39 | 4              | 25.5 |

### Insertos disponibles

APMT-MA APMT-MM

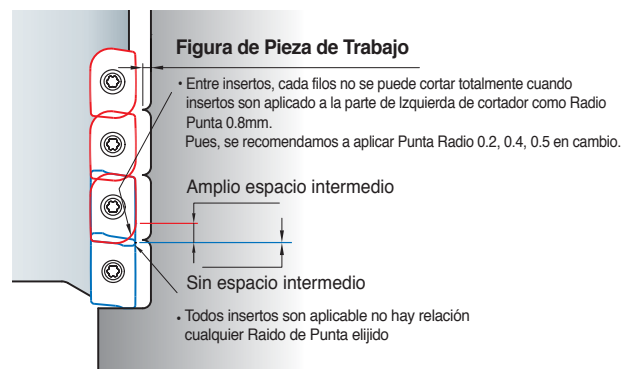


| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM635 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |     |
| APMT   | 0602PDFR-MA   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     | ●   | E05 |
|        | 060208PDFR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |     |
|        | 060202PDSR-MM |      |            | ●      |        |        |        |        | ●      |        |        |        |        | ●        | ●      |      |     |     |     |
|        | 0602PDSR-MM   |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        |        | ●        | ●      |      |     |     |     |
|        | 060208PDSR-MM |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |     |
|        | 060212R-MM    |      |            | ●      |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |     |
|        | 060216R-MM    |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |      |     |     |     |

### Partes

| Especificaciones |           |   |         |
|------------------|-----------|---|---------|
| Ø16~Ø25          | FTKA01842 | - | TW06S-A |

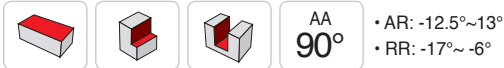
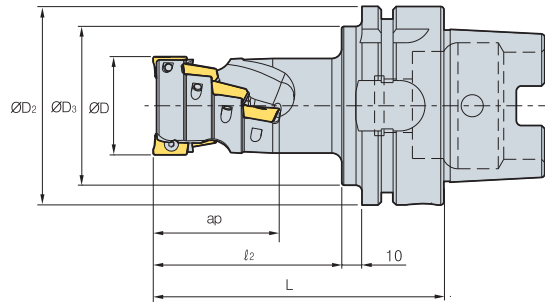
### Cuidado cuando se aplica insertos al cortador



Insertos disponibles E05



# HSK63A AM1500



(mm)

| Codigo              | Flautas | ØD | ØD <sub>2</sub> | ØD <sub>3</sub> | l <sub>2</sub> | L  | No. de Flautas | ap   |
|---------------------|---------|----|-----------------|-----------------|----------------|----|----------------|------|
| HSK63A AM15020026-1 | 3       | 20 | 63              | 53              | 42             | 78 | 1              | 26.5 |
| AM15025035-2        | 8       | 25 | 63              | 53              | 50             | 86 | 2              | 35   |
| AM15032044-2        | 10      | 32 | 63              | 53              | 60             | 96 | 2              | 44   |

## Insertos disponibles



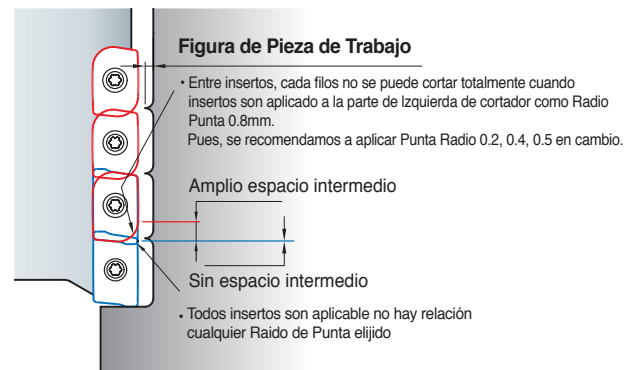
| Codigo           | Cermet |      | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|                  | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT 0903PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     | ●   |
| 090308PDFR-MA    |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
| 0903PDER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
| 090308PDER-ML    |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |     |     |
| 0903PDSR-MM      |        |      |            | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        |        | ●        | ●      |      |     |     |
| 090308PDSR-MM    |        |      |            | ●      |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |      |     |     |
| 090312R-MM       |        |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |      |     |     |
| 090316R-MM       |        |      |            | ●      |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |      |     |     |
| 090320R-MM       |        |      |            |        |        |        |        |        |        | ●      | ●      |        |        | ●        | ●      |      |     |     |

## Partes

| Especificaciones | Tornillo   | Llave | Llave |
|------------------|------------|-------|-------|
| Ø20~Ø32          | FTKA02565S | TW08S | -     |

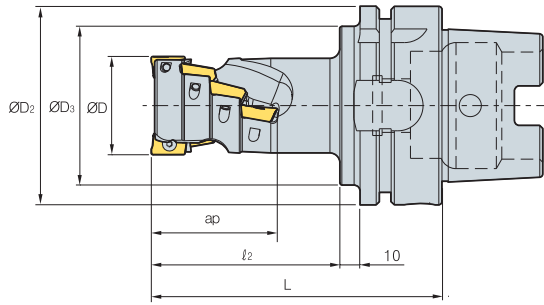
Insertos disponibles E05

## Cuidado cuando se aplica insertos al cortador



# E Adaptadores HSK (filo de corte múltiple)

## HSK63A AM2000



(mm)

| Codigo | Flautas     | ØD | ØD <sub>2</sub> | ØD <sub>3</sub> | l <sub>2</sub> | L  | No. de Flautas | ap |      |
|--------|-------------|----|-----------------|-----------------|----------------|----|----------------|----|------|
| HSK63A | AM2020029-1 | 3  | 20              | 63              | 53             | 45 | 81             | 1  | 29.4 |
|        | AM2025038-2 | 8  | 25              | 63              | 53             | 55 | 91             | 2  | 38.9 |
|        | AM2032048-2 | 10 | 32              | 63              | 53             | 65 | 101            | 2  | 48.5 |
|        | AM2040058-2 | 14 | 40              | 63              | 53             | 75 | 111            | 2  | 58   |
|        | AM2050039-4 | 16 | 50              | 63              | 53             | 58 | 94             | 4  | 39   |
|        | AM2063039-4 | 16 | 63              | 63              | 53             | 58 | 94             | 4  | 39   |
|        | AM2080039-5 | 20 | 80              | 63              | 53             | 63 | 99             | 5  | 39   |
|        | AM2100039-6 | 24 | 100             | 63              | 53             | 63 | 99             | 6  | 39   |

### Insertos disponibles



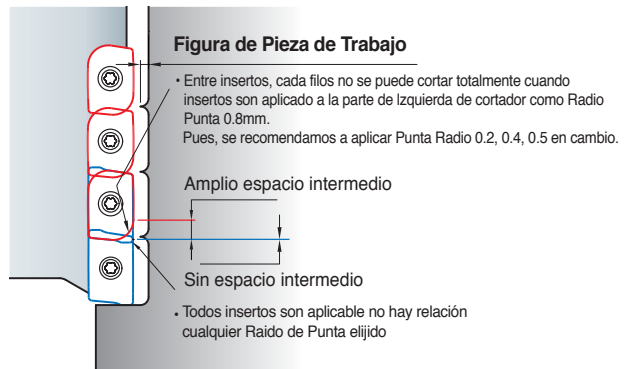
| Codigo | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |     |     |
|--------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-----|-----|
|        | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | G10 | H01 |
| APMT   |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     | ●   |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |
|        |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |     |     |

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-

MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).

※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

### Cuidado cuando se aplica insertos al cortador



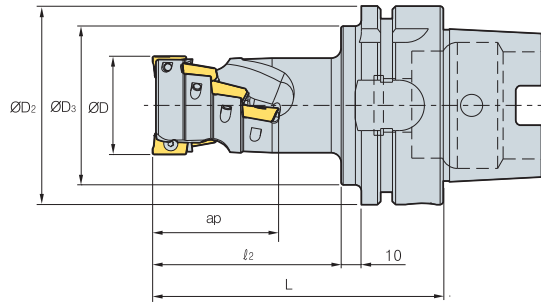
### Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø20~Ø100         | FTKA02565S | TW08S |

Insertos disponibles E05



# HSK100A AM3000



(mm)

| Codigo              | 6  | 16 | 20 | 30 | ØD  | ØD <sub>2</sub> | ØD <sub>3</sub> | l <sub>2</sub> | L   | No. de Flautas | ap |
|---------------------|----|----|----|----|-----|-----------------|-----------------|----------------|-----|----------------|----|
| HSK100A AM3050043-2 | 6  | 16 | 20 | 30 | 50  | 100             | 88              | 72             | 111 | 2              | 43 |
| AM3063057-4         | 16 | 16 | 20 | 30 | 63  | 100             | 88              | 86             | 125 | 4              | 57 |
| AM3080071-4         | 20 | 16 | 20 | 30 | 80  | 100             | 88              | 100            | 139 | 4              | 71 |
| AM3100071-6         | 20 | 16 | 20 | 30 | 100 | 100             | 88              | 100            | 139 | 6              | 71 |

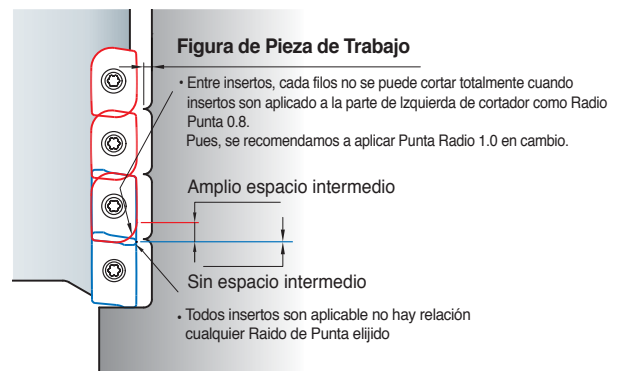
## Insertos disponibles



| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-----|-----|
|                  | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | G10 | H01 |
| APMT 1604PDFR-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        | ●   | E05 |
| 160404PDFR-MA    |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |     |     |
| 1604PDER-ML      |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
| 160404PDER-ML    |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |     |     |
| 1604PDSR-MM      |        |      | ●          | ●      | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
| 1604PDSR-MF      |        |      |            | ●      |        |        |        | ●      | ●      | ●      |        |        |          | ●      | ●    |        |     |     |
| 160410PDSR-MM    |        |      |            |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
| 160416PDSR-MM    |        |      |            | ●      |        |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
| 160424R-MM       |        |      |            | ●      |        |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
| 160430R-MM       |        |      |            |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
| 160432R-MM       |        |      |            | ●      |        |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●    |        |     |     |
| 1604PDSR-MN3     |        |      |            |        |        |        |        |        |        |        |        |        | ●        | ●      |      |        |     |     |
| 1604PDSR-MN4     |        |      |            |        |        |        |        |        |        |        |        |        | ●        | ●      |      |        |     |     |

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 ※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

## Cuidado cuando se aplica insertos al cortador

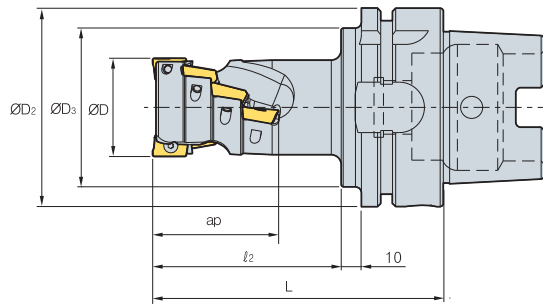


## Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø50-Ø100         | FTKA0410 | TW15S |

Insertos disponibles E05

## HSK100A AM4000



(mm)

| Codigo  |             | ØD | ØD2 | ØD3 | l2 | L   | No. de Flautas | ap |
|---------|-------------|----|-----|-----|----|-----|----------------|----|
| HSK100A | AM4040046-2 | 6  | 40  | 100 | 88 | 75  | 2              | 46 |
|         | AM4050061-2 | 8  | 50  | 100 | 88 | 95  | 2              | 61 |
|         | AM4063061-4 | 16 | 63  | 100 | 88 | 90  | 4              | 61 |
|         | AM4080076-4 | 20 | 80  | 100 | 88 | 105 | 4              | 76 |
|         | AM4100076-6 | 30 | 100 | 100 | 88 | 105 | 6              | 76 |

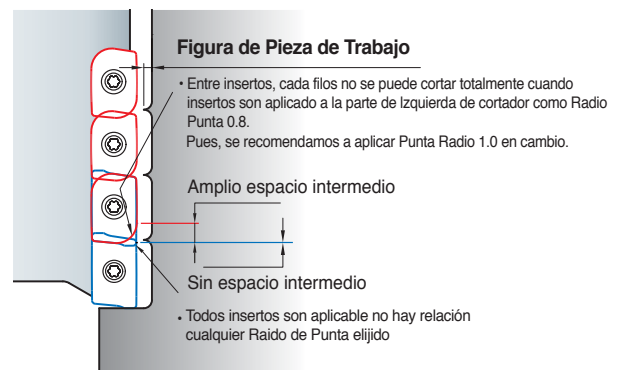
### Insertos disponibles



| Codigo           | Recubierto |      |        |        |        |        |        |        |        | Sin Rec. | pag. | Codigo | Recubierto         |        |        |        |        |        |     |     |        | Sin Rec. | pag. |      |        |        |        |        |        |        |        |        |        |
|------------------|------------|------|--------|--------|--------|--------|--------|--------|--------|----------|------|--------|--------------------|--------|--------|--------|--------|--------|-----|-----|--------|----------|------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  | CN2000     | CN30 | NCM325 | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 |          |      |        | PC3700             | PC6510 | PC9530 | PC9540 | PC5300 | PC5400 | G10 | H01 | CN2000 |          |      | CN30 | NCM325 | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 |
| APMT 1806PDFR-MA |            |      |        |        |        |        |        |        |        |          | •    | E05    | APMT 180624PDER-ML |        |        |        |        |        |     |     |        |          |      |      |        |        |        |        |        |        |        | •      | E05    |
| 180604PDFR-MA    |            |      |        |        |        |        |        |        |        |          | •    |        | 180630R-ML         |        |        |        |        |        |     |     |        |          |      |      |        |        |        |        |        |        | •      |        |        |
| 180612PDFR-MA    |            |      |        |        |        |        |        |        |        |          | •    |        | 1806PDSR-MM        |        | •      | •      | •      | •      | •   | •   | •      | •        | •    | •    | •      | •      | •      | •      | •      | •      | •      | •      |        |
| 180616PDFR-MA    |            |      |        |        |        |        |        |        |        |          | •    |        | 1806PDSR-MF        |        | •      |        | •      |        |     |     |        |          |      |      |        |        |        |        |        |        |        | •      |        |
| 180620PDFR-MA    |            |      |        |        |        |        |        |        |        |          | •    |        | 180612PDSR-MM      |        | •      |        | •      |        |     |     |        |          |      |      |        |        |        |        |        |        |        | •      |        |
| 180624PDFR-MA    |            |      |        |        |        |        |        |        |        |          | •    |        | 180616PDSR-MM      |        | •      |        | •      |        |     |     |        |          |      |      |        |        |        |        |        |        |        | •      |        |
| 180630R-MA       |            |      |        |        |        |        |        |        |        |          | •    |        | 180620PDSR-MM      |        |        |        |        |        |     |     |        |          |      |      |        |        |        |        |        |        |        | •      |        |
| 1806PDER-ML      |            |      |        |        |        |        |        |        |        |          |      |        |                    |        |        |        |        |        |     |     |        |          |      |      |        |        |        |        |        |        |        | •      |        |
| 180604PDER-ML    |            |      |        |        |        |        |        |        |        |          |      |        |                    |        |        |        |        |        |     |     |        |          |      |      |        |        |        |        |        |        |        | •      |        |
| 180612PDER-ML    |            |      |        |        |        |        |        |        |        |          |      |        |                    |        |        |        |        |        |     |     |        |          |      |      |        |        |        |        |        |        |        | •      |        |
| 180616PDER-ML    |            |      |        |        |        |        |        |        |        |          |      |        |                    |        |        |        |        |        |     |     |        |          |      |      |        |        |        |        |        |        |        | •      |        |
| 180620PDER-ML    |            |      |        |        |        |        |        |        |        |          |      |        |                    |        |        |        |        |        |     |     |        |          |      |      |        |        |        |        |        |        |        | •      |        |
|                  |            |      |        |        |        |        |        |        |        |          |      |        |                    |        |        |        |        |        |     |     |        |          |      |      |        |        |        |        |        |        |        | •      |        |
|                  |            |      |        |        |        |        |        |        |        |          |      |        |                    |        |        |        |        |        |     |     |        |          |      |      |        |        |        |        |        |        |        | •      |        |
|                  |            |      |        |        |        |        |        |        |        |          |      |        |                    |        |        |        |        |        |     |     |        |          |      |      |        |        |        |        |        |        | •      |        |        |
|                  |            |      |        |        |        |        |        |        |        |          |      |        |                    |        |        |        |        |        |     |     |        |          |      |      |        |        |        |        |        |        | •      |        |        |

※ Información extra: por favor tenga en cuenta que en caso de adquirir los insertos APMT-MN tiene que adquirir los dos tipos de rompevirutas disponibles (MN2 y MN3).  
 ※ Por favor, usar fresas con un número par de dientes (canales); no usar fresas con número impar de dientes.

### Cuidado cuando se aplica insertos al cortador



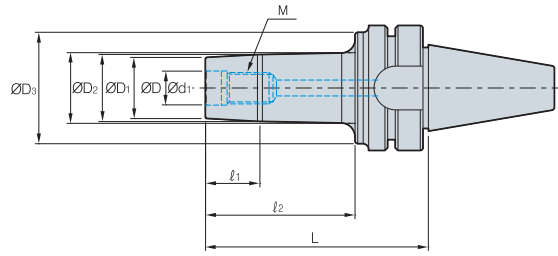
### Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø40~Ø100         | FTKA0410 | TW15S |

Insertos disponibles E05



# BT30/BT40/BT50

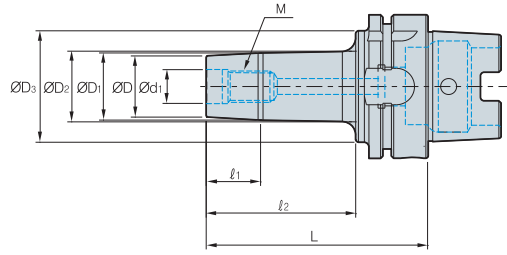


(mm)

| Codigo       | ØD                 | ØD1  | ØD2  | ØD3  | Ød1 | ℓ1   | ℓ2 | L  | M   |          |
|--------------|--------------------|------|------|------|-----|------|----|----|-----|----------|
| <b>BT30-</b> | <b>MAT-M06-053</b> | 11   | 11.7 | 13   | 30  | 6.5  | 5  | 21 | 53  | M06*1.0  |
|              | <b>MAT-M08-057</b> | 14.5 | 15.7 | 17.5 | 35  | 8.5  | 7  | 25 | 57  | M08*1.25 |
|              | <b>MAT-M10-062</b> | 18   | 19.7 | 24   | 38  | 10.5 | 7  | 30 | 62  | M10*1.5  |
|              | <b>MAT-M12-067</b> | 23   | 24.7 | 27.5 | 41  | 12.5 | 10 | 35 | 67  | M12*1.75 |
|              | <b>MAT-M16-067</b> | 29   | 31.7 | 33.5 | 41  | 17   | 10 | 35 | 67  | M16*2.0  |
| <b>BT40-</b> | <b>MAT-M06-062</b> | 11   | 11.7 | 14   | 40  | 6.5  | 5  | 25 | 62  | M06*1.0  |
|              | <b>MAT-M06-077</b> | 11   | 11.7 | 14   | 40  | 6.5  | 5  | 40 | 77  | M06*1.0  |
|              | <b>MAT-M06-092</b> | 11   | 11.7 | 14   | 40  | 6.5  | 5  | 55 | 92  | M06*1.0  |
|              | <b>MAT-M08-067</b> | 14.5 | 15.7 | 19   | 44  | 8.5  | 7  | 30 | 67  | M08*1.25 |
|              | <b>MAT-M08-082</b> | 14.5 | 15.7 | 19   | 44  | 8.5  | 7  | 45 | 82  | M08*1.25 |
|              | <b>MAT-M08-097</b> | 14.5 | 15.7 | 19   | 44  | 8.5  | 7  | 60 | 97  | M08*1.25 |
|              | <b>MAT-M10-072</b> | 18   | 19.7 | 23   | 50  | 10.5 | 10 | 35 | 72  | M10*1.5  |
|              | <b>MAT-M10-087</b> | 18   | 19.7 | 23   | 50  | 10.5 | 10 | 50 | 87  | M10*1.5  |
|              | <b>MAT-M10-102</b> | 18   | 19.7 | 23   | 50  | 10.5 | 10 | 65 | 102 | M10*1.5  |
|              | <b>MAT-M12-077</b> | 23   | 24.7 | 30   | 55  | 12.5 | 10 | 40 | 77  | M12*1.75 |
|              | <b>MAT-M12-092</b> | 23   | 24.7 | 30   | 55  | 12.5 | 13 | 55 | 92  | M12*1.75 |
|              | <b>MAT-M12-107</b> | 23   | 24.7 | 30   | 55  | 12.5 | 13 | 70 | 107 | M12*1.75 |
|              | <b>MAT-M16-077</b> | 29   | 31.7 | 37   | 55  | 17   | 13 | 40 | 77  | M16*2.0  |
|              | <b>MAT-M16-092</b> | 29   | 31.7 | 37   | 55  | 17   | 13 | 55 | 92  | M16*2.0  |
|              | <b>MAT-M16-107</b> | 29   | 31.7 | 37   | 55  | 17   | 13 | 70 | 107 | M16*2.0  |
| <b>BT50-</b> | <b>MAT-M06-083</b> | 11   | 11.7 | 15   | 40  | 6.5  | 5  | 35 | 83  | M06*1.0  |
|              | <b>MAT-M06-098</b> | 11   | 11.7 | 15   | 40  | 6.5  | 5  | 50 | 98  | M06*1.0  |
|              | <b>MAT-M06-113</b> | 11   | 11.7 | 15   | 40  | 6.5  | 5  | 65 | 113 | M06*1.0  |
|              | <b>MAT-M08-088</b> | 14.5 | 15.7 | 20   | 45  | 8.5  | 7  | 40 | 88  | M08*1.25 |
|              | <b>MAT-M08-103</b> | 14.5 | 15.7 | 20   | 45  | 8.5  | 7  | 55 | 103 | M08*1.25 |
|              | <b>MAT-M08-118</b> | 14.5 | 15.7 | 20   | 45  | 8.5  | 7  | 70 | 118 | M08*1.25 |
|              | <b>MAT-M10-093</b> | 18   | 19.7 | 25   | 55  | 10.5 | 10 | 45 | 93  | M10*1.5  |
|              | <b>MAT-M10-113</b> | 18   | 19.7 | 25   | 55  | 10.5 | 10 | 65 | 113 | M10*1.5  |
|              | <b>MAT-M10-128</b> | 18   | 19.7 | 25   | 55  | 10.5 | 10 | 80 | 128 | M10*1.5  |
|              | <b>MAT-M12-103</b> | 23   | 24.7 | 33   | 65  | 12.5 | 10 | 55 | 103 | M12*1.75 |
|              | <b>MAT-M12-118</b> | 23   | 24.7 | 33   | 65  | 12.5 | 13 | 70 | 118 | M12*1.75 |
|              | <b>MAT-M12-133</b> | 23   | 24.7 | 33   | 65  | 12.5 | 13 | 85 | 133 | M12*1.75 |
|              | <b>MAT-M16-103</b> | 29   | 31.7 | 41   | 85  | 17   | 13 | 55 | 103 | M16*2.0  |
|              | <b>MAT-M16-118</b> | 29   | 31.7 | 41   | 85  | 17   | 13 | 70 | 118 | M16*2.0  |
|              | <b>MAT-M16-133</b> | 29   | 31.7 | 41   | 85  | 17   | 13 | 85 | 133 | M16*2.0  |

➔ Modulos disponibles E42, E43

## HSK63A/HSK100A



(mm)

| Codigo      | ØD          | ØD1  | ØD2  | ØD3  | Ød1 | ℓ1   | ℓ2 | L   | M       |          |
|-------------|-------------|------|------|------|-----|------|----|-----|---------|----------|
| HSK63A-     | MAT-M06-061 | 11   | 11.7 | 27   | 40  | 6.5  | 5  | 25  | 61      | M06*1.0  |
|             | MAT-M06-076 | 11   | 11.7 | 27   | 40  | 6.5  | 5  | 40  | 76      | M06*1.0  |
|             | MAT-M06-091 | 11   | 11.7 | 27   | 40  | 6.5  | 5  | 55  | 91      | M06*1.0  |
|             | MAT-M08-066 | 14.5 | 15.7 | 30.5 | 44  | 8.5  | 7  | 30  | 66      | M08*1.25 |
|             | MAT-M08-081 | 14.5 | 15.7 | 30.5 | 44  | 8.5  | 7  | 45  | 81      | M08*1.25 |
|             | MAT-M08-096 | 14.5 | 15.7 | 30.5 | 44  | 8.5  | 7  | 60  | 96      | M08*1.25 |
|             | MAT-M10-071 | 18   | 19.7 | 34   | 50  | 10.5 | 10 | 35  | 71      | M10*1.5  |
|             | MAT-M10-086 | 18   | 19.7 | 34   | 50  | 10.5 | 10 | 50  | 86      | M10*1.5  |
|             | MAT-M10-101 | 18   | 19.7 | 34   | 50  | 10.5 | 10 | 65  | 101     | M10*1.5  |
|             | MAT-M12-076 | 23   | 24.7 | 36.5 | 55  | 12.5 | 10 | 40  | 76      | M12*1.75 |
|             | MAT-M12-091 | 23   | 24.7 | 36.5 | 55  | 12.5 | 13 | 55  | 91      | M12*1.75 |
|             | MAT-M12-106 | 23   | 24.7 | 36.5 | 55  | 12.5 | 13 | 70  | 106     | M12*1.75 |
|             | MAT-M16-076 | 29   | 31.7 | 38.5 | 55  | 17   | 13 | 40  | 76      | M16*2.0  |
| MAT-M16-091 | 29          | 31.7 | 38.5 | 55   | 17  | 13   | 55 | 91  | M16*2.0 |          |
| MAT-M16-106 | 29          | 31.7 | 38.5 | 55   | 17  | 13   | 70 | 106 | M16*2.0 |          |
| HSK100A-    | MAT-M06-074 | 11   | 11.7 | 15   | 40  | 6.5  | 5  | 35  | 74      | M06*1.0  |
|             | MAT-M06-089 | 11   | 11.7 | 15   | 40  | 6.5  | 5  | 50  | 89      | M06*1.0  |
|             | MAT-M06-104 | 11   | 11.7 | 15   | 40  | 6.5  | 5  | 65  | 104     | M06*1.0  |
|             | MAT-M08-079 | 14.5 | 15.7 | 20   | 45  | 8.5  | 7  | 40  | 79      | M08*1.25 |
|             | MAT-M08-094 | 14.5 | 15.7 | 20   | 45  | 8.5  | 7  | 55  | 94      | M08*1.25 |
|             | MAT-M08-109 | 14.5 | 15.7 | 20   | 45  | 8.5  | 7  | 70  | 109     | M08*1.25 |
|             | MAT-M10-084 | 18   | 19.7 | 25   | 55  | 10.5 | 10 | 45  | 84      | M10*1.5  |
|             | MAT-M10-104 | 18   | 19.7 | 25   | 55  | 10.5 | 10 | 65  | 104     | M10*1.5  |
|             | MAT-M10-119 | 18   | 19.7 | 25   | 55  | 10.5 | 10 | 80  | 119     | M10*1.5  |
|             | MAT-M12-094 | 23   | 24.7 | 33   | 65  | 12.5 | 10 | 55  | 94      | M12*1.75 |
|             | MAT-M12-109 | 23   | 24.7 | 33   | 65  | 12.5 | 13 | 70  | 109     | M12*1.75 |
|             | MAT-M12-124 | 23   | 24.7 | 33   | 65  | 12.5 | 13 | 85  | 124     | M12*1.75 |
|             | MAT-M16-094 | 29   | 31.7 | 41   | 85  | 17   | 13 | 55  | 94      | M16*2.0  |
|             | MAT-M16-109 | 29   | 31.7 | 41   | 85  | 17   | 13 | 70  | 109     | M16*2.0  |
|             | MAT-M16-124 | 29   | 31.7 | 41   | 85  | 17   | 13 | 85  | 124     | M16*2.0  |

Modulos disponibles E42, E43





**Amplia cobertura de piezas de trabajo de aluminio, acero y fundición**

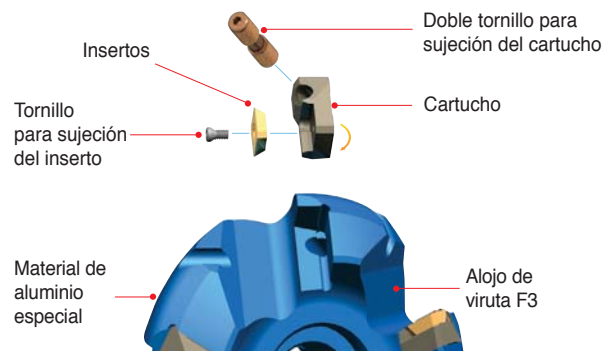
# Future Mill

- Se pueden obtener excelentes resultados, especialmente en cortes a alta velocidad, gracias a sus ligeros cortadores de aluminio que pesan 50% menos que los cortadores de acero convencionales.
- Muy fácil de manejar gracias a su peso ligero.
- Amplia cobertura de piezas de trabajo de aluminio, acero y fundición.
- El cartucho evita que los cortadores raspen o dañen la pieza de trabajo, proporcionando una larga vida al cortador de aluminio
- Variedad de rompevirutas para una amplia gama de aplicaciones

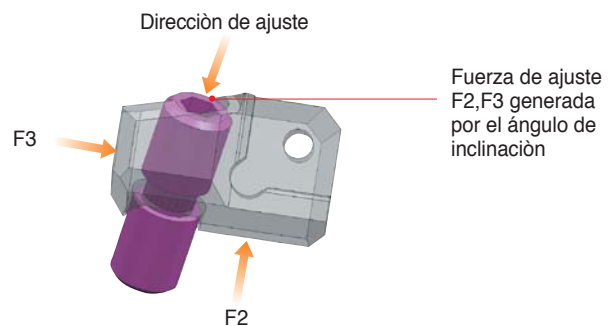
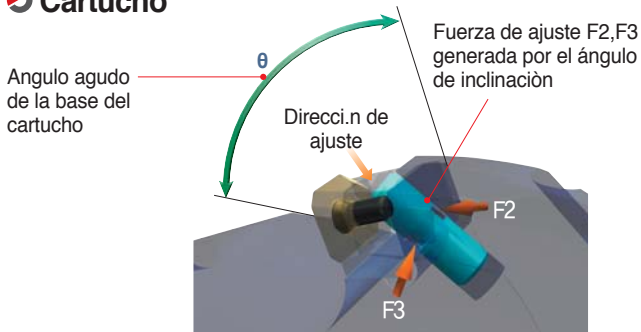
## Características de cortador

- El firme apriete con doble tornillo garantiza un soporte estable al inserto.
- El ángulo agudo del filo de corte garantiza un montaje estable.
- El amplio alojamiento de viruta facilita la eliminación de viruta.
- El aluminio especial de los cortadores proporciona un maquinado estable

## Como se ensambla el cortador

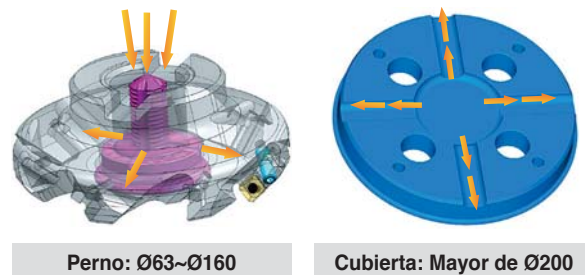


## Cartucho

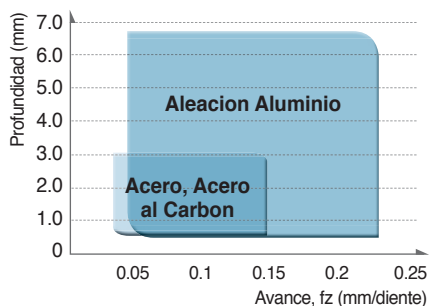


## Sistema de refrigeración interna

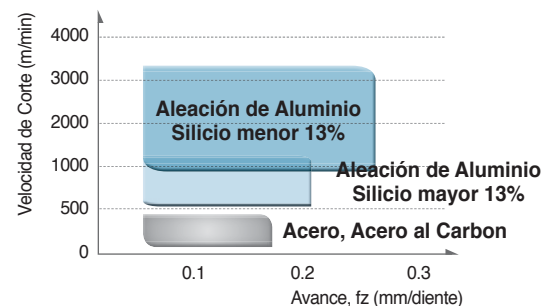
- Sistema de refrigerante interno especialmente diseñado, que despacha refrigerante desde el centro del cortador hacia el inserto. Aumenta la velocidad de refrigeración y propiedad de eliminación de viruta.
- Máxima eliminación de viruta gracias a que el refrigerante se despacha directamente al filo de corte del inserto.
- Perno del refrigerante utilizable hasta @160, tapa del refrigerante utilizable a partir de @200. Ambos dispositivos se venden por separado.



## Rango de Aplicación as per Pieza Trabajo



## Velocidad de Corte



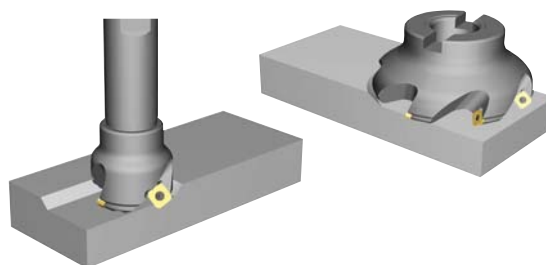
## ➤ Máxima revolución disponible

| Diam. Cortador | Revoluciones Max. |
|----------------|-------------------|
| Ø63            | 20,000            |
| Ø80            | 16,000            |
| Ø100           | 13,000            |
| Ø125           | 10,000            |
| Ø160           | 8,000             |
| Ø200           | 6,500             |
| Ø250           | 5,000             |
| Ø315           | 4,000             |

## Future Mill (FMA)

### ➤ Características

- El paso de la fresa se puede ajustar al cambiar el número de insertos por diámetro específico, y los varios rompevirutas ofrecen una amplia gama de aplicaciones.
- Sus cortadores ligeros permiten maquinar a alta velocidad sin producir vibraciones, por lo que se puede usar en máquinas con menor potencia.
- Su amplio ángulo de salida produce una baja fuerza de corte y facilita el corte



### ➤ Características del rompevirutas

| Rompeviruta | Filo de corte | Usos             | Características   |
|-------------|---------------|------------------|---|
| None<br>C/B |               | Corte Ligero     | Rugosidad de acabado superior, gracias al inserto de cermet.  |
| MF          |               | Corte Ligero     | Calidad de corte superior en materiales ligeros o difíciles de cortar, gracias al rompevirutas de baja resistencia al corte.  |
| MM          |               | Corte en General | Recomendable para una amplia gama de cortes gracias a su diseño especial para cortes en general.  |
| MR          |               | Roughing         | El filo de corte resistente proporciona un mejor rendimiento de corte estable y uniforme inclusive bajo condiciones de intermitencia severa.  |
| MA          |               | Para Aluminio    | Calidad de corte superior en cortes de aluminio al aplicar el filo y pulido adecuado.<br>- S□ET-MA: Filo de corte extremadamente agudo debido a la precisión del afilado<br>- S□XT-MA: Filo de corte adecuado para desbaste |

### ➤ Condiciones de corte recomendadas

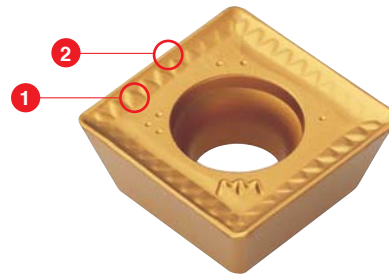
| ISO | Grados | vc (m/min) | MF             | MM             | MR             | MA             |
|-----|--------|------------|----------------|----------------|----------------|----------------|
|     |        |            | fz (mm/diente) | fz (mm/diente) | fz (mm/diente) | fz (mm/diente) |
| P   | NC5330 | 210~350    | 0.05~0.20      | 0.10~0.30      | 0.10~0.30      | -              |
|     | NCM325 | 190~310    | 0.05~0.20      | 0.10~0.30      | 0.10~0.30      | -              |
|     | PC3500 | 160~270    | 0.05~0.20      | 0.10~0.30      | 0.10~0.30      | -              |
| M   | PC9530 | 90~150     | 0.05~0.15      | 0.10~0.30      | -              | -              |
|     | NCM335 | 70~120     | 0.05~0.15      | 0.10~0.30      | -              | -              |
| K   | PC5300 | 110~180    | 0.05~0.20      | 0.10~0.30      | -              | -              |
| N   | H01    | 260~440    | -              | -              | -              | 0.10~0.35      |



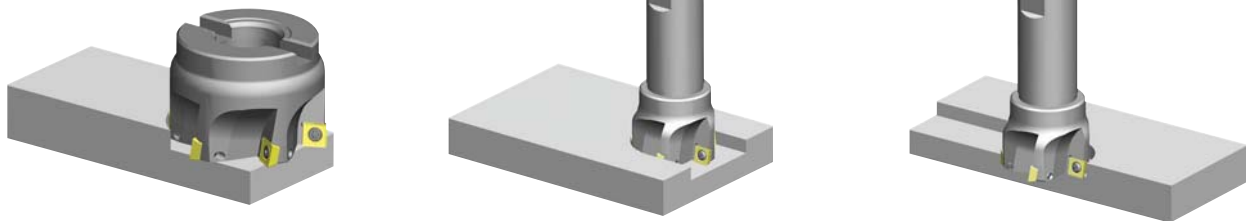
# Future Mill (FMP)

## Características

- Excelente vida de herramienta garantizada en cortes de gran avance y profundidad con baja resistencia al corte.
- El diseño innovador del filo de corte curvo reduce la resistencia al corte y aumenta la resistencia del mismo. (②)
- El distintivo diseño del rompevirutas asegura el libre flujo de la viruta. (①)
- Hay grados disponibles para la mayoría de los materiales, tales como acero, acero inoxidable, fundición y aluminio.



## Ej. de Maquinado



## Características y aplicación del inserto

- El diseño innovador del filo de corte curvo y el rompevirutas asegura un corte de 90 grados y una menor resistencia al corte.
- Los cortadores multifuncionales tienen una gama de aplicaciones (Chapeado, mortajado, planeado, etc.)
- Los insertos con vida mejorada logran una aplicación óptima en cada ocasión.
- Excelentes resultados garantizados en cortes de gran profundidad, gracias a su filo de corte resistente y baja resistencia al corte.

## Rompevirutas y grados recomendados según pieza de trabajo

| Rompeviruta | Filo de corte | Usos | Rompevirutas y grados recomendados según pieza de trabajo (●: 1ª recomendación) |                                  |                                    |        |                  |                                  |           |                                  |                      |                      |                |   |
|-------------|---------------|------|---|----------------------------------|------------------------------------|--------|------------------|----------------------------------|-----------|----------------------------------|----------------------|----------------------|----------------|---|
|             |               |      | Acero Bajo en Carbon, Acero Blando  |                                  | Aleaciones de Acero alto en Carbon |        | Acero Inoxidable |                                  | Fundición |                                  | Aleación de Aluminio |                      |                |   |
|             |               |      | C/B   | Grados                           | C/B                                | Grados | C/B              | Grados                           | C/B       | Grados                           | C/B                  | Grados               |                |   |
| MF          |               |      | ●   | ○ NCM325<br>○ NC5330<br>● NCM335 | -                                  | -      | ●                | ● NCM325<br>○ NC5330<br>○ NCM335 | ●         | ○ NCM325<br>○ NC5330<br>● NCM335 | ●                    | ● PC6510<br>○ PC215K | -              | - |
| MM          |               |      | -   | ○ NCM325<br>○ NC5330<br>● NCM335 | -                                  | -      | -                | -                                | -         | -                                | -                    | ● PC6510<br>○ PC215K | -              | - |
| MA          |               |      | -   | -                                | -                                  | -      | -                | -                                | -         | -                                | -                    | -                    | ● H01<br>○ G10 | - |

## Condiciones de corte recomendadas

| ISO | Velocidad de Corte vc (m/min) |         |                |         |         |         |        |         |         |
|-----|-------------------------------|---------|----------------|---------|---------|---------|--------|---------|---------|
|     | CVD Recubierto                |         | PVD Recubierto |         |         |         |        |         | Carburo |
|     | NCM325                        | NCM335  | PC3500         | PC3600  | PC6510  | PC5300  | PC9530 | PC5400  | H01     |
| P   | 190~310                       | 180~290 | 160-270        | 160-270 | -       | 150-240 | -      | 130-210 | -       |
| M   | 110~180                       | 100~160 | -              | -       | -       | 90-150  | 90-150 | 70-120  | -       |
| K   | -                             | -       | -              | -       | 140-230 | 120-200 | -      | 100-160 | -       |
| N   | -                             | -       | -              | -       | -       | -       | -      | -       | 260-440 |

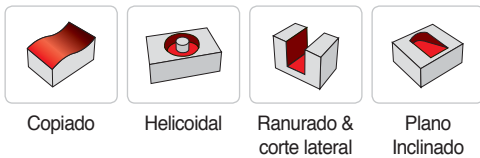


## Future Mill (FMR)

### Características

- Amplia cobertura de materiales para moldes, aleación de acero, acero endurecido, etc.
- La forma del inserto le proporciona una excelente colocación y ajuste.
- Insertos de 4~8 filos.
- La distribución irregular de los insertos previene vibraciones.
- El diseño preciso de la base de posicionamiento del inserto previene vibraciones.
- El diseño especial de la base del inserto evita que se mueva o vibre.
- El filo de corte es f.cilde cambiar, ya que el inserto cuenta con un diseño para prevenir rotaciones.

### Usos



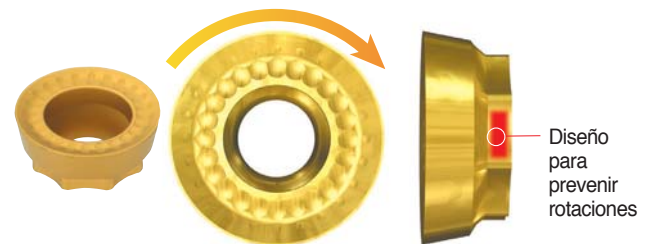
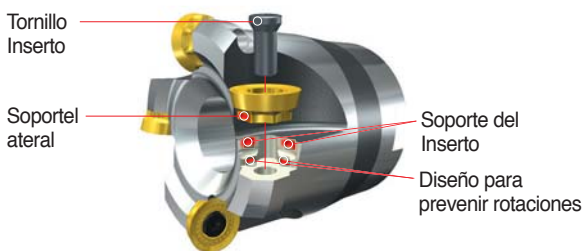
### FMR Forma de Inserto filo de corte

| Codigo                             | RDHW□□□□M0F | RDHW□□□□M0E | RDHW□□□□M0S |
|------------------------------------|-------------|-------------|-------------|
| Formas del Filo de Corte (G calss) |             |             |             |

### Características del rompevirutas

| Rompeviruta | Filo de corte | Usos     | Características   |
|-------------|---------------|----------|---|
| MF          |               | Acabado  | El diseño bajo del rompeviruta y la baja resistencia del corte garantiza el buen funcionamiento, alargando la vida de la herramienta                |
| MM          |               | Medio    | Conveniente para fresado en general.  |
| MA          |               | Aluminio | El filo agudo y la cara superior pulimentada para el máquinado de aluminio, evitan la adherencia del material y brinda un mejor flujo de la viruta. |

### Sistema de Sujecion

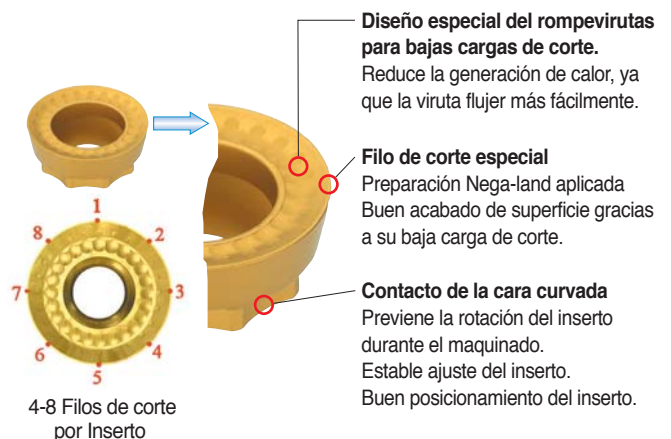
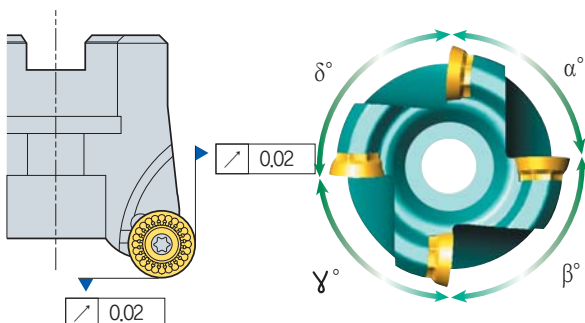


FMR□3000 Tipo  
FMR□4000 Tipo

FMR□5000 Tipo  
FMR□6000 Tipo

RDKT10T3M0-□□  
RDKT1204M0-□□

RDKT1605M0-MM  
RDKT2006M0-MM



Proporciona un buen acabado de superficie gracias al diseño preciso de la base de posicionamiento del cortador

Buen rendimiento sin vibraciones gracias a la distribución regular de los insertos

**Diseño especial del rompevirutas para bajas cargas de corte.**  
Reduce la generación de calor, ya que la viruta flujer más fácilmente.

**Filo de corte especial**  
Preparación Nega-land aplicada  
Buen acabado de superficie gracias a su baja carga de corte.

**Contacto de la cara curvada**  
Previene la rotación del inserto durante el maquinado.  
Estable ajuste del inserto.  
Buen posicionamiento del inserto.



## Future Mill (FMR)

### Indice Retiro de viruta (cm<sup>3</sup>/min)

| Pieza Trabajo   | Calidades        | Ø8                                       | Ø10  | Ø12                                     | Ø15   | Ø16                                     | Ø20   | Ø21   | Ø25   | Ø26   | Ø32   | Ø33   | Ø40   | Ø50    | Ø63    | Ø80    | Ø100   | Ø125                                    | Ø160   |   |
|---|------------------|--|------|---|-------|---|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|---|--------|---|
| P<br>Acero en general (Menor 200HB)<br>Acero al Carbon (Menor 30 Hrc)<br>Aleacion de Acero, Acero alto Carbon (30-40 Hrc)<br>Aleacion de Acero, Acero alto Carbon (40-50 Hrc)<br>Aleacion de Acer (over 50 Hrc) | PC3500<br>PC5300 | 4.97                                     | 9.94 | 9.94                                    | 14.92 | 31.83                                   | 31.83 | 47.74 | 47.74 | 47.74 | 71.61 | 38.19 | 95.49 | 119.36 | 143.23 | 167.11 | 190.98 | 133.69                                  | 509.29 |   |
|   |                  | vc = 250, fz = 0.25, ap = 0.5, ae = 0.5D |      | vc = 300, fz = 0.4, ap = 1.0, ae = 0.5D |       | vc = 250, fz = 0.4, ap = 1.5, ae = 0.5D |       |       |       |       |       |       |       |        |        |        |        |   |        | vc = 200, fz = 0.5, ap = 4.0, ae = 0.5D |
|   |                  | 3.97                                     | 7.95 | 7.95                                    | 11.93 | 25.46                                   | 25.46 | 38.19 | 38.19 | 38.19 | 57.29 | 38.19 | 76.39 | 95.49  | 114.59 | 133.69 | 152.78 | 133.69                                  | 458.36 |   |
|   |                  | vc = 200, fz = 0.25, ap = 0.5, ae = 0.5D |      | vc = 250, fz = 0.4, ap = 1.0, ae = 0.5D |       | vc = 200, fz = 0.4, ap = 1.5, ae = 0.5D |       |       |       |       |       |       |       |        |        |        |        |   |        | vc = 180, fz = 0.5, ap = 4.0, ae = 0.5D |
|   |                  | 2.86                                     | 5.72 | 5.72                                    | 8.59  | 22.91                                   | 22.91 | 34.37 | 34.37 | 34.37 | 51.56 | 34.37 | 68.75 | 85.94  | 103.13 | 120.32 | 137.5  | 120.32                                  | 407.43 |   |
|   |                  | vc = 180, fz = 0.20, ap = 0.5, ae = 0.5D |      | vc = 200, fz = 0.4, ap = 1.0, ae = 0.5D |       | vc = 180, fz = 0.4, ap = 1.5, ae = 0.5D |       |       |       |       |       |       |       |        |        |        |        |   |        | vc = 160, fz = 0.5, ap = 4.0, ae = 0.5D |
| 1.24  | 2.48             | 2.48                                     | 3.72 | 11.45                                   | 11.45 | 14.32                                   | 17.18 | 14.32 | 21.48 | 14.32 | 28.64 | 35.8  | 42.97 | 50.13  | 57.29  | 50.13  | 249.55 |   |        |   |
| vc = 130, fz = 0.15, ap = 0.4, ae = 0.5D  |                  | vc = 170, fz = 0.3, ap = 0.9, ae = 0.5D  |      | vc = 150, fz = 0.3, ap = 1.0, ae = 0.5D |       |   |       |       |       |       |       |       |       |        |        |        |        | vc = 140, fz = 0.4, ap = 3.5, ae = 0.5D |        |   |
| 0.95  | 1.9              | 1.9                                      | 2.86 | 7.63                                    | 7.63  | 9.54                                    | 11.45 | 9.54  | 14.32 | 9.54  | 19.09 | 23.87 | 28.64 | 33.42  | 38.19  | 33.42  | 152.78 |   |        |   |
| vc = 100, fz = 0.15, ap = 0.4, ae = 0.5D  |                  | vc = 130, fz = 0.3, ap = 0.9, ae = 0.5D  |      | vc = 100, fz = 0.3, ap = 1.0, ae = 0.5D |       |   |       |       |       |       |       |       |       |        |        |        |        | vc = 100, fz = 0.4, ap = 3.0, ae = 0.5D |        |   |
| M<br>Acero Inoxidable   | PC5300           | 2.06                                     | 4.13 | 4.13                                    | 6.2   | 16.55                                   | 16.55 | 12.41 | 24.82 | 12.41 | 18.62 | 12.41 | 24.82 | 31.03  | 37.24  | 43.44  | 49.65  | 43.44                                   | 331.04 |   |
|   |                  | vc = 130, fz = 0.20, ap = 0.5, ae = 0.5D |      | vc = 200, fz = 0.2, ap = 1.0, ae = 0.5D |       | vc = 100, fz = 0.3, ap = 1.0, ae = 0.5D |       |       |       |       |       |       |       |        |        |        |        |   |        | vc = 130, fz = 0.5, ap = 4.0, ae = 0.5D |
| K<br>Fundicion  | PC5300           | 2.86                                     | 5.72 | 5.72                                    | 8.59  | 14.32                                   | 14.32 | 21.48 | 21.48 | 21.48 | 32.22 | 21.48 | 42.97 | 53.71  | 64.45  | 75.2   | 85.94  | 75.2                                    | 366.69 |   |
|   |                  | vc = 180, fz = 0.20, ap = 0.5, ae = 0.5D |      | vc = 180, fz = 0.2, ap = 1.0, ae = 0.5D |       | vc = 180, fz = 0.2, ap = 1.5, ae = 0.5D |       |       |       |       |       |       |       |        |        |        |        |   |        | vc = 180, fz = 0.4, ap = 4.0, ae = 0.5D |

### Poder de maquinado requerido (P<sub>KW</sub> = 0.75 x P<sub>HP</sub>)

• RDKT10

| Pieza Trabajo   | Calidades        | Ø21 | Ø25 | Ø26 | Ø32 | Ø40 | Ø50 | Ø63 | Ø80 | Ø100 | Condicion de Corte |     |     |      |
|---|------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|--------------------|-----|-----|------|
|   |                  |     |     |     |     |     |     |     |     |      | vc                 | fz  | ap  | ae   |
| P<br>Acero en general (Menor 200HB)<br>Acero al Carbon (Menor 30 Hrc)<br>Aleacion de Acero, Acero alto Carbon (30-40 Hrc)<br>Aleacion de Acero, Acero alto Carbon (40-50 Hrc)<br>Aleacion de Acerol (over 50 Hrc) | PC3500<br>PC5300 | 2.2 | 2.2 | 2.2 | 3.3 | 4.4 | 5.5 | 6.6 | 7.7 | 8.8  | 250                | 0.4 | 1.5 | 0.5D |
|   |                  | 2.1 | 2.1 | 2.1 | 3.1 | 4.1 | 5.2 | 6.2 | 7.3 | 8.3  | 200                | 0.4 | 1.5 | 0.5D |
|   |                  | 2.2 | 2.2 | 2.2 | 3.3 | 4.5 | 5.6 | 6.7 | 7.9 | 9    | 180                | 0.4 | 1.5 | 0.5D |
|   |                  | 1.1 | 1.1 | 1.1 | 1.6 | 2.1 | 2.6 | 3.2 | 3.7 | 4.2  | 150                | 0.3 | 1.0 | 0.5D |
|   |                  | 0.7 | 0.7 | 0.7 | 1.1 | 1.4 | 1.7 | 2.1 | 2.4 | 2.8  | 100                | 0.3 | 1.0 | 0.5D |
| M<br>Acero Inoxidable   | PC5300           | 0.6 | 0.6 | 0.6 | 0.8 | 1.2 | 1.5 | 1.7 | 2   | 2.3  | 130                | 0.2 | 1.5 | 0.5D |
| K<br>Fundición  | PC5300           | 0.6 | 0.6 | 0.6 | 0.9 | 1.2 | 1.5 | 1.8 | 2.1 | 2.4  | 180                | 0.2 | 1.5 | 0.5D |

• Las cifras de la tabla anterior significan valor PHP.

• RDKT12

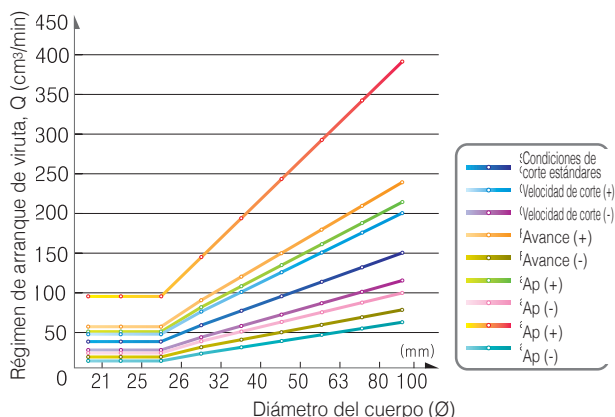
| Pieza Trabajo   | Calidades        | Ø32 | Ø33 | Ø40 | Ø50 | Ø63 | Ø80 | Ø100 | Ø125 | Condicion de Corte |     |     |      |
|---|------------------|-----|-----|-----|-----|-----|-----|------|------|--------------------|-----|-----|------|
|   |                  |     |     |     |     |     |     |      |      | vc                 | fz  | ap  | ae   |
| P<br>Acero en general (Menor 200HB)<br>Acero al Carbon (Menor 30 Hrc)<br>Aleacion de Acero, Acero alto Carbon (30-40 Hrc)<br>Aleacion de Acero, Acero alto Carbon (40-50 Hrc)<br>Aleacion de Acerol (over 50 Hrc) | PC3500<br>PC5300 | 1.7 | 1.7 | 2.6 | 3.5 | 3.5 | 4.4 | 5.3  | 6.1  | 200                | 0.4 | 1.5 | 0.5D |
|   |                  | 2   | 2   | 3.1 | 4.1 | 2.6 | 5.2 | 6.2  | 7.2  | 180                | 0.4 | 1.5 | 0.5D |
|   |                  | 2.2 | 2.2 | 3.3 | 4.4 | 2.8 | 5.6 | 6.7  | 7.8  | 160                | 0.4 | 1.5 | 0.5D |
|   |                  | 1   | 1   | 1.5 | 1.6 | 2.1 | 2.6 | 3.1  | 3.6  | 140                | 0.3 | 1.0 | 0.5D |
|   |                  | 0.7 | 0.7 | 1   | 1.4 | 0.8 | 1.7 | 2.1  | 2.4  | 100                | 0.3 | 1.0 | 0.5D |
| M<br>Acero Inoxidable   | PC5300           | 0.5 | 0.5 | 0.8 | 1.1 | 0.7 | 1.4 | 1.7  | 2    | 130                | 0.2 | 1.5 | 0.5D |
| K<br>Fundición  | PC5300           | 0.6 | 0.6 | 0.9 | 1.2 | 0.7 | 1.5 | 1.8  | 2.1  | 180                | 0.2 | 1.5 | 0.5D |

• Las cifras de la tabla anterior significan valor PHP.

### Rango de Desalojo de Viruta por Condicion de Corte

• Inserto Usado: RDKT10

• Variacion en Condicion de Corte

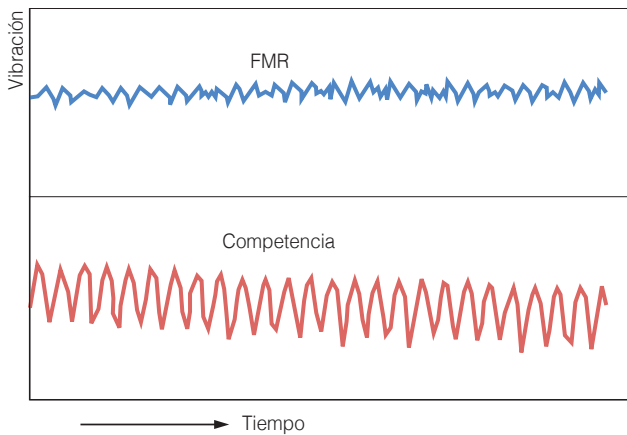


| Estandard  | ISO      |          |          |           |
|------------|----------|----------|----------|-----------|
|            | vc = 200 | fz = 0.4 | ap = 1.5 | ae = 0.5D |
| Vel. (+)   | 250      |          |          |           |
| Vel. (-)   | 150      |          |          |           |
| Avance (+) | 0.6      |          |          |           |
| Avance (-) | 0.2      |          |          |           |
| ap (+)     | 2        |          |          |           |
| ap (-)     | 1        |          |          |           |
| ae (+)     | D        |          |          |           |
| ae (-)     | 0.2D     |          |          |           |

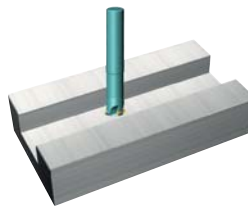


# Future Mill (FMR)

## Prueba de Vibración FMR



### Ej. Maquinado



- **Pieza Trabajo** STD11
- **Condicion Corte**
  - vc (m/min) = 200
  - fz (mm/diente) = 0.40
  - ap (mm) = 2.0
  - ae (mm) = 4.0
- **Denominación**
  - Insertos** RDKT10T3M0-MM (PC3500)
  - Porta herramienta** FMRS3032RD-S

## Formulas para Fresado

| Vel de Corte | RPM |
|--------------|-----|
|--------------|-----|

$$vc = \frac{\pi \times D \times n}{1000} \text{ (m/min)}$$

$$n = \frac{vc \times 1000}{\pi \times D} \text{ (min}^{-1}\text{)}$$

| Avance (por diente) | Avance (por minuto) |
|---------------------|---------------------|
|---------------------|---------------------|

$$vf = \frac{vf}{Z \times n} \text{ (mm/diente)}$$

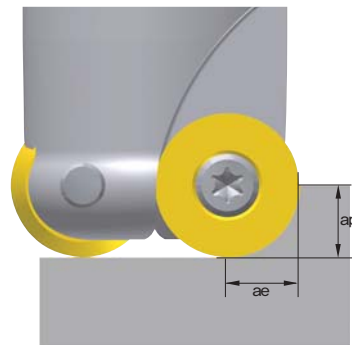
$$vf = fz \times n \times z \text{ (mm/min)}$$

| Rango de desalhojo de viruta | Poder de Maquinado Requerido |
|------------------------------|------------------------------|
|------------------------------|------------------------------|

$$Q = \frac{ap \times ae \times vf}{1000} \text{ (cm}^3\text{/min)}$$

$$Pkw = \frac{Q \times kc}{60 \times 102 \times \eta} \text{ (kW)}$$

$$Php = \frac{Pc}{0.75} \text{ (hp)}$$



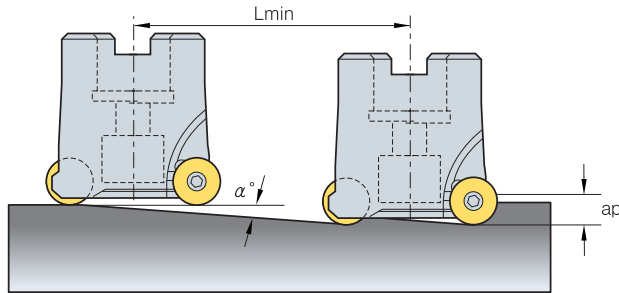
|                                       |  |
|---------------------------------------|--|
| vc = Vel. de Corte (m/min)            | Pkw = H.P.Requeridos (kW)                      |
| n = R.P.M (min <sup>-1</sup> )        | H = Hp Requerido (hp)                          |
| D = Diam. De Corte (mm)               | Q = Desalhojo de Viruta (cm <sup>3</sup> /min) |
| De = Diametro de Corte Eficiente (mm) | ap = Profundidas de Corte (mm)                 |
| vf = Avance por min (mm/min)          | ae = Anchura del Corte (mm)                    |
| fz = Avance por Diente (mm/diente)    | kc = Resistencia de Corte Especifica (MPa)     |
| z = Avance por Diente                 | η = Eficiencia Mecanica (%)                    |
| Pc = Poder Requerido (kW)             |  |

## Alimentación según profundidad de corte

| Codigo       | Rompeviruta | Profundidad de Corte (mm) |         |      |      |      |      |      |      |      |
|--------------|-------------|---------------------------|---------|------|------|------|------|------|------|------|
|              |             | 0.2~0.5                   | 0.5~1.0 | 2.0  | 3.0  | 4.0  | 5.0  | 6.0  | 7.0  | 8.0  |
| RDHW0501M0   | -           | 0.25                      | 0.15    | -    | -    | -    | -    | -    | -    | -    |
| RDHW06T1M0   | -           | 0.30                      | 0.20    | 0.10 | -    | -    | -    | -    | -    | -    |
| RDHW0702M0   | -           | 0.35                      | 0.25    | 0.10 | 0.07 | -    | -    | -    | -    | -    |
| RDHW0803M0   | -           | 0.40                      | 0.30    | 0.15 | 0.01 | -    | -    | -    | -    | -    |
| RDKT10T3M0 - | MF/MM       | -                         | 0.40    | 0.35 | 0.30 | 0.20 | -    | -    | -    | -    |
| RDKT1204M0 - | MF/MM       | -                         | 0.50    | 0.45 | 0.30 | 0.25 | 0.22 | -    | -    | -    |
| RDHW1605M0   | -           | -                         | 0.60    | 0.50 | 0.45 | 0.35 | 0.30 | 0.20 | 0.10 | -    |
| RDHW2006M0   | -           | -                         | -       | 0.60 | 0.50 | 0.40 | 0.30 | 0.25 | 0.15 | 0.10 |
| RDKT1605M0 - | MM          | -                         | 0.60    | 0.50 | 0.45 | 0.35 | 0.30 | 0.20 | 0.10 | -    |
| RDKT2006M0 - | MM          | -                         | -       | 0.60 | 0.50 | 0.40 | 0.30 | 0.25 | 0.15 | 0.10 |

## Future Mill (FMR)

### Información técnica de Plano Inclinado



$$L_{min} = \frac{ap}{\tan \alpha^\circ} \text{ (mm)}$$

※ Lmin: Inclinación Min. de corte  
 $\alpha^\circ$ : Angulo Max. plano inclinado  
 ap: Profundidad de corte.

(mm)

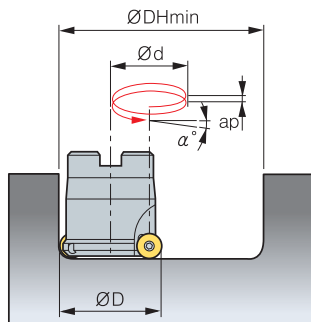
| Sección | Diametro Herramienta | Angulo del Plano $\alpha^\circ$ (Max) | Condición de Corte L (mm) para plano inclinado |        |          |        |          |        |        |        |        |         |
|---------|----------------------|---------------------------------------|--|--------|----------|--------|----------|--------|--------|--------|--------|---------|
|         |                      |                                       | ap = 1   | ap = 2 | ap = 2.5 | ap = 3 | ap = 3.5 | ap = 4 | ap = 5 | ap = 6 | ap = 8 | ap = 10 |
| FMR1000 | 08                   | 18.14                                 | 3  | 6      | 8        | -      | -        | -      | -      | -      | -      | -       |
|         | 10                   | 11.7                                  | 5  | 10     | 12       | -      | -        | -      | -      | -      | -      | -       |
|         | 12                   | 8.43                                  | 7  | 13     | 17       | -      | -        | -      | -      | -      | -      | -       |
|         | 15                   | 5.93                                  | 10   | 19     | 24       | -      | -        | -      | -      | -      | -      | -       |
| FMR1500 | 10                   | 20.67                                 | 21   | 5      | 7        | 8      | -        | -      | -      | -      | -      | -       |
|         | 12                   | 10.05                                 | 10   | 11     | 14       | 17     | -        | -      | -      | -      | -      | -       |
|         | 16                   | 6.12                                  | 6  | 19     | 23       | 28     | -        | -      | -      | -      | -      | -       |
|         | 20                   | 4.36                                  | 4  | 26     | 33       | 39     | -        | -      | -      | -      | -      | -       |
| FMR2000 | 15                   | 9.42                                  | 6  | 12     | 15       | 18     | 21       | -      | -      | -      | -      | -       |
|         | 20                   | 5.85                                  | 10   | 20     | 24       | 29     | 34       | -      | -      | -      | -      | -       |
| FMR2500 | 16                   | 13.7                                  | 4  | 8      | 10       | 12     | 14       | 16     | -      | -      | -      | -       |
|         | 20                   | 9.29                                  | 6  | 12     | 15       | 18     | 21       | 24     | -      | -      | -      | -       |
|         | 25                   | 6.56                                  | 9  | 17     | 22       | 26     | 30       | 35     | -      | -      | -      | -       |
| FMR3000 | 25                   | 21.8                                  | 3  | 5      | 6        | 8      | 9        | 10     | 13     | -      | -      | -       |
|         | 32                   | 13.24                                 | 4  | 9      | 11       | 13     | 15       | 17     | 21     | -      | -      | -       |
|         | 40                   | 9.09                                  | 6  | 13     | 16       | 19     | 22       | 25     | 31     | -      | -      | -       |
|         | 50                   | 6.52                                  | 9  | 17     | 22       | 26     | 31       | 35     | 44     | -      | -      | -       |
|         | 63                   | 4.76                                  | 12   | 24     | 30       | 36     | 42       | 48     | 60     | -      | -      | -       |
|         | 80                   | 3.52                                  | 16   | 33     | 41       | 49     | 57       | 65     | 81     | -      | -      | -       |
| FMR4000 | 100                  | 2.69                                  | 21   | 43     | 53       | 64     | 74       | 85     | 106    | -      | -      | -       |
|         | 32                   | 15.95                                 | 3  | 7      | 9        | 10     | 12       | 14     | 17     | 21     | -      | -       |
|         | 40                   | 10.3                                  | 6  | 11     | 14       | 17     | 19       | 22     | 28     | 33     | -      | -       |
|         | 50                   | 7.13                                  | 8  | 16     | 20       | 24     | 28       | 32     | 40     | 48     | -      | -       |
|         | 63                   | 5.08                                  | 11   | 22     | 28       | 34     | 39       | 45     | 56     | 67     | -      | -       |
|         | 80                   | 3.69                                  | 16   | 31     | 39       | 47     | 54       | 62     | 78     | 93     | -      | -       |
|         | 100                  | 2.79                                  | 21   | 41     | 51       | 62     | 72       | 82     | 103    | 123    | -      | -       |
| FMR5000 | 125                  | 2.14                                  | 27   | 54     | 67       | 80     | 94       | 107    | 134    | 161    | -      | -       |
|         | 40                   | 7.4                                   | 8  | 15     | 19       | 23     | 27       | 31     | 38     | 46     | 62     | -       |
|         | 50                   | 5.22                                  | 11   | 22     | 27       | 33     | 38       | 44     | 55     | 66     | 88     | -       |
|         | 63                   | 3.79                                  | 15   | 30     | 38       | 45     | 53       | 60     | 75     | 91     | 121    | -       |
|         | 80                   | 2.97                                  | 19   | 39     | 48       | 58     | 67       | 77     | 96     | 116    | 154    | -       |
|         | 100                  | 2.09                                  | 27   | 55     | 69       | 82     | 96       | 110    | 137    | 164    | 219    | -       |
| FMR6000 | 125                  | 1.63                                  | 35   | 70     | 88       | 105    | 123      | 141    | 176    | 211    | 281    | -       |
|         | 40                   | 7.44                                  | 8  | 15     | 19       | 23     | 27       | 31     | 38     | 46     | 61     | 77      |
|         | 50                   | 4.97                                  | 11   | 23     | 29       | 34     | 40       | 46     | 57     | 69     | 92     | 46      |
|         | 63                   | 3.69                                  | 16   | 31     | 39       | 47     | 54       | 62     | 78     | 93     | 124    | 62      |
|         | 80                   | 2.72                                  | 21   | 42     | 53       | 63     | 74       | 84     | 105    | 126    | 168    | 84      |
|         | 100                  | 2.12                                  | 27   | 54     | 68       | 81     | 95       | 108    | 135    | 162    | 216    | 108     |
|         | 125                  | 1.57                                  | 36   | 73     | 91       | 109    | 128      | 146    | 182    | 219    | 292    | 146     |





# Future Mill (FMR)

## Información en corte helicoidal - ØDHmin



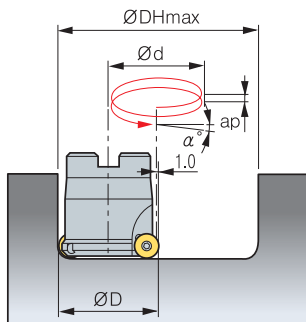
- ØD = diam. de la Herramienta (mm), ØDHmin, Max = Diametro Min, Max (mm)
- Ød = Trayectoria Hetta (mm)
- ØDHmin (Diametro Max) = ØD x 2 - Tam. Inserto, ØDHmax (Diametro Max) = ØD x 2 - 2
- Ød (Trayectoria de la hetta) = ØDHmin, Max - ØD

(mm)

| Sección | Inserto | Diametro Herramienta | ØDHmin | Ød  | Angulo plano (α°) |        |          |        |          |        |        |        |        |         |
|---------|---------|----------------------|--------|-----|-------------------|--------|----------|--------|----------|--------|--------|--------|--------|---------|
|         |         |                      |        |     | ap = 1            | ap = 2 | ap = 2.5 | ap = 3 | ap = 3.5 | ap = 4 | ap = 5 | ap = 6 | ap = 8 | ap = 10 |
| FMR1000 | 5       | 08                   | 11     | 3   | 6.11              | 12.35  | 15.57    | -      | -        | -      | -      | -      | -      | -       |
|         | 5       | 10                   | 15     | 5   | 3.65              | 7.34   | 7.34     | -      | -        | -      | -      | -      | -      | -       |
|         | 5       | 12                   | 19     | 7   | 2.61              | 5.23   | 5.23     | -      | -        | -      | -      | -      | -      | -       |
|         | 5       | 15                   | 25     | 10  | 1.83              | 3.65   | 3.65     | -      | -        | -      | -      | -      | -      | -       |
| FMR1500 | 6       | 10                   | 14     | 4   | 4.57              | 9.20   | 9.20     | 13.95  | -        | -      | -      | -      | -      | -       |
|         | 6       | 12                   | 18     | 6   | 3.04              | 6.11   | 6.11     | 9.20   | -        | -      | -      | -      | -      | -       |
|         | 6       | 16                   | 26     | 10  | 1.83              | 3.65   | 3.65     | 5.49   | -        | -      | -      | -      | -      | -       |
|         | 6       | 20                   | 34     | 14  | 1.30              | 2.61   | 2.61     | 3.92   | -        | -      | -      | -      | -      | -       |
| FMR2000 | 7       | 15                   | 23     | 8   | 2.28              | 4.57   | 4.57     | 6.88   | 8.04     | -      | -      | -      | -      | -       |
|         | 7       | 20                   | 33     | 13  | 1.40              | 2.81   | 2.81     | 4.22   | 4.92     | -      | -      | -      | -      | -       |
| FMR2500 | 8       | 16                   | 24     | 8   | 2.28              | 4.57   | 4.57     | 6.88   | 8.04     | 9.20   | -      | -      | -      | -       |
|         | 8       | 20                   | 32     | 12  | 1.52              | 3.04   | 3.04     | 4.57   | 5.34     | 6.11   | -      | -      | -      | -       |
|         | 8       | 25                   | 42     | 17  | 1.07              | 2.15   | 2.15     | 3.22   | 3.76     | 4.30   | -      | -      | -      | -       |
| FMR3000 | 10      | 25                   | 40     | 15  | 1.22              | 2.43   | 2.43     | 3.65   | 4.27     | 4.88   | 6.11   | -      | -      | -       |
|         | 10      | 32                   | 54     | 22  | 0.83              | 1.66   | 1.66     | 2.49   | 2.91     | 3.32   | 4.15   | -      | -      | -       |
|         | 10      | 40                   | 70     | 30  | 0.61              | 1.22   | 1.22     | 1.83   | 2.13     | 2.43   | 3.04   | -      | -      | -       |
|         | 10      | 50                   | 90     | 40  | 0.46              | 0.91   | 0.91     | 1.37   | 1.60     | 1.83   | 2.28   | -      | -      | -       |
|         | 10      | 63                   | 116    | 53  | 0.34              | 0.69   | 0.69     | 1.03   | 1.21     | 1.38   | 1.72   | -      | -      | -       |
|         | 10      | 80                   | 150    | 70  | 0.26              | 0.52   | 0.52     | 0.78   | 0.91     | 1.04   | 1.30   | -      | -      | -       |
| FMR4000 | 12      | 32                   | 52     | 20  | 0.91              | 1.83   | 1.83     | 2.74   | 3.20     | 3.65   | 4.57   | 5.49   | -      | -       |
|         | 12      | 40                   | 68     | 28  | 0.65              | 1.30   | 1.30     | 1.96   | 2.28     | 2.61   | 3.26   | 3.92   | -      | -       |
|         | 12      | 50                   | 88     | 38  | 0.48              | 0.96   | 0.96     | 1.44   | 1.68     | 1.92   | 2.40   | 2.88   | -      | -       |
|         | 12      | 63                   | 114    | 51  | 0.36              | 0.72   | 0.72     | 1.07   | 1.25     | 1.43   | 1.79   | 2.15   | -      | -       |
|         | 12      | 80                   | 148    | 68  | 0.27              | 0.54   | 0.54     | 0.81   | 0.94     | 1.07   | 1.34   | 1.61   | -      | -       |
|         | 12      | 100                  | 188    | 88  | 0.21              | 0.41   | 0.41     | 0.62   | 0.73     | 0.83   | 1.04   | 1.24   | -      | -       |
|         | 12      | 125                  | 238    | 113 | 0.16              | 0.32   | 0.32     | 0.48   | 0.57     | 0.65   | 0.81   | 0.97   | -      | -       |
| FMR5000 | 16      | 40                   | 64     | 24  | 0.76              | 1.52   | 1.52     | 2.28   | 2.66     | 3.04   | 3.81   | 4.57   | 6.11   | -       |
|         | 16      | 50                   | 84     | 34  | 0.54              | 1.07   | 1.07     | 1.61   | 1.88     | 2.15   | 2.69   | 3.22   | 4.30   | -       |
|         | 16      | 63                   | 110    | 47  | 0.39              | 0.78   | 0.78     | 1.16   | 1.36     | 1.55   | 1.94   | 2.33   | 3.11   | -       |
|         | 16      | 80                   | 144    | 64  | 0.29              | 0.57   | 0.57     | 0.86   | 1.00     | 1.14   | 1.43   | 1.71   | 2.28   | -       |
|         | 16      | 100                  | 184    | 84  | 0.22              | 0.43   | 0.43     | 0.65   | 0.76     | 0.87   | 1.09   | 1.30   | 1.74   | -       |
|         | 16      | 125                  | 234    | 109 | 0.17              | 0.33   | 0.33     | 0.50   | 0.59     | 0.67   | 0.84   | 1.00   | 1.34   | -       |
| FMR6000 | 20      | 50                   | 80     | 30  | 0.61              | 1.22   | 1.22     | 1.83   | 2.13     | 2.43   | 3.04   | 3.65   | 4.88   | 6.11    |
|         | 20      | 63                   | 106    | 43  | 0.42              | 0.85   | 0.85     | 1.27   | 1.49     | 1.70   | 2.12   | 2.55   | 3.40   | 4.25    |
|         | 20      | 80                   | 140    | 60  | 0.30              | 0.61   | 0.61     | 0.91   | 1.06     | 1.22   | 1.52   | 1.83   | 2.43   | 3.04    |
|         | 20      | 100                  | 180    | 80  | 0.23              | 0.46   | 0.46     | 0.68   | 0.80     | 0.91   | 1.14   | 1.37   | 1.83   | 2.28    |
|         | 20      | 125                  | 230    | 105 | 0.17              | 0.35   | 0.35     | 0.52   | 0.61     | 0.70   | 0.87   | 1.04   | 1.39   | 1.74    |
|         | 20      | 160                  | 300    | 140 | 0.13              | 0.26   | 0.26     | 0.39   | 0.46     | 0.52   | 0.65   | 0.78   | 1.04   | 1.30    |

## Future Mill (FMR)

### Información en corte helicoidal - ØDHmax



- ØD = diam. de la Herramienta (mm), ØDHmin, Max = Diametro Min, Max (mm)
- Ød = Trayectoria Hetta (mm)
- ØDHmin (Diametro Max) = ØD x 2 - Tam. Inserto, ØDHmax (Diametro Max) = ØD x 2 - 2
- Ød (Trayectoria de la hetta) = ØDHmin, Max - ØD

(mm)

| Sección | Inserto | Diametro Herramienta | ØDHmax | Ød  | Angulo plano (α°) |        |          |        |          |        |        |        |        |         |
|---------|---------|----------------------|--------|-----|-------------------|--------|----------|--------|----------|--------|--------|--------|--------|---------|
|         |         |                      |        |     | ap = 1            | ap = 2 | ap = 2.5 | ap = 3 | ap = 3.5 | ap = 4 | ap = 5 | ap = 6 | ap = 8 | ap = 10 |
| FMR1000 | 5       | 08                   | 14     | 6   | 3.04              | 6.11   | 7.65     | -      | -        | -      | -      | -      | -      | -       |
|         | 5       | 10                   | 18     | 8   | 2.28              | 4.57   | 5.72     | -      | -        | -      | -      | -      | -      | -       |
|         | 5       | 12                   | 22     | 10  | 1.83              | 3.65   | 4.57     | -      | -        | -      | -      | -      | -      | -       |
|         | 5       | 15                   | 28     | 13  | 1.40              | 2.81   | 3.51     | -      | -        | -      | -      | -      | -      | -       |
| FMR1500 | 6       | 10                   | 18     | 8   | 2.28              | 4.57   | 5.72     | 6.88   | -        | -      | -      | -      | -      | -       |
|         | 6       | 12                   | 22     | 10  | 1.83              | 3.65   | 4.57     | 5.49   | -        | -      | -      | -      | -      | -       |
|         | 6       | 16                   | 30     | 14  | 1.30              | 2.61   | 3.26     | 3.92   | -        | -      | -      | -      | -      | -       |
|         | 6       | 20                   | 38     | 18  | 1.01              | 2.03   | 2.54     | 3.04   | -        | -      | -      | -      | -      | -       |
| FMR2000 | 7       | 15                   | 28     | 13  | 1.40              | 2.81   | 3.51     | 4.22   | 4.92     | -      | -      | -      | -      | -       |
|         | 7       | 20                   | 38     | 18  | 1.01              | 2.03   | 2.54     | 3.04   | 3.55     | -      | -      | -      | -      | -       |
| FMR2500 | 8       | 16                   | 30     | 14  | 1.30              | 2.61   | 3.26     | 3.92   | 4.57     | 5.23   | -      | -      | -      | -       |
|         | 8       | 20                   | 38     | 18  | 1.01              | 2.03   | 2.54     | 3.04   | 3.55     | 4.06   | -      | -      | -      | -       |
|         | 8       | 25                   | 48     | 23  | 0.79              | 1.59   | 1.98     | 2.38   | 2.78     | 3.18   | -      | -      | -      | -       |
| FMR3000 | 10      | 25                   | 48     | 23  | 0.79              | 1.59   | 1.98     | 2.38   | 2.78     | 3.18   | 3.97   | -      | -      | -       |
|         | 10      | 32                   | 62     | 30  | 0.61              | 1.22   | 1.52     | 1.83   | 2.13     | 2.43   | 3.04   | -      | -      | -       |
|         | 10      | 40                   | 78     | 38  | 0.48              | 0.96   | 1.20     | 1.44   | 1.68     | 1.92   | 2.40   | -      | -      | -       |
|         | 10      | 50                   | 98     | 48  | 0.38              | 0.76   | 0.95     | 1.14   | 1.33     | 1.52   | 1.90   | -      | -      | -       |
|         | 10      | 63                   | 124    | 61  | 0.30              | 0.60   | 0.75     | 0.90   | 1.05     | 1.20   | 1.50   | -      | -      | -       |
|         | 10      | 80                   | 158    | 78  | 0.23              | 0.47   | 0.58     | 0.70   | 0.82     | 0.94   | 1.17   | -      | -      | -       |
|         | 10      | 100                  | 198    | 98  | 0.19              | 0.37   | 0.47     | 0.56   | 0.65     | 0.74   | 0.93   | -      | -      | -       |
| FMR4000 | 12      | 32                   | 62     | 30  | 0.61              | 1.22   | 1.52     | 1.83   | 2.13     | 2.43   | 3.04   | 3.65   | -      | -       |
|         | 12      | 40                   | 78     | 38  | 0.48              | 0.96   | 1.20     | 1.44   | 1.68     | 1.92   | 2.40   | 2.88   | -      | -       |
|         | 12      | 50                   | 98     | 48  | 0.38              | 0.76   | 0.95     | 1.14   | 1.33     | 1.52   | 1.90   | 2.28   | -      | -       |
|         | 12      | 63                   | 124    | 61  | 0.30              | 0.60   | 0.75     | 0.90   | 1.05     | 1.20   | 1.50   | 1.80   | -      | -       |
|         | 12      | 80                   | 158    | 78  | 0.23              | 0.47   | 0.58     | 0.70   | 0.82     | 0.94   | 1.17   | 1.40   | -      | -       |
|         | 12      | 100                  | 198    | 98  | 0.19              | 0.37   | 0.47     | 0.56   | 0.65     | 0.74   | 0.93   | 1.12   | -      | -       |
|         | 12      | 125                  | 248    | 123 | 0.15              | 0.30   | 0.37     | 0.45   | 0.52     | 0.59   | 0.74   | 0.89   | -      | -       |
| FMR5000 | 16      | 40                   | 78     | 38  | 0.48              | 0.96   | 1.20     | 1.44   | 1.68     | 1.92   | 2.40   | 2.88   | 3.85   | -       |
|         | 16      | 50                   | 98     | 48  | 0.38              | 0.76   | 0.95     | 1.14   | 1.33     | 1.52   | 1.90   | 2.28   | 3.04   | -       |
|         | 16      | 63                   | 124    | 61  | 0.30              | 0.60   | 0.75     | 0.90   | 1.05     | 1.20   | 1.50   | 1.80   | 2.39   | -       |
|         | 16      | 80                   | 158    | 78  | 0.23              | 0.47   | 0.58     | 0.70   | 0.82     | 0.94   | 1.17   | 1.40   | 1.87   | -       |
|         | 16      | 100                  | 198    | 98  | 0.19              | 0.37   | 0.47     | 0.56   | 0.65     | 0.74   | 0.93   | 1.12   | 1.49   | -       |
|         | 16      | 125                  | 248    | 123 | 0.15              | 0.30   | 0.37     | 0.45   | 0.52     | 0.59   | 0.74   | 0.89   | 1.19   | -       |
| FMR6000 | 20      | 50                   | 98     | 48  | 0.38              | 0.76   | 0.95     | 1.14   | 1.33     | 1.52   | 1.90   | 2.28   | 3.04   | 3.81    |
|         | 20      | 63                   | 124    | 61  | 0.30              | 0.60   | 0.75     | 0.90   | 1.05     | 1.20   | 1.50   | 1.80   | 2.39   | 2.99    |
|         | 20      | 80                   | 158    | 78  | 0.23              | 0.47   | 0.58     | 0.70   | 0.82     | 0.94   | 1.17   | 1.40   | 1.87   | 2.34    |
|         | 20      | 100                  | 198    | 98  | 0.19              | 0.37   | 0.47     | 0.56   | 0.65     | 0.74   | 0.93   | 1.12   | 1.49   | 1.86    |
|         | 20      | 125                  | 248    | 123 | 0.15              | 0.30   | 0.37     | 0.45   | 0.52     | 0.59   | 0.74   | 0.89   | 1.19   | 1.48    |
|         | 20      | 160                  | 318    | 158 | 0.12              | 0.23   | 0.29     | 0.35   | 0.40     | 0.46   | 0.58   | 0.69   | 0.92   | 1.16    |



Serie para moldes Future Mill

# FMR P-positive

- El sistema de sujeción estable permite un mecanizado y productividad estables
- La variada línea de productos garantiza una amplia gama de aplicaciones
- Forma y calidad óptimas con alta dureza para el mecanizado de materiales difíciles de cortar

## Características

- El ángulo positivo de 11°, P, asegura una gran rigidez en maquinado de moldes de acero y la posibilidad de mecanizar aleaciones de alta resistencia.
- La superficie plana del inserto evita la interferencia y la revolución durante el mecanizado
- Grados óptimos y rompevirutas para diversas piezas
- rompevirutas
  - La forma cóncava asegura un bolsillo de viruta ancho y baja temperatura de corte
  - Despeje de la cara para evitar la rotación.
  - Previene la rotación en el mecanizado.
  - Divide las esquinas
  - Previene las interferencias en el mecanizado de alta alimentación.
  - Asegura una sujeción estable.
- Sistema de refrigeración interna.
  - Excelente evacuación de viruta.
  - El bajo calor de corte asegura una larga vida útil de la herramienta

## Características de los rompevirutas

| Rompeviruta      |  | Filo de corte | Usos                             | Características   |
|------------------|--|---------------|----------------------------------|---|
| MA               |  |               | Maquinado de aluminio            | El filo óptimo para el mecanizado de aluminio y la superficie pulida garantizan una alta maquinabilidad   |
| ML               |  |               | Titanio e inconel                | Excelentes resultados en mecanizado de titanio gracias al filo de corte de alta dureza y el rompevirutas positivo que reduce la carga de corte. |
| MF               |  |               | Acabado                          | El rompevirutas para una baja resistencia al corte permite un acabado fino  |
| MM               |  |               | Maquinado general                | Uso general   |
| Sin rompevirutas |  |               | Maquinado de metales endurecidos | Para acero endurecido y aleaciones termorresistentes  |

## Condiciones de corte recomendadas

\*Rompe virutas recomendado: ● Primero ○ Segundo

| Pieza Trabajo                    | Dureza                             | Grados           | Condiciones de corte |                |           |           | Rompe virutas |           |    |    |                 |   |   |
|----------------------------------|------------------------------------|------------------|----------------------|----------------|-----------|-----------|---------------|-----------|----|----|-----------------|---|---|
|                                  |                                    |                  | vc (m/min)           | fz (mm/diente) | ap (mm)   | ae (mm)   | MA            | ML        | MF | MM | None C/B<br>1 2 |   |   |
| <b>P</b>                         | Acero al carbono bajo              | HB80~180         | PC5400               | 100~250        | 0.12~0.70 | 0.3~6.0   | 0.7D~0.1D     | -         | -  | ●  | ○               | - | - |
|                                  | Acero al carbono alto              | HB180~280        | PC5400               | 100~220        | 0.12~0.70 | 0.3~6.0   | 0.7D~0.1D     | -         | -  | ●  | ○               | - | - |
|                                  | Acero aleado bajo                  | Debajo HRC27     | PC3600               | 180~290        | 0.20~0.60 | 0.3~6.0   | 0.7D~0.1D     | -         | -  | -  | ●               | ○ | - |
|                                  |                                    |                  | PC5400/PC5300        | 100~200        | 0.20~0.60 | 0.3~6.0   | 0.7D~0.1D     | -         | -  | -  | ●               | ○ | - |
|                                  | Acero aleado bajo pre-endurecido   | HRC20~50         | PC3600               | 130~250        | 0.30~0.50 | ~ 0.5     | 0.7D~0.1D     | -         | -  | -  | -               | ● | ○ |
|                                  |                                    |                  | PC2510/PC5300        | 50~150         | 0.30~0.50 | ~ 0.5     | 0.7D~0.1D     | -         | -  | -  | -               | ● | ○ |
|                                  | Acero aleado alto                  | Debajo HRC27     | PC3600               | 130~250        | 0.30~0.50 | ~ 0.5     | 0.7D~0.1D     | -         | -  | -  | ●               | ○ | - |
| PC5300                           |                                    |                  | 100~220              | 0.30~0.50      | ~ 0.5     | 0.7D~0.1D | -             | -         | -  | ●  | ○               | - |   |
| Acero aleado alto pre-endurecido | HRC20~48                           | PC2510/PC5300    | 50~150               | 0.30~0.50      | ~ 0.5     | 0.7D~0.1D | -             | -         | -  | -  | ●               | ○ |   |
| <b>M</b>                         | Inoxidable                         | Debajo HB270     | PC5300/PC5400        | 100~150        | 0.20~0.60 | 0.3~6.0   | 0.7D~0.1D     | -         | -  | ○  | ●               | - | - |
| <b>K</b>                         | Fundición gris y dúctil            | Debajo 350MPa    | PC5300               | 120~210        | 0.20~0.60 | 0.3~6.0   | 0.7D~0.1D     | -         | -  | ○  | ●               | - | - |
| <b>N</b>                         | Aluminio                           | -                | H01                  | 300~800        | 0.30~0.60 | 0.3~6.0   | 0.7D~0.1D     | ●         | -  | -  | -               | - | - |
| <b>S</b>                         | Aleaciones termorresistentes       | Fe               | HRC20~30             | PC5300/PC5400  | 35~60     | 0.30~0.50 | ~ 0.5         | 0.7D~0.1D | -  | ●  | ○               | - | - |
|                                  |                                    | Ni o Co          | HRC40~45             | PC5300/PC5400  | 30~50     | 0.30~0.50 | ~ 0.5         | 0.7D~0.1D | -  | ●  | ○               | - | - |
|                                  | Titanio                            | HRC35~45         | PC5300/PC5400        | 40~70          | 0.30~0.50 | ~ 1.5     | 0.7D~0.1D     | -         | ●  | ○  | -               | - |   |
| <b>H</b>                         | Materiales endurecidos y templados | Por encima HRC50 | PC2505/PC2510        | 30~50          | 0.30~0.50 | ~ 0.5     | 0.7D~0.1D     | -         | -  | -  | -               | ● | ○ |



## ➤ Avance por diente según Ap (fz, mm/diente)

(mm)

| Insertos | Tamaño de inserto (d) | Avance por diente según ap |        |        |        |        |        |        |         |
|----------|-----------------------|----------------------------|--------|--------|--------|--------|--------|--------|---------|
|          |                       | ap = 1                     | ap = 2 | ap = 3 | ap = 4 | ap = 5 | ap = 6 | ap = 8 | ap = 10 |
| RPMT08   | 8                     | 0.30                       | 0.22   | 0.18   | 0.15   | -      | -      | -      | -       |
| RPMT10   | 10                    | 0.40                       | 0.28   | 0.25   | 0.20   | 0.12   | -      | -      | -       |
| RPMT12   | 12                    | 0.60                       | 0.45   | 0.35   | 0.30   | 0.25   | 0.20   | -      | -       |
| RPMT16   | 16                    | 0.65                       | 0.45   | 0.40   | 0.32   | 0.30   | 0.28   | 0.23   | -       |
| RPMT20   | 20                    | 0.70                       | 0.50   | 0.42   | 0.35   | 0.32   | 0.29   | 0.25   | 0.22    |

## ➤ Análisis de prueba

### Acero aleado (SM490A Tratamiento térmico, HRC 38~40)

- Condiciones de Cortes**
  - vc (m/min) = 250
  - fz (mm/diente) = 0.6
  - ap (mm) = 1
  - Refrigerante
- Herramientas**
  - Insertos RPMT1204M0E-MF (PC5300)
  - Porta herramienta FMRS4032HRP-3L25



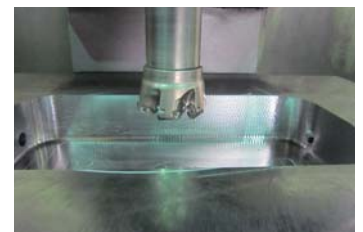
### Acero aleado bajo pre-endurecido (KP4M Tratamiento térmico, HRC 30~45)

- Condiciones de Cortes**
  - vc (m/min) = 178
  - fz (mm/diente) = 0.72
  - ap (mm) = 1.5
  - Seco (sin refrigerante)
- Herramientas**
  - Insertos RPMT1606M0S-MM (PC5300)
  - Porta herramienta FMRCM5063HRP-4



### Acero aleado bajo pre-endurecido (KP1, HRC 28~33)

- Condiciones de Cortes**
  - vc (m/min) = 178
  - fz (mm/diente) = 0.74
  - ap (mm) = 0.8
  - Seco (sin refrigerante)
- Herramientas**
  - Insertos RPMT1204M0E-MF (PC5300)
  - Porta herramienta FMRCM4063HRP-6



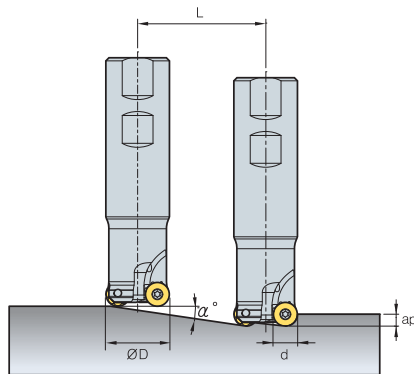
### Acero aleado bajo pre-endurecido (STD61, HRC 50~52)

- Condiciones de Cortes**
  - vc (m/min) = 50
  - fz (mm/diente) = 0.15
  - ap (mm) = 4.0
  - Seco (sin refrigerante)
- Herramientas**
  - Insertos RPMW1204M0S1 (PC5300)
  - Porta herramienta FMRS4032HRP-3L25



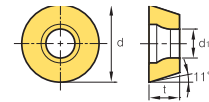
## FMR P-positive

### Ángulo máximo para maquinado en rampa



$$L_{min} = \frac{ap}{\tan \alpha^\circ} \text{ (mm)}$$

\* L (mm): Longitud de corte  
 $\alpha^\circ$ : ángulo máximo de rampa  
 ap: Profundidad de corte



(mm)

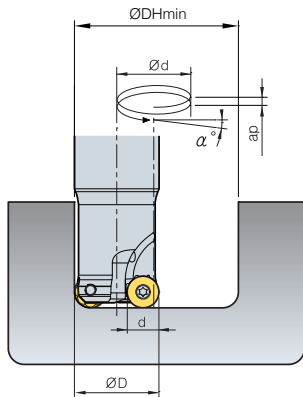
| Tamaño fresa | Tamaño inserto (d) | Diámetro herramienta. (ØD) | Ángulo de rampa $\alpha^\circ$ (max) | Longitud de corte (mm) según ap |        |          |        |          |        |        |        |        |         |
|--------------|--------------------|----------------------------|--------------------------------------|---------------------------------|--------|----------|--------|----------|--------|--------|--------|--------|---------|
|              |                    |                            |                                      | ap = 1                          | ap = 2 | ap = 2.5 | ap = 3 | ap = 3.5 | ap = 4 | ap = 5 | ap = 6 | ap = 8 | ap = 10 |
| FMR2500      | 8                  | 17                         | 4.7                                  | 12                              | 24     | 30       | 36     | 42       | 48     | -      | -      | -      | -       |
|              | 8                  | 18                         | 4.1                                  | 14                              | 28     | 34       | 41     | 48       | 55     | -      | -      | -      | -       |
|              | 8                  | 20                         | 15.4                                 | 4                               | 7      | 9        | 11     | 13       | 14     | -      | -      | -      | -       |
|              | 8                  | 21                         | 13.9                                 | 4                               | 8      | 10       | 12     | 14       | 16     | -      | -      | -      | -       |
|              | 8                  | 25                         | 9.8                                  | 6                               | 12     | 14       | 17     | 20       | 23     | -      | -      | -      | -       |
|              | 8                  | 26                         | 9.2                                  | 6                               | 12     | 16       | 19     | 22       | 25     | -      | -      | -      | -       |
| FMR3000      | 10                 | 25                         | 13.8                                 | 4                               | 8      | 10       | 12     | 14       | 16     | 20     | -      | -      | -       |
|              | 10                 | 26                         | 12.6                                 | 4                               | 9      | 11       | 13     | 16       | 18     | 22     | -      | -      | -       |
|              | 10                 | 32                         | 8.4                                  | 7                               | 14     | 17       | 20     | 24       | 27     | 34     | -      | -      | -       |
|              | 10                 | 33                         | 8.0                                  | 7                               | 14     | 18       | 21     | 25       | 29     | 36     | -      | -      | -       |
|              | 10                 | 40                         | 5.8                                  | 10                              | 20     | 25       | 30     | 34       | 39     | 49     | -      | -      | -       |
|              | 10                 | 50                         | 4.2                                  | 14                              | 27     | 34       | 41     | 48       | 55     | 68     | -      | -      | -       |
|              | 10                 | 63                         | 3.1                                  | 19                              | 37     | 47       | 56     | 65       | 75     | 93     | -      | -      | -       |
| FMR4000      | 12                 | 25                         | 4.5                                  | 13                              | 25     | 32       | 38     | 44       | 51     | 63     | 76     | -      | -       |
|              | 12                 | 26                         | 4.1                                  | 14                              | 28     | 35       | 42     | 49       | 56     | 70     | 84     | -      | -       |
|              | 12                 | 32                         | 14.7                                 | 4                               | 8      | 10       | 11     | 13       | 15     | 19     | 23     | -      | -       |
|              | 12                 | 33                         | 13.8                                 | 4                               | 8      | 10       | 12     | 14       | 16     | 20     | 24     | -      | -       |
|              | 12                 | 40                         | 9.6                                  | 6                               | 12     | 15       | 18     | 21       | 24     | 30     | 36     | -      | -       |
|              | 12                 | 50                         | 6.7                                  | 9                               | 17     | 21       | 26     | 30       | 34     | 43     | 51     | -      | -       |
|              | 12                 | 63                         | 4.8                                  | 12                              | 24     | 30       | 36     | 42       | 48     | 60     | 72     | -      | -       |
|              | 12                 | 66                         | 4.5                                  | 13                              | 26     | 32       | 38     | 45       | 51     | 64     | 77     | -      | -       |
|              | 12                 | 80                         | 3.5                                  | 17                              | 33     | 41       | 50     | 58       | 66     | 83     | 99     | -      | -       |
| FMR5000      | 16                 | 40                         | 17.8                                 | 3                               | 6      | 8        | 9      | 11       | 12     | 16     | 19     | 25     | -       |
|              | 16                 | 50                         | 11.3                                 | 5                               | 10     | 13       | 15     | 18       | 20     | 25     | 30     | 40     | -       |
|              | 16                 | 63                         | 7.6                                  | 7                               | 15     | 19       | 22     | 26       | 30     | 37     | 45     | 60     | -       |
|              | 16                 | 66                         | 7.1                                  | 8                               | 16     | 20       | 24     | 28       | 32     | 40     | 48     | 64     | -       |
|              | 16                 | 80                         | 5.3                                  | 11                              | 21     | 27       | 32     | 37       | 43     | 53     | 64     | 85     | -       |
|              | 16                 | 100                        | 4.0                                  | 14                              | 29     | 36       | 43     | 51       | 58     | 72     | 87     | 116    | -       |
|              | 16                 | 125                        | 3.0                                  | 19                              | 38     | 48       | 58     | 67       | 77     | 96     | 115    | 154    | -       |
|              | 16                 | 160                        | 2.2                                  | 26                              | 52     | 65       | 78     | 90       | 103    | 129    | 155    | 207    | -       |
| FMR6000      | 20                 | 50                         | 17.8                                 | 3                               | 6      | 8        | 9      | 11       | 12     | 16     | 19     | 25     | 31      |
|              | 20                 | 63                         | 11.1                                 | 5                               | 10     | 13       | 15     | 18       | 20     | 25     | 30     | 41     | 51      |
|              | 20                 | 80                         | 7.4                                  | 8                               | 15     | 19       | 23     | 27       | 31     | 38     | 46     | 61     | 77      |
|              | 20                 | 100                        | 5.3                                  | 11                              | 21     | 27       | 32     | 37       | 43     | 53     | 64     | 85     | 107     |
|              | 20                 | 125                        | 4.0                                  | 14                              | 29     | 36       | 43     | 51       | 58     | 72     | 87     | 116    | 145     |
|              | 20                 | 160                        | 2.9                                  | 20                              | 40     | 49       | 59     | 69       | 79     | 99     | 119    | 158    | 198     |
|              | 20                 | 200                        | 2.2                                  | 26                              | 52     | 65       | 78     | 90       | 103    | 129    | 155    | 207    | 258     |
|              | 20                 | 250                        | 1.7                                  | 33                              | 67     | 84       | 100    | 117      | 134    | 167    | 200    | 267    | 334     |

\* Tamaño inserto (d): por favor refiérase a las páginas E19 y E20 para los planos de los insertos disponibles



## FMR P-positive

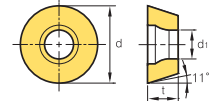
### ↳ Listado de diámetros mínimos de agujeros a maquinarse para maquinado helicoidal (ØDHmin)



- ØD = Diámetro herramienta. (mm)
- ØD (Paso de la herramienta, mm) = ØDHmin, Max - ØD
- ØDHmin (Diámetro mínimo agujero) = ØD × 2 - Tamaño inserto (d)
- ØDHmax (Diámetro máximo agujero) = ØD × 2 - 2

• Ángulo de rampa según Ap ( $\alpha^\circ$ ) =  $\tan^{-1}\left(\frac{ap}{\pi \times \text{Ød}}\right)$   
 Ángulo de rampeado circular no puede exceder ángulo máximo

- ap = Profundidad de corte



(mm)

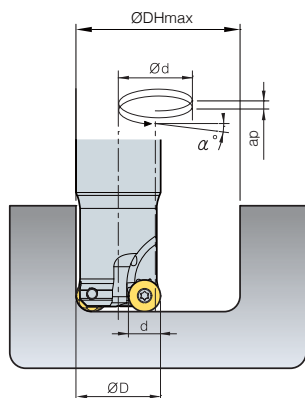
| Tamaño fresa | Tamaño inserto (d) | Diámetro herramienta. (ØD) | Ángulo de rampa α° (max) | ØDHmin | Ød  | Ángulo de rampa según Ap(α°) |        |          |        |          |        |        |        |        |         |   |   |
|--------------|--------------------|----------------------------|--------------------------|--------|-----|------------------------------|--------|----------|--------|----------|--------|--------|--------|--------|---------|---|---|
|              |                    |                            |                          |        |     | ap = 1                       | ap = 2 | ap = 2.5 | ap = 3 | ap = 3.5 | ap = 4 | ap = 5 | ap = 6 | ap = 8 | ap = 10 |   |   |
| FMR2500      | 8                  | 17                         | 4.7                      | 26     | 9   | 2.03                         | 4.06   | -        | -      | -        | -      | -      | -      | -      | -       | - | - |
|              | 8                  | 18                         | 4.1                      | 28     | 10  | 1.83                         | 3.65   | -        | -      | -        | -      | -      | -      | -      | -       | - | - |
|              | 8                  | 20                         | 15.4                     | 32     | 12  | 1.52                         | 3.04   | 3.81     | 4.57   | 5.34     | 6.11   | -      | -      | -      | -       | - | - |
|              | 8                  | 21                         | 13.9                     | 34     | 13  | 1.40                         | 2.81   | 3.51     | 4.22   | 4.92     | 5.63   | -      | -      | -      | -       | - | - |
|              | 8                  | 25                         | 9.8                      | 42     | 17  | 1.07                         | 2.15   | 2.69     | 3.22   | 3.76     | 4.30   | -      | -      | -      | -       | - | - |
|              | 8                  | 26                         | 9.2                      | 44     | 18  | 1.01                         | 2.03   | 2.54     | 3.04   | 3.55     | 4.06   | -      | -      | -      | -       | - | - |
| FMR3000      | 10                 | 25                         | 13.8                     | 40     | 15  | 1.22                         | 2.43   | 3.04     | 3.65   | 4.27     | 4.88   | -      | -      | -      | -       | - | - |
|              | 10                 | 26                         | 12.6                     | 42     | 16  | 1.14                         | 2.28   | 2.85     | 3.43   | 4.00     | 4.57   | -      | -      | -      | -       | - | - |
|              | 10                 | 32                         | 8.4                      | 54     | 22  | 0.83                         | 1.66   | 2.07     | 2.49   | 2.91     | 3.32   | -      | -      | -      | -       | - | - |
|              | 10                 | 33                         | 8.0                      | 56     | 23  | 0.79                         | 1.59   | 1.98     | 2.38   | 2.78     | 3.18   | -      | -      | -      | -       | - | - |
|              | 10                 | 40                         | 5.8                      | 70     | 30  | 0.61                         | 1.22   | 1.52     | 1.83   | 2.13     | 2.43   | -      | -      | -      | -       | - | - |
|              | 10                 | 50                         | 4.2                      | 90     | 40  | 0.46                         | 0.91   | 1.14     | 1.37   | 1.60     | 1.83   | -      | -      | -      | -       | - | - |
|              | 10                 | 63                         | 3.1                      | 116    | 53  | 0.34                         | 0.69   | 0.86     | 1.03   | 1.21     | 1.38   | -      | -      | -      | -       | - | - |
|              | 10                 | 66                         | 2.9                      | 122    | 56  | 0.33                         | 0.65   | 0.81     | 0.98   | 1.14     | 1.30   | -      | -      | -      | -       | - | - |
| FMR4000      | 12                 | 25                         | 4.5                      | 38     | 13  | 1.40                         | 2.81   | 3.51     | -      | -        | -      | -      | -      | -      | -       | - | - |
|              | 12                 | 26                         | 4.1                      | 40     | 14  | 1.30                         | 2.61   | 3.26     | -      | -        | -      | -      | -      | -      | -       | - | - |
|              | 12                 | 32                         | 14.7                     | 52     | 20  | 0.91                         | 1.83   | 2.28     | 2.74   | 3.20     | 3.65   | 4.57   | 5.49   | -      | -       | - | - |
|              | 12                 | 33                         | 13.8                     | 54     | 21  | 0.87                         | 1.74   | 2.17     | 2.61   | 3.04     | 3.48   | 4.35   | 5.23   | -      | -       | - | - |
|              | 12                 | 40                         | 9.6                      | 68     | 28  | 0.65                         | 1.30   | 1.63     | 1.96   | 2.28     | 2.61   | 3.26   | 3.92   | -      | -       | - | - |
|              | 12                 | 50                         | 6.7                      | 88     | 38  | 0.48                         | 0.96   | 1.20     | 1.44   | 1.68     | 1.92   | 2.40   | 2.88   | -      | -       | - | - |
|              | 12                 | 63                         | 4.8                      | 114    | 51  | 0.36                         | 0.72   | 0.89     | 1.07   | 1.25     | 1.43   | 1.79   | 2.15   | -      | -       | - | - |
|              | 12                 | 66                         | 4.5                      | 120    | 54  | 0.34                         | 0.68   | 0.84     | 1.01   | 1.18     | 1.35   | 1.69   | 2.03   | -      | -       | - | - |
|              | 12                 | 80                         | 3.5                      | 148    | 68  | 0.27                         | 0.54   | 0.67     | 0.81   | 0.94     | 1.07   | 1.34   | 1.61   | -      | -       | - | - |
|              | 12                 | 100                        | 2.6                      | 188    | 88  | 0.21                         | 0.41   | 0.52     | 0.62   | 0.73     | 0.83   | 1.04   | 1.24   | -      | -       | - | - |
| FMR5000      | 16                 | 40                         | 17.8                     | 64     | 24  | 0.76                         | 1.52   | 1.90     | 2.28   | 2.66     | 3.04   | 3.81   | 4.57   | 6.11   | -       | - | - |
|              | 16                 | 50                         | 11.3                     | 84     | 34  | 0.54                         | 1.07   | 1.34     | 1.61   | 1.88     | 2.15   | 2.69   | 3.22   | 4.30   | -       | - | - |
|              | 16                 | 63                         | 7.6                      | 110    | 47  | 0.39                         | 0.78   | 0.97     | 1.16   | 1.36     | 1.55   | 1.94   | 2.33   | 3.11   | -       | - | - |
|              | 16                 | 66                         | 7.1                      | 116    | 50  | 0.36                         | 0.73   | 0.91     | 1.09   | 1.28     | 1.46   | 1.83   | 2.19   | 2.92   | -       | - | - |
|              | 16                 | 80                         | 5.3                      | 144    | 64  | 0.29                         | 0.57   | 0.71     | 0.86   | 1.00     | 1.14   | 1.43   | 1.71   | 2.28   | -       | - | - |
|              | 16                 | 100                        | 4.0                      | 184    | 84  | 0.22                         | 0.43   | 0.54     | 0.65   | 0.76     | 0.87   | 1.09   | 1.30   | 1.74   | -       | - | - |
|              | 16                 | 125                        | 3.0                      | 234    | 109 | 0.17                         | 0.33   | 0.42     | 0.50   | 0.59     | 0.67   | 0.84   | 1.00   | 1.34   | -       | - | - |
|              | 16                 | 160                        | 2.2                      | 304    | 144 | 0.13                         | 0.25   | 0.32     | 0.38   | 0.44     | 0.51   | 0.63   | 0.76   | 1.01   | -       | - | - |
| FMR6000      | 20                 | 50                         | 17.8                     | 80     | 30  | 0.61                         | 1.22   | 1.52     | 1.83   | 2.13     | 2.43   | 3.04   | 3.65   | 4.88   | 6.11    | - | - |
|              | 20                 | 63                         | 11.1                     | 106    | 43  | 0.42                         | 0.85   | 1.06     | 1.27   | 1.49     | 1.70   | 2.12   | 2.55   | 3.40   | 4.25    | - | - |
|              | 20                 | 80                         | 7.4                      | 140    | 60  | 0.30                         | 0.61   | 0.76     | 0.91   | 1.06     | 1.22   | 1.52   | 1.83   | 2.43   | 3.04    | - | - |
|              | 20                 | 100                        | 5.3                      | 180    | 80  | 0.23                         | 0.46   | 0.57     | 0.68   | 0.80     | 0.91   | 1.14   | 1.37   | 1.83   | 2.28    | - | - |
|              | 20                 | 125                        | 4.0                      | 230    | 105 | 0.17                         | 0.35   | 0.43     | 0.52   | 0.61     | 0.70   | 0.87   | 1.04   | 1.39   | 1.74    | - | - |
|              | 20                 | 160                        | 2.9                      | 300    | 140 | 0.13                         | 0.26   | 0.33     | 0.39   | 0.46     | 0.52   | 0.65   | 0.78   | 1.04   | 1.30    | - | - |
|              | 20                 | 200                        | 2.2                      | 380    | 180 | 0.10                         | 0.20   | 0.25     | 0.30   | 0.35     | 0.41   | 0.51   | 0.61   | 0.81   | 1.01    | - | - |
|              | 20                 | 250                        | 1.7                      | 480    | 230 | 0.08                         | 0.16   | 0.20     | 0.24   | 0.28     | 0.32   | 0.40   | 0.48   | 0.63   | 0.79    | - | - |

\* Tamaño inserto (d): por favor refiérase a las páginas E19 y E20 para los planos de los insertos disponibles

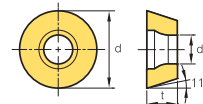


**FMR P-positive**

**Listado de diámetros máximos de agujeros a maquinarse para maquinado helicoidal (ØDHmax)**



- ØD = Diámetro herramienta. (mm)
- Ød (Paso de la herramienta, mm) = ØDHmin, Max - ØD
- ØDHmin (Diámetro mínimo agujero) = ØD x 2 - Tamaño inserto (d)
- ØDHmax (Diámetro máximo agujero) = ØD x 2 - 2
- Ángulo de rampa según ap ( $\alpha^\circ = \tan^{-1}\left(\frac{ap}{\pi \times \text{Ød}}\right)$ )
- Ángulo de rampeado circular no puede exceder ángulo máximo
- ap = Profundidad de corte



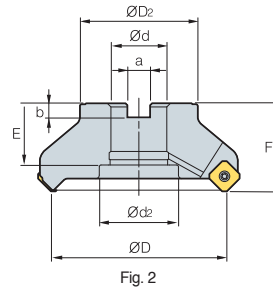
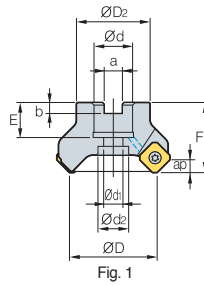
(mm)

| Tamaño fresa | Tamaño inserto (d) | Diámetro herramienta. (ØD) | Ángulo de rampa α° (max) | ØDHmin | Ød  | Ángulo de rampa según ap(α°) |        |          |        |          |        |        |        |        |         |
|--------------|--------------------|----------------------------|--------------------------|--------|-----|------------------------------|--------|----------|--------|----------|--------|--------|--------|--------|---------|
|              |                    |                            |                          |        |     | ap = 1                       | ap = 2 | ap = 2.5 | ap = 3 | ap = 3.5 | ap = 4 | ap = 5 | ap = 6 | ap = 8 | ap = 10 |
| FMR2500      | 8                  | 17                         | 4.7                      | 32     | 15  | 1.22                         | 2.43   | 3.04     | 3.65   | -        | -      | -      | -      | -      | -       |
|              | 8                  | 18                         | 4.1                      | 34     | 16  | 1.14                         | 2.28   | 2.85     | 3.43   | -        | -      | -      | -      | -      | -       |
|              | 8                  | 20                         | 15.4                     | 38     | 18  | 1.01                         | 2.03   | 2.54     | 3.04   | 3.55     | 4.06   | -      | -      | -      | -       |
|              | 8                  | 21                         | 13.9                     | 40     | 19  | 0.96                         | 1.92   | 2.40     | 2.88   | 3.37     | 3.85   | -      | -      | -      | -       |
|              | 8                  | 25                         | 9.8                      | 48     | 23  | 0.79                         | 1.59   | 1.98     | 2.38   | 2.78     | 3.18   | -      | -      | -      | -       |
|              | 8                  | 26                         | 9.2                      | 50     | 24  | 0.76                         | 1.52   | 1.90     | 2.28   | 2.66     | 3.04   | -      | -      | -      | -       |
| FMR3000      | 10                 | 25                         | 13.8                     | 48     | 23  | 0.79                         | 1.59   | 1.98     | 2.38   | 2.78     | 3.18   | -      | -      | -      | -       |
|              | 10                 | 26                         | 12.6                     | 50     | 24  | 0.76                         | 1.52   | 1.90     | 2.28   | 2.66     | 3.04   | -      | -      | -      | -       |
|              | 10                 | 32                         | 8.4                      | 62     | 30  | 0.61                         | 1.22   | 1.52     | 1.83   | 2.13     | 2.43   | -      | -      | -      | -       |
|              | 10                 | 33                         | 8.0                      | 64     | 31  | 0.59                         | 1.18   | 1.47     | 1.77   | 2.06     | 2.36   | -      | -      | -      | -       |
|              | 10                 | 40                         | 5.8                      | 78     | 38  | 0.48                         | 0.96   | 1.20     | 1.44   | 1.68     | 1.92   | -      | -      | -      | -       |
|              | 10                 | 50                         | 4.2                      | 98     | 48  | 0.38                         | 0.76   | 0.95     | 1.14   | 1.33     | 1.52   | -      | -      | -      | -       |
|              | 10                 | 63                         | 3.1                      | 124    | 61  | 0.30                         | 0.60   | 0.75     | 0.90   | 1.05     | 1.20   | -      | -      | -      | -       |
|              | 10                 | 66                         | 2.9                      | 130    | 64  | 0.29                         | 0.57   | 0.71     | 0.86   | 1.00     | 1.14   | -      | -      | -      | -       |
| FMR4000      | 12                 | 25                         | 4.5                      | 48     | 23  | 0.79                         | 1.59   | 1.98     | 2.38   | 2.78     | 3.18   | -      | -      | -      | -       |
|              | 12                 | 26                         | 4.1                      | 50     | 24  | 0.76                         | 1.52   | 1.90     | 2.28   | 2.66     | 3.04   | -      | -      | -      | -       |
|              | 12                 | 32                         | 14.7                     | 62     | 30  | 0.61                         | 1.22   | 1.52     | 1.83   | 2.13     | 2.43   | 3.04   | 3.65   | -      | -       |
|              | 12                 | 33                         | 13.8                     | 64     | 31  | 0.59                         | 1.18   | 1.47     | 1.77   | 2.06     | 2.36   | 2.95   | 3.54   | -      | -       |
|              | 12                 | 40                         | 9.6                      | 78     | 38  | 0.48                         | 0.96   | 1.20     | 1.44   | 1.68     | 1.92   | 2.40   | 2.88   | -      | -       |
|              | 12                 | 50                         | 6.7                      | 98     | 48  | 0.38                         | 0.76   | 0.95     | 1.14   | 1.33     | 1.52   | 1.90   | 2.28   | -      | -       |
|              | 12                 | 63                         | 4.8                      | 124    | 61  | 0.30                         | 0.60   | 0.75     | 0.90   | 1.05     | 1.20   | 1.50   | 1.80   | -      | -       |
|              | 12                 | 66                         | 4.5                      | 130    | 64  | 0.29                         | 0.57   | 0.71     | 0.86   | 1.00     | 1.14   | 1.43   | 1.71   | -      | -       |
|              | 12                 | 80                         | 3.5                      | 158    | 78  | 0.23                         | 0.47   | 0.58     | 0.70   | 0.82     | 0.94   | 1.17   | 1.40   | -      | -       |
|              | 12                 | 100                        | 2.6                      | 198    | 98  | 0.19                         | 0.37   | 0.47     | 0.56   | 0.65     | 0.74   | 0.93   | 1.12   | -      | -       |
| FMR5000      | 16                 | 40                         | 17.8                     | 78     | 38  | 0.48                         | 0.96   | 1.20     | 1.44   | 1.68     | 1.92   | 2.40   | 2.88   | 3.85   | -       |
|              | 16                 | 50                         | 11.3                     | 98     | 48  | 0.38                         | 0.76   | 0.95     | 1.14   | 1.33     | 1.52   | 1.90   | 2.28   | 3.04   | -       |
|              | 16                 | 63                         | 7.6                      | 124    | 61  | 0.30                         | 0.60   | 0.75     | 0.90   | 1.05     | 1.20   | 1.50   | 1.80   | 2.39   | -       |
|              | 16                 | 66                         | 7.1                      | 130    | 64  | 0.29                         | 0.57   | 0.71     | 0.86   | 1.00     | 1.14   | 1.43   | 1.71   | 2.28   | -       |
|              | 16                 | 80                         | 5.3                      | 158    | 78  | 0.23                         | 0.47   | 0.58     | 0.70   | 0.82     | 0.94   | 1.17   | 1.40   | 1.87   | -       |
|              | 16                 | 100                        | 4.0                      | 198    | 98  | 0.19                         | 0.37   | 0.47     | 0.56   | 0.65     | 0.74   | 0.93   | 1.12   | 1.49   | -       |
|              | 16                 | 125                        | 3.0                      | 248    | 123 | 0.15                         | 0.30   | 0.37     | 0.45   | 0.52     | 0.59   | 0.74   | 0.89   | 1.19   | -       |
|              | 16                 | 160                        | 2.2                      | 318    | 158 | 0.12                         | 0.23   | 0.29     | 0.35   | 0.40     | 0.46   | 0.58   | 0.69   | 0.92   | -       |
| FMR6000      | 20                 | 50                         | 17.8                     | 98     | 48  | 0.38                         | 0.76   | 0.95     | 1.14   | 1.33     | 1.52   | 1.90   | 2.28   | 3.04   | 3.81    |
|              | 20                 | 63                         | 11.1                     | 124    | 61  | 0.30                         | 0.60   | 0.75     | 0.90   | 1.05     | 1.20   | 1.50   | 1.80   | 2.39   | 2.99    |
|              | 20                 | 80                         | 7.4                      | 158    | 78  | 0.23                         | 0.47   | 0.58     | 0.70   | 0.82     | 0.94   | 1.17   | 1.40   | 1.87   | 2.34    |
|              | 20                 | 100                        | 5.3                      | 198    | 98  | 0.19                         | 0.37   | 0.47     | 0.56   | 0.65     | 0.74   | 0.93   | 1.12   | 1.49   | 1.86    |
|              | 20                 | 125                        | 4.0                      | 248    | 123 | 0.15                         | 0.30   | 0.37     | 0.45   | 0.52     | 0.59   | 0.74   | 0.89   | 1.19   | 1.48    |
|              | 20                 | 160                        | 2.9                      | 318    | 158 | 0.12                         | 0.23   | 0.29     | 0.35   | 0.40     | 0.46   | 0.58   | 0.69   | 0.92   | 1.16    |
|              | 20                 | 200                        | 2.2                      | 398    | 198 | 0.09                         | 0.18   | 0.23     | 0.28   | 0.32     | 0.37   | 0.46   | 0.55   | 0.74   | 0.92    |
|              | 20                 | 250                        | 1.7                      | 498    | 248 | 0.07                         | 0.15   | 0.18     | 0.22   | 0.26     | 0.29   | 0.37   | 0.44   | 0.59   | 0.74    |

\* Tamaño inserto (d): por favor refiérase a las páginas E19 y E20 para los planos de los insertos disponibles



# FMAC(M)3000



AA  
45°

• AR: 21°  
• RR: -17°~-12°

(mm)

| Codigo              | ØD              | ØD <sub>2</sub> | Ød  | a         | b           | E           | F       | Ød <sub>1</sub> | Ød <sub>2</sub> | ap      | kg      | Fig.      |           |       |
|---------------------|-----------------|-----------------|-----|-----------|-------------|-------------|---------|-----------------|-----------------|---------|---------|-----------|-----------|-------|
| <b>FMACM</b>        | <b>3050HR</b>   | 4               | 50  | 42        | 22          | 10.4        | 6.3     | 20              | 40              | 11      | 17.5    | 4.0       | 0.4       | 1     |
|                     | <b>3050HR-H</b> | 6               | 50  | 42        | 22          | 10.4        | 6.3     | 20              | 40              | 11      | 17.5    | 4.0       | 0.4       | 1     |
|                     | <b>3063HR</b>   | 5               | 63  | 49        | 22          | 10.4        | 6.3     | 20              | 40              | 11      | 17.5    | 4.0       | 0.5       | 1     |
|                     | <b>3063HR-H</b> | 8               | 63  | 49        | 22          | 10.4        | 6.3     | 20              | 40              | 11      | 17.5    | 4.0       | 0.6       | 1     |
| <b>FMAC (FMACM)</b> | <b>3080HR</b>   | 6               | 80  | 57        | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (23)         | 50              | 14      | 20      | 4.0       | 1.1       | 1     |
|                     | <b>3080HR-H</b> | 10              | 80  | 57        | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (23)         | 50              | 14      | 20      | 4.0       | 1.2       | 1     |
|                     | <b>3100HR</b>   | 7               | 100 | 67        | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 35 (25.5)       | 50              | (18)    | 45 (26) | 4.0       | 1.7       | 2 (1) |
|                     | <b>3100HR-H</b> | 12              | 100 | 67        | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 35 (25.5)       | 50              | (18)    | 45 (26) | 4.0       | 1.7       | 2 (1) |
|                     | <b>3125HR</b>   | 8               | 125 | 87        | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 42 (29)         | 63              | (22)    | 55 (32) | 4.0       | 3.3 (3.5) | 2 (1) |
| <b>3125HR-H</b>     | 14              | 125             | 87  | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 42 (29) | 63              | (22)            | 55 (32) | 4.0     | 3.3 (3.5) | 2 (1)     |       |

( ) Tamaño métrico

## Insertos disponibles



| Codigo | Cermet      |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       |     | pag. |     |     |
|--------|-------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|-----|------|-----|-----|
|        | CN2000      | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A | G10 |      | H01 | H05 |
| SEET   | 0903AGFN-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |     |      |     |     |
|        | 0903AGSN-MF |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |     |      |     |     |
|        | 0903AGSN-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |     |      |     |     |
| SEXT   | 0903AGSN-MF |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |     |      |     |     |
|        | 0903AGSN-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |     |      |     |     |
|        | 0903AGSN-MR |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |     |      |     |     |
| SEEW   | 0903AGTN    |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |     |      |     |     |

## Adaptadores disponibles

| Codigo              | Ød                | Adaptadores NC   |
|---------------------|-------------------|------------------|
| <b>FMACM</b>        | 3050HR-□          | BT□□-FMC22-□□    |
|                     | 3063HR-□          |                  |
| <b>FMAC (FMACM)</b> | 3080HR-□          | BT□□-FMA25.4-□□  |
|                     |                   | BT□□-FMC27-□□    |
|                     | 3100HR-□          | BT□□-FMA31.75-□□ |
|                     |                   | BT□□-FMC32-□□    |
|                     | 3125HR-□          | BT□□-FMA38.1-□□  |
|                     | BT□□-FMB/FMC40-□□ |                  |

## Partes

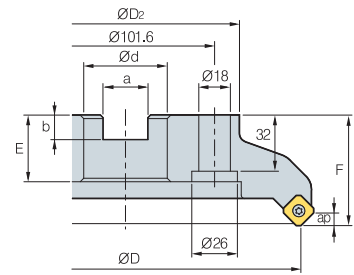
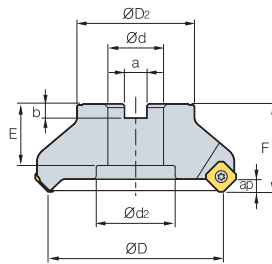
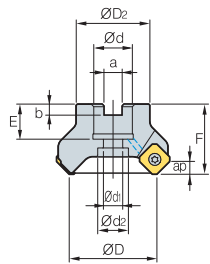
| Especificaciones | Tornillo | Llave Inserto |
|------------------|----------|---------------|
| Ø50~Ø125         | FTKA0307 | TW09S         |

Insertos disponibles E19, E20 Detalles del cortador E400~E402





# FMAC(M)4000



AA  
45°

• AR: 21°  
• RR: -17°~-12°

| Codigo              | ØD       | ØD <sub>2</sub> | Ød  | a           | b           | E           | F       | Ød <sub>1</sub> | Ød <sub>2</sub> | ap | kg  | Fig. |         |   |
|---------------------|----------|-----------------|-----|-------------|-------------|-------------|---------|-----------------|-----------------|----|-----|------|---------|---|
| <b>FMACM</b>        | 4050HR   | 3               | 50  | 42          | 22          | 10.4        | 6.3     | 20              | 40              | 11 | 18  | 6.5  | 0.4     | 1 |
|                     | 4063HR   | 4               | 63  | 49          | 22          | 10.4        | 6.3     | 20              | 40              | 11 | 18  | 6.5  | 0.6     | 1 |
|                     | 4063HR-M | 5               | 63  | 49          | 22          | 10.4        | 6.3     | 20              | 40              | 11 | 18  | 6.5  | 0.6     | 1 |
|                     | 4063HR-H | 6               | 63  | 49          | 22          | 10.4        | 6.3     | 20              | 40              | 11 | 18  | 6.5  | 0.6     | 1 |
| <b>FMAC (FMACM)</b> | 4080HR   | 5               | 80  | 57          | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (23)         | 50              | 14 | 20  | 6.5  | 1.1     | 1 |
|                     | 4080HR-M | 6               | 80  | 57          | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (23)         | 50              | 14 | 20  | 6.5  | 1.1     | 1 |
|                     | 4080HR-H | 8               | 80  | 57          | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (23)         | 50              | 14 | 20  | 6.5  | 1.1     | 1 |
|                     | 4100HR   | 5               | 100 | 67          | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 33 (25)         | 63 (50)         | 18 | 26  | 6.5  | 2 (1.6) | 1 |
|                     | 4100HR-M | 7               | 100 | 67          | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 33 (25)         | 63 (50)         | 18 | 26  | 6.5  | 2 (1.6) | 1 |
|                     | 4100HR-H | 10              | 100 | 67          | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 33 (25)         | 63 (50)         | 18 | 26  | 6.5  | 2 (1.6) | 1 |
|                     | 4125HR   | 6               | 125 | 87          | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 35 (29)         | 63              | 22 | 32  | 6.5  | 3.1     | 1 |
|                     | 4125HR-M | 8               | 125 | 87          | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 35 (29)         | 63              | 22 | 32  | 6.5  | 3.1     | 1 |
|                     | 4125HR-H | 12              | 125 | 87          | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 35 (29)         | 63              | 22 | 32  | 6.5  | 3.1     | 1 |
|                     | 4160R    | 7               | 160 | 107         | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (35)         | 63              | -  | -   | 6.5  | 4.8     | 2 |
|                     | 4160R-M  | 10              | 160 | 107         | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (35)         | 63              | -  | -   | 6.5  | 4.8     | 2 |
|                     | 4160R-H  | 16              | 160 | 107         | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (35)         | 63              | -  | -   | 6.5  | 4.8     | 2 |
|                     | 4200R    | 8               | 200 | 130         | 47.625 (60) | 25.4 (25.7) | 14      | 38 (32)         | 63              | -  | -   | 6.5  | 6.1     | 3 |
|                     | 4200R-M  | 12              | 200 | 130         | 47.625 (60) | 25.4 (25.7) | 14      | 38 (32)         | 63              | -  | -   | 6.5  | 6.1     | 3 |
| 4200R-H             | 18       | 200             | 130 | 47.625 (60) | 25.4 (25.7) | 14          | 38 (32) | 63              | -               | -  | 6.5 | 6.1  | 3       |   |

## Insertos disponibles

( ) Tamaño métrico

| SEET-MF | SEET-MM                                   | SEET-MA                              | SEXT-MF  | SEXT-MM    | SEXT-MR    | SEEW | SEEW-W         |  |            |            |        |            |  |  |  |  |  |          |      |
|---------|---|--------------------------------------|--|------------|------------|------|----------------|--|------------|------------|--------|------------|--|--|--|--|--|----------|------|
|         |   |                                      |  |            |            |      |                |  |            |            |        |            |  |  |  |  |  |          |      |
| Codigo  | Cermet                                    | Recubierta                           |  |            |            |      |                | Sin Rec.   | pag.       | Codigo     | Cermet | Recubierta |  |  |  |  |  | Sin Rec. | pag. |
| SEET    | CN2000<br>CN30                            | NCM325<br>NC5330<br>NCM535<br>NCM545 | PC3700<br>PC6510<br>PC9540<br>PC9530<br>PC5400<br>PD2000<br>PD1010 | H01<br>H05 | E19<br>E20 | SEXT | CN2000<br>CN30 | NCM325<br>NC5330<br>NCM535<br>NCM545<br>PC2505<br>PC2010<br>PC3600<br>PC3700<br>PC6510<br>PC9540<br>PC9530<br>PC5400 | H01<br>H05 | E19<br>E20 |        |            |  |  |  |  |  |          |      |
| SEET    | 14M4AGFN-MA<br>14M4AGSN-MF<br>14M4AGSN-MM |                                      |  |            |            |      | SEEW           | 14M4AGSN-MR<br>14M4AGTN<br>14M4AGFN-W<br>14M4AGSN-W<br>14M4AGTN-W  |            |            |        |            |  |  |  |  |  |          |      |
| SEXT    | 14M4AGSN-MF<br>14M4AGSN-MM                |                                      |  |            |            |      |                |  |            |            |        |            |  |  |  |  |  |          |      |
|         |   |                                      |  |            |            |      |                |  |            |            |        |            |  |  |  |  |  |          |      |

## Adaptadores disponibles

| Codigo       | Ød                   | Adaptadores NC | Codigo           | Ød           | Adaptadores NC |              |                                      |
|--------------|----------------------|----------------|------------------|--------------|----------------|--------------|--------------------------------------|
| FMACM        | 4050HR-□<br>4063HR-□ | 22             | BT□□-FMC22-□□    | FMAC (FMACM) | 4125HR-□       | 38.1<br>40   | BT□□-FMA38.1-□□<br>BT□□-FMB40-□□     |
| FMAC (FMACM) | 4080HR-□             | 25.4           | BT□□-FMA25.4-□□  |              | 4160R-□        | 50.8<br>40   | BT□□-FMA50.8-□□<br>BT□□-FMB/FMC40-□□ |
|              | 4100HR-□             | 31.75          | BT□□-FMA31.75-□□ |              | 4200R-□        | 47.625<br>60 | BT□□-FMA47.625-□□<br>BT□□-FMB60-□□   |
|              |                      | 32             | BT□□-FMC32-□□    |              |                |              |                                      |

## Partes

| Especificaciones | Tornillo  | Shim    | Shim Tornillo | Llave Inserto | Shim Llave |
|------------------|-----------|---------|---------------|---------------|------------|
| Ø50-Ø200         | FTGA03512 | SS42SAF | SHXN0509F     | TW15S         | HW35L      |

Insertos disponibles E19, E20

Detalles del cortador E400-E402

# FMAC(M)3000-A

Cuerpo de aluminio

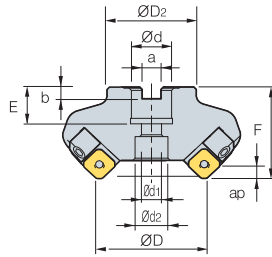


Fig. 1

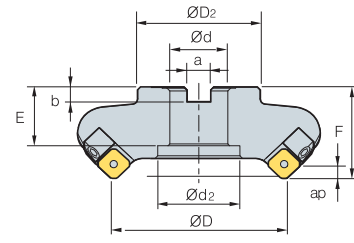


Fig. 2



AA  
45°  
• AR: 21°  
• RR: -16°~-12°

(mm)

| Codigo               | ØD  | ØD2 | Ød         | a           | b      | E  | F  | Ød1  | Ød2 | ap | kg  | Fig. |
|----------------------|-----|-----|------------|-------------|--------|----|----|------|-----|----|-----|------|
| FMACM 3063R-A        | 63  | 49  | 22         | 10.4        | 6.3    | 20 | 40 | 11   | 18  | 4  | 0.5 | 1    |
| FMAC (FMACM) 3080R-A | 80  | 57  | 25.4 (27)  | 9.5 (12.4)  | 6 (7)  | 25 | 50 | 13.5 | 20  | 4  | 0.6 | 1    |
| 3100R-A              | 100 | 67  | 31.75 (32) | 12.7 (14.4) | 8 (8)  | 32 | 50 | -    | 45  | 4  | 0.8 | 2    |
| 3100R-25.4-A         | 100 | 67  | 25.4       | 9.5         | 6      | 25 | 50 | -    | 38  | 4  | 0.9 | 2    |
| 3125R-A              | 125 | 87  | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 38 | 63 | -    | 56  | 4  | 1.6 | 2    |
| 3125R-25.4-A         | 125 | 70  | 25.4       | 9.5         | 6      | 25 | 63 | -    | 38  | 4  | 1.7 | 2    |

( )Tamaño métrico

## Insertos disponibles



| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       |     | pag. |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|-----|------|-----|-----|
|                  | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A | G10 |      | H01 | H05 |
| SEET 0903AGFN-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |     |      |     |     |
| 0903AGSN-MF      |        |      |            |        |        |        |        |        |        |        | •      | •      |        | •        | •      |       |     | •    | •   |     |
| 0903AGSN-MM      |        |      | •          |        |        |        |        |        |        |        | •      |        |        | •        | •      |       |     |      |     |     |
| SEXT 0903AGSN-MF |        |      |            |        |        |        |        |        |        | •      | •      |        |        | •        | •      |       |     |      |     |     |
| 0903AGSN-MM      |        |      |            |        |        |        |        |        |        | •      | •      |        |        | •        | •      |       |     |      |     |     |
| 0903AGSN-MR      |        |      |            |        |        |        |        |        |        | •      | •      |        |        | •        | •      |       |     |      |     |     |
| SEEW 0903AGTN    |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |     |      |     |     |

## Adaptadores disponibles

| Codigo               | Ød    | Adaptadores NC   |
|----------------------|-------|------------------|
| FMACM 3063R-□        | 22    | BT□□-FMC22-□□    |
| FMAC (FMACM) 3080R-□ | 25.4  | BT□□-FMA25.4-□□  |
|                      | 27    | BT□□-FMC27-□□    |
| 3100R-□              | 31.75 | BT□□-FMA31.75-□□ |
|                      | 32    | BT□□-FMC32-□□    |
| 3125R-□              | 38.1  | BT□□-FMA38.1-□□  |
|                      | 40    | BT□□-FMB40-□□    |

## Partes

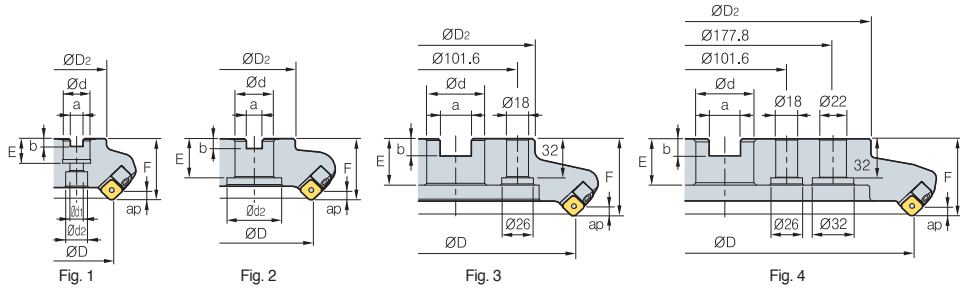
| Especificaciones | Tornillo | Llave Inserto | Llave Placa | Cartucho | Tornillo Cartucho |
|------------------|----------|---------------|-------------|----------|-------------------|
| Ø63~Ø125         | FTKA0307 | TW09S         | HW30L       | LFMA3R-A | DHA0620           |

Insertos disponibles E19, E20 Detalles del cortador E400~E402



# FMAC(M)4000-A

Cuerpo de aluminio



AA  
45°  
• AR: 21°  
• RR: -16°~ -12°

| Codigo          | ØD | ØD2 | Ød  | a           | b           | E       | F       | Ød1 | Ød2  | ap | kg  | Fig. |   |
|-----------------|----|-----|-----|-------------|-------------|---------|---------|-----|------|----|-----|------|---|
| FMACM 4063R-A   | 3  | 63  | 49  | 22          | 10.4        | 6.3     | 20      | 50  | 11   | 18 | 6.5 | 0.6  | 1 |
| FMAC 4080R-A    | 4  | 80  | 67  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50  | 13.5 | 20 | 6.5 | 0.8  | 1 |
| (FMACM) 4100R-A | 5  | 100 | 67  | 31.75 (32)  | 12.7 (14.4) | 8(8)    | 32      | 50  | -    | 45 | 6.5 | 1.1  | 2 |
| 4100R-25.4-A    | 5  | 100 | 67  | 25.4        | 9.5         | 6       | 25      | 50  | -    | 38 | 6.5 | 1.2  | 2 |
| 4125R-A         | 6  | 125 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (35) | 63  | -    | 56 | 6.5 | 1.7  | 2 |
| 4125R-25.4-A    | 6  | 125 | 70  | 25.4        | 9.5         | 6       | 25      | 63  | -    | 38 | 6.5 | 1.8  | 2 |
| 4160R-A         | 7  | 160 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (35) | 63  | -    | 75 | 6.5 | 2.5  | 2 |
| 4200R-A         | 8  | 200 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (32) | 63  | -    | -  | 6.5 | 3.2  | 3 |
| 4250R-A         | 10 | 250 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38      | 63  | -    | -  | 6.5 | 4.1  | 3 |
| 4315R-A         | 12 | 315 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38      | 63  | -    | -  | 6.5 | 6.7  | 4 |

Nota: Tipo Refrigeración interna : Ø50~Ø125

( ) Tamaño métrico

## Insertos disponibles

| SEET-MF          | SEET-MM        | SEET-MA          | SEXT-MF          | SEXT-MM          | SEXT-MR          | SEEW             | SEEW-W                     |            |      |
|------------------|----------------|------------------|------------------|------------------|------------------|------------------|----------------------------|------------|------|
|                  |                |                  |                  |                  |                  |                  |                            |            |      |
| Codigo           | Cermet         | Recubierto       |                  |                  |                  |                  |                            | Sin Rec.   | pag. |
|                  | CN2000<br>CN30 | NCM325<br>NC5330 | NCM535<br>NCM545 | PC3600<br>PC3700 | PC8510<br>PC9530 | PC9540<br>PC5300 | PC5400<br>PD2000<br>PD1010 | H01<br>H05 |      |
| SEET 14M4AGFN-MA |                |                  |                  |                  |                  |                  |                            |            |      |
| 14M4AGSN-MF      |                |                  |                  |                  |                  |                  |                            |            | E19  |
| 14M4AGSN-MM      |                |                  |                  |                  |                  |                  |                            |            | E20  |
| SEXT 14M4AGSN-MF |                |                  |                  |                  |                  |                  |                            |            |      |
| 14M4AGSN-MM      |                |                  |                  |                  |                  |                  |                            |            |      |
| Codigo           | Cermet         | Recubierto       |                  |                  |                  |                  |                            | Sin Rec.   | pag. |
|                  | CN2000<br>CN30 | NCM325<br>NC5330 | NCM535<br>NCM545 | PC2505<br>PC2010 | PC3600<br>PC3700 | PC6510<br>PC9530 | PC9540<br>PC5300<br>PC5400 | H01<br>H05 |      |
| SEXT 14M4AGSN-MR |                |                  |                  |                  |                  |                  |                            |            |      |
| SEEW 14M4AGTN    |                |                  |                  |                  |                  |                  |                            |            | E19  |
| 14M4AGFN-W       |                |                  |                  |                  |                  |                  |                            |            | E20  |
| 14M4AGSN-W       |                |                  |                  |                  |                  |                  |                            |            |      |
| 14M4AGTN-W       |                |                  |                  |                  |                  |                  |                            |            |      |

## Adaptadores disponibles

| Codigo           | Ød    | Adaptadores NC   | Codigo          | Ød     | Adaptadores NC    |
|------------------|-------|------------------|-----------------|--------|-------------------|
| FMACM 4063R-□    | 22    | BT□□-FMC22-□□    | FMAC 4125R-□    | 40     | BT□□-FMB40-□□     |
| FMAC 4080R-□     | 25.4  | BT□□-FMA25.4-□□  | (FMACM) 4160R-□ | 50.8   | BT□□-FMA50.8-□□   |
| (FMACM) 4100HR-□ | 27    | BT□□-FMC27-□□    |                 | 40     | BT□□-FMB/FMC40-□□ |
| 4100R-□          | 31.75 | BT□□-FMA31.75-□□ | 4200R-□         | 47.625 | BT□□-FMA47.625-□□ |
| 4125R-□          | 32    | BT□□-FMC32-□□    | 4250R-□         | 60     | BT□□-FMB60-□□     |
|                  | 38.1  | BT□□-FMA38.1-□□  | 4315R-□         | 60     | BT□□-FMB60-□□     |

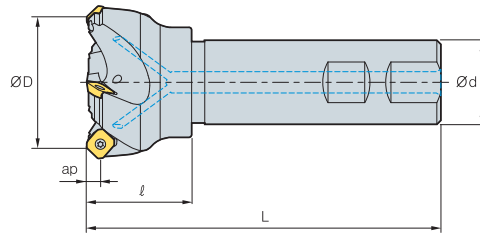
## Partes

| Especificaciones |           |               |             |          |                   |
|------------------|-----------|---------------|-------------|----------|-------------------|
|                  | Tornillo  | Llave Inserto | Llave Placa | Cartucho | Tornillo Cartucho |
| Ø63-Ø315         | FTGA03512 | TW15S         | HW40L       | LFMA4R-A | DHA0830           |

Insertos disponibles E19, E20

Detalles del cortador E400~E402

# FMAS3000



AA  
45°

• AR: 23°  
• RR: -17°~-13°

(mm)

| Codigo |            | ØD | Ød | l  | L  | ap  |     |
|--------|------------|----|----|----|----|-----|-----|
| FMAS   | 3025HR     | 2  | 25 | 25 | 35 | 115 | 0.4 |
|        | 3032HR     | 3  | 32 | 25 | 40 | 125 | 0.5 |
|        | 3032HR-S32 | 3  | 32 | 32 | 40 | 130 | 0.8 |
|        | 3040HR     | 3  | 40 | 32 | 40 | 130 | 0.9 |
|        | 3040HR-S40 | 3  | 40 | 40 | 40 | 140 | 1.3 |
|        | 3040HR-S42 | 3  | 40 | 42 | 40 | 140 | 1.4 |
|        | 3050HR     | 4  | 50 | 32 | 40 | 135 | 1   |
|        | 3050HR-S40 | 4  | 50 | 40 | 40 | 140 | 1.3 |
|        | 3050HR-S42 | 4  | 50 | 42 | 40 | 140 | 1.5 |
|        | 3063HR     | 5  | 63 | 32 | 45 | 135 | 1.2 |
|        | 3063HR-S40 | 5  | 63 | 40 | 45 | 145 | 1.6 |
|        | 3063HR-S42 | 5  | 63 | 42 | 45 | 145 | 1.7 |

## Insertos disponibles

SEET-MF

SEET-MM

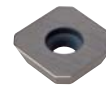
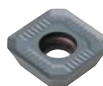
SEET-MA

SEXT-MF

SEXT-MM

SEXT-MR

SEEW



| Codigo | Cermet      |      | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |       |     |     | pag. |     |
|--------|-------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-------|-----|-----|------|-----|
|        | CN2000      | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | ST30A | G10 | H01 |      | H05 |
| SEET   | 0903AGFN-MA |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |     |      |     |
|        | 0903AGSN-MF |      |            |        |        |        |        |        |        |        | ●      | ●      |        | ●      | ●        |       |     | ●   | ●    |     |
|        | 0903AGSN-MM |      |            | ●      |        |        |        |        |        |        | ●      |        |        | ●      | ●        |       |     |     |      |     |
| SEXT   | 0903AGSN-MF |      |            |        |        |        |        |        | ●      |        | ●      |        |        | ●      | ●        |       |     |     |      |     |
|        | 0903AGSN-MM |      |            |        |        |        |        | ●      | ●      | ●      |        |        |        | ●      | ●        |       |     |     |      |     |
|        | 0903AGSN-MR |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |     |      |     |
| SEEW   | 0903AGTN    |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |     |      |     |

## Partes

Especificaciones



Tornillo



Llave Inserto

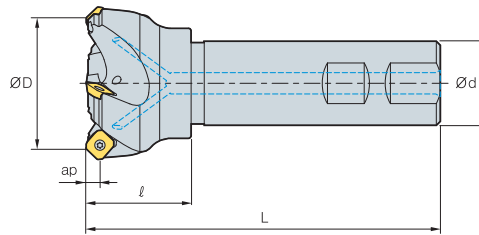
Ø25-Ø63

FTKA0307

TW09S



# FMAS4000



AA  
45°

• AR: 23°  
• RR: -17°~-13°

(mm)

| Codigo |            | ØD | Ød | l  | L  | ap  |      |
|--------|------------|----|----|----|----|-----|------|
| FMAS   | 4050HR     | 3  | 50 | 32 | 45 | 135 | 1    |
|        | 4050HR-S40 | 3  | 50 | 40 | 45 | 135 | 1.3  |
|        | 4050HR-S42 | 3  | 50 | 42 | 45 | 135 | 1.45 |
|        | 4063HR     | 4  | 63 | 32 | 45 | 135 | 1.2  |
|        | 4063HR-S40 | 4  | 63 | 40 | 45 | 135 | 1.5  |
|        | 4063HR-S42 | 4  | 63 | 42 | 45 | 135 | 1.6  |

## Insertos disponibles

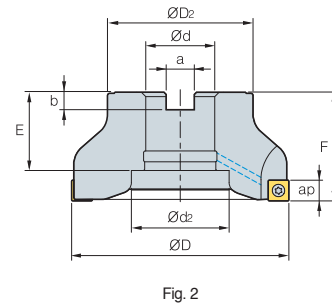
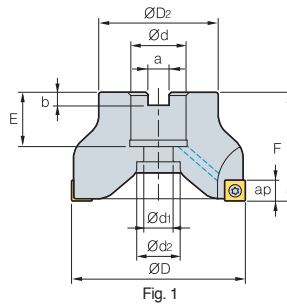
|        |             | SEET-MF | SEET-MM | SEET-MA    | SEXT-MF | SEXT-MM | SEXT-MR | SEEW   | SEEW-W |        |        |        |        |          |        |        |      |        |       |     |     |  |
|--------|-------------|---------|---------|------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|--------|-------|-----|-----|--|
|        |             |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |      |        |       |     |     |  |
| Codigo |             | Cermet  |         | Recubierto |         |         |         |        |        |        |        |        |        | Sin Rec. |        |        | pag. |        |       |     |     |  |
|        |             | CN2000  | CN30    | NCM325     | NCM335  | NC5330  | NCM535  | NCM545 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | PD2000 |      | PD1010 | ST30A | H01 | H05 |  |
| SEET   | 14M4AGFN-MA |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |      |        |       |     |     |  |
|        | 14M4AGSN-MF |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |      |        |       |     |     |  |
|        | 14M4AGSN-MM |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |      |        |       |     |     |  |
| SEXT   | 14M4AGSN-MF |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |      |        |       |     |     |  |
|        | 14M4AGSN-MM |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |      |        |       |     |     |  |
|        | 14M4AGSN-MR |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |      |        |       |     |     |  |
| SEEW   | 14M4AGTN    |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |      |        |       |     |     |  |
|        | 14M4AGFN-W  |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |      |        |       |     |     |  |
|        | 14M4AGSN-W  |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |      |        |       |     |     |  |
|        | 14M4AGTN-W  |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |      |        |       |     |     |  |

## Partes

| Especificaciones |           |         |               |               |             |
|------------------|-----------|---------|---------------|---------------|-------------|
|                  | Tornillo  | Placa   | Shim Tornillo | Llave Inserto | Llave Placa |
| Ø50~Ø63          | FTGA03512 | SS42SAF | SHXN0509F     | TW15S         | HW35L       |

Insertos disponibles E19, E20

# FMPC(M)3000



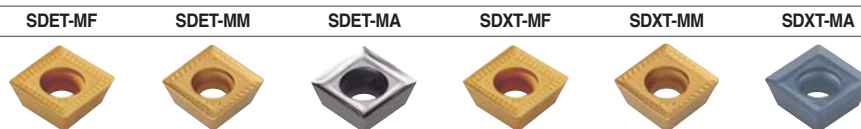
AA  
90°  
• AR: 10°  
• RR: -9°~ -8°

(mm)

| Codigo       | ØD     | ØD <sub>2</sub> | Ød  | a  | b          | E           | F     | Ød <sub>1</sub> | Ød <sub>2</sub> | ap | kg      | Fig. |     |       |
|--------------|--------|-----------------|-----|----|------------|-------------|-------|-----------------|-----------------|----|---------|------|-----|-------|
| FMPCM        | 3050HS | 5               | 50  | 40 | 22         | 10.4        | 6.3   | 20              | 40              | 11 | 18      | 7    | 0.3 | 1     |
|              | 3063HS | 6               | 63  | 40 | 22         | 10.4        | 6.3   | 20              | 40              | 11 | 18      | 7    | 0.5 | 1     |
| FMPC (FMPCM) | 3080HS | 7               | 80  | 55 | 25.4 (27)  | 9.5 (12.4)  | 6 (7) | 25 (22)         | 50              | 14 | 20      | 7    | 1.0 | 1     |
|              | 3100HS | 8               | 100 | 67 | 31.75 (32) | 12.7 (14.4) | 8 (8) | 36 (26)         | 50              | 18 | 45 (26) | 7    | 1.5 | 2 (1) |

( ) Tamaño métrico

## Insertos disponibles



| Codigo | Cermet     |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        |       | pag. |     |     |     |  |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|-------|------|-----|-----|-----|--|
|        | CN2000     | CN30 | NCM325     | NCM335 | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | PD2000 | ST30A |      | G10 | H01 | H05 |  |
| SDET   | 09M402R-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |  |
|        | 09M405R-MF |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |  |
|        | 09M405R-MM |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |  |
| SDXT   | 09M405R-MF |      |            | ●      |        |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      |        |       |      |     |     |     |  |
|        | 09M405L-MF |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |  |
|        | 09M405R-MM |      |            | ●      | ●      |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      |        |       |      |     |     |     |  |
|        | 09M405L-MM |      |            |        |        |        |        | ●      | ●      |        |        |        |          |        |        |       |      |     |     |     |  |
|        | 09M405R-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      | ●   | ●   |     |  |

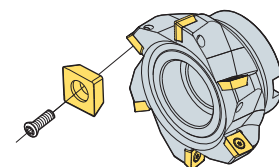
## Adaptadores disponibles

| Codigo       | Ød     | Adaptadores NC   |
|--------------|--------|------------------|
| FMPCM        | 3050HS | BT□□-FMC22-□□    |
|              | 3063HS |                  |
| FMPC (FMPCM) | 3080HS | BT□□-FMA25.4-□□  |
|              |        | BT□□-FMC27-□□    |
|              |        | BT□□-FMA31.75-□□ |
|              | 3100HS | BT□□-FMC32-□□    |

## Partes

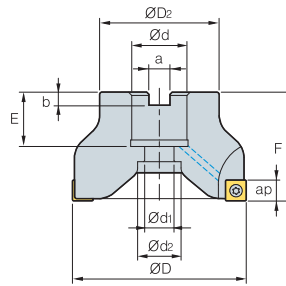
| Especificaciones | Tornillo  | Llave |
|------------------|-----------|-------|
| Ø50~Ø100         | FTGA03508 | TW15S |

## Ensamblado



Insertos disponibles E17, E18 Detalles del cortador E400~E402

# FMPC(M)4000



AA  
90°  
• AR: 10°  
• RR: -9° ~ -8°

| Codigo              | ØD | ØD <sub>2</sub> | Ød | a          | b           | E      | F       | Ød <sub>1</sub> | Ød <sub>2</sub> | ap | kg |           |
|---------------------|----|-----------------|----|------------|-------------|--------|---------|-----------------|-----------------|----|----|-----------|
| FMPCM 4063HS        | 5  | 63              | 49 | 22         | 10.4        | 6.3    | 20 (20) | 50 (50)         | 11              | 18 | 11 | 0.4       |
| FMPC (FMPCM) 4080HS | 6  | 80              | 57 | 25.4 (27)  | 9.5 (12.4)  | 6 (7)  | 25 (23) | 50 (50)         | 14              | 20 | 11 | 0.9       |
| 4100HS              | 7  | 100             | 67 | 31.75 (32) | 12.7 (14.4) | 8 (8)  | 33 (25) | 63 (50)         | 18              | 26 | 11 | 1.9 (1.5) |
| 4125HS              | 8  | 125             | 87 | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 35 (29) | 63              | 22              | 32 | 11 | 3.1       |

(mm)

( ) Tamaño métrico

## Insertos disponibles

|                 | SDET-MF | SDET-MM | SDET-MA    | SDXT-MF | SDXT-MM | SDXT-MA |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
|-----------------|---------|---------|------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|----------|--------|--------|-------|------|-----|-----|-----|
|                 |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| Codigo          | Cermet  |         | Recubierto |         |         |         |        |        |        |        |        |        | Sin Rec. |        |        |       | pag. |     |     |     |
|                 | CN2000  | CN30    | NCM325     | NCM335  | NC5330  | NCM535  | NCM545 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | PD1010 | ST30A | G10  | H01 | H05 |     |
| SDET 130504R-MA |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| 130508R-MF      |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| 130508R-MM      |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |       |      |     |     | E17 |
| SDXT 130508R-MF |         |         | ●          |         |         |         |        | ●      |        | ●      | ●      |        | ●        | ●      |        |       |      |     |     | E18 |
| 130508R-MM      |         |         | ●          | ●       |         |         |        | ●      | ●      | ●      | ●      |        | ●        | ●      |        |       |      |     |     |     |
| 130508R-MA      |         |         |            |         |         |         |        |        |        |        |        |        |          |        |        |       |      | ●   | ●   |     |

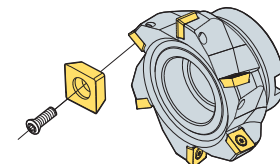
## Adaptadores disponibles

| Codigo              | Ød    | Adaptadores NC    |
|---------------------|-------|-------------------|
| FMPCM 4063HS        | 22    | BT□□-FMC22-□□     |
| FMPC (FMPCM) 4080HS | 25.4  | BT□□-FMA25.4-□□   |
|                     | 27    | BT□□-FMC27-□□     |
|                     | 31.75 | BT□□-FMA31.75-□□  |
| 4100HS              | 32    | BT□□-FMC32-□□     |
|                     | 38.1  | BT□□-FMA38.1-□□   |
| 4125HS              | 40    | BT□□-FMB/FMC40-□□ |

## Partes

| Especificaciones | Tornillo  | Llave |
|------------------|-----------|-------|
| Ø63-Ø125         | FTNC04511 | TW20S |

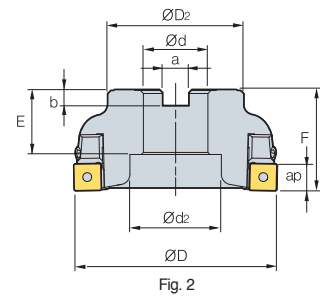
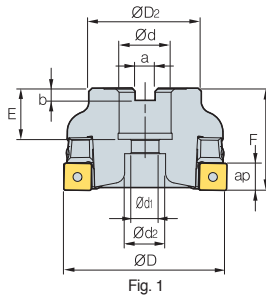
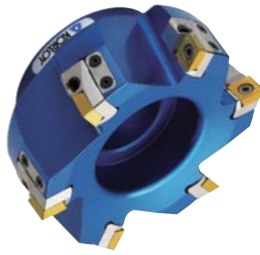
## Ensamblado



Insertos disponibles E17,E18    Detalles del cortador E400~E402

# FMPC(M)3000-A

Cuerpo de aluminio



AA  
90°

• AR: 10°  
• RR: -9°~ -7.3°

(mm)

| Codigo          | ØD | ØD <sub>2</sub> | Ød | a          | b           | E     | F       | Ød <sub>1</sub> | Ød <sub>2</sub> | ap | kg | Fig. |   |
|-----------------|----|-----------------|----|------------|-------------|-------|---------|-----------------|-----------------|----|----|------|---|
| FMPCM 3063S-A   | 3  | 63              | 40 | 22         | 10.4        | 6.3   | 20      | 40              | 11.0            | 18 | 7  | 0.2  | 1 |
| FMPC 3080S-A    | 4  | 80              | 55 | 25.4 (27)  | 9.5 (12.4)  | 6 (7) | 25 (22) | 50              | 13.5            | 20 | 7  | 0.4  | 1 |
| (FMPCM) 3100S-A | 5  | 100             | 67 | 31.75 (32) | 12.7 (14.4) | 8 (8) | 32      | 50              | -               | 45 | 7  | 0.6  | 2 |
| 3100S-25.4-A    | 5  | 100             | 67 | 25.4       | 9.5         | 6     | 25      | 50              | -               | 38 | 7  | 0.7  | 2 |

( ) Tamaño métrico

## Insertos disponibles

SDET-MF

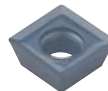
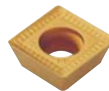
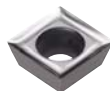
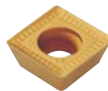
SDET-MM

SDET-MA

SDXT-MF

SDXT-MM

SDXT-MA



| Codigo          | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        |       | pag. |     |     |     |
|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|-------|------|-----|-----|-----|
|                 | CN2000 | CN30 | NCM325     | NCM335 | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | PD2000 | ST30A |      | G10 | H01 | H05 |
| SDET 09M402R-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| SDET 09M405R-MF |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| SDET 09M405R-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| SDXT 09M405R-MF |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| SDXT 09M405L-MF |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| SDXT 09M405R-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| SDXT 09M405L-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| SDXT 09M405R-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |

## Adaptadores disponibles

| Codigo          | Ød    | Adaptadores NC   |
|-----------------|-------|------------------|
| FMPCM 3063S-□   | 22    | BT□□-FMC22-□□    |
| FMPC 3080S-□    | 25.4  | BT□□-FMA25.4-□□  |
|                 | 27    | BT□□-FMC27-□□    |
| (FMPCM) 3100S-□ | 31.75 | BT□□-FMA31.75-□□ |
|                 | 32    | BT□□-FMC32-□□    |
| 3100S-25.4-□    | 25.4  | BT□□-FMA25.4-□□  |

## Partes

| Especificaciones | Tornillo  | Llave Inserto | Llave Placa | Cartucho | Tornillo Cartucho | Rompeviruta  | Tornillo Rompeviruta |
|------------------|-----------|---------------|-------------|----------|-------------------|--------------|----------------------|
| Ø63              | FTGA03508 | TW15S         | HW30L       | LFMP3R-A | DHA0624           | CFMP3R14R1-A | PXMA0306             |
| Ø80~Ø100         | FTGA03508 | TW15S         | HW30L       | LFMP3R-A | DHA0624           | CFMP3R-A     | PXMA0306             |

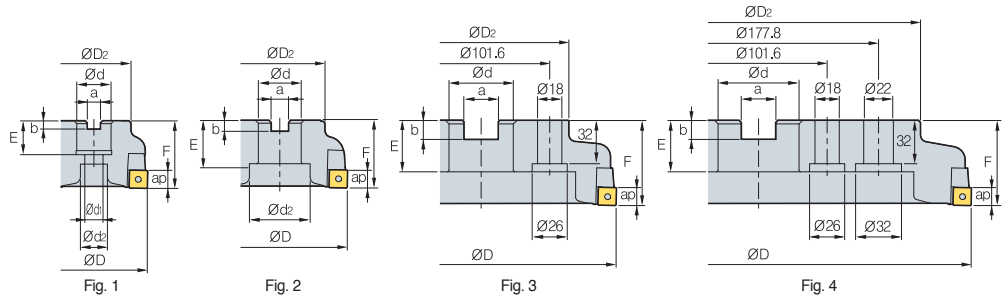
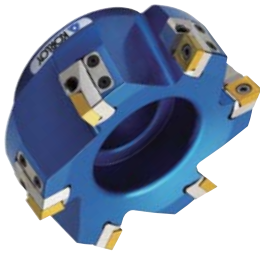
Insertos disponibles E17, E18 Detalles del cortador E400~E402





# FMPC(M)4000-A

Cuerpo de aluminio



AA  
90°

• AR: 10°  
• RR: -9°~-7.3°

| Codigo          | ØD  | ØD2 | Ød          | a           | b       | E       | F  | Ød1  | Ød2 | ap | kg  | Fig. |
|-----------------|-----|-----|-------------|-------------|---------|---------|----|------|-----|----|-----|------|
| FMPCM 4063S-A   | 63  | 49  | 22          | 10.4        | 6.3     | 20      | 50 | 11   | 18  | 11 | 0.6 | 1    |
| FMPC 4080S-A    | 80  | 67  | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 25 (22) | 50 | 13.5 | 20  | 11 | 0.8 | 1    |
| (FMPCM) 4100S-A | 100 | 67  | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 32      | 50 | -    | 45  | 11 | 1.1 | 2    |
| 4100S-25.4-A    | 100 | 67  | 25.4        | 9.5         | 6       | 25      | 50 | -    | 38  | 11 | 1.2 | 2    |
| 4125S-A         | 125 | 87  | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 38 (35) | 63 | -    | 56  | 11 | 1.7 | 2    |
| 4125S-25.4-A    | 125 | 70  | 25.4        | 9.5         | 6       | 25      | 63 | -    | 38  | 11 | 1.8 | 2    |
| 4160S-A         | 160 | 107 | 50.8 (40)   | 19.0 (16.4) | 11 (9)  | 38 (35) | 63 | -    | 75  | 11 | 2.5 | 2    |
| 4200S-A         | 200 | 130 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38 (32) | 63 | -    | -   | 11 | 3.2 | 3    |
| 4250S-A         | 250 | 180 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38      | 63 | -    | -   | 11 | 4.1 | 3    |
| 4315S-A         | 315 | 240 | 47.625 (60) | 25.4 (25.7) | 14 (14) | 38      | 63 | -    | -   | 11 | 6.7 | 4    |

(mm)

( ) Tamaño métrico

## Insertos disponibles

|        |            | SDET-MF | SDET-MM | SDET-MA    | SDXT-MF | SDXT-MM | SDXT-MA |        |        |        |        |          |        |        |        |      |        |       |     |     |     |     |
|--------|------------|---------|---------|------------|---------|---------|---------|--------|--------|--------|--------|----------|--------|--------|--------|------|--------|-------|-----|-----|-----|-----|
|        |            |         |         |            |         |         |         |        |        |        |        |          |        |        |        |      |        |       |     |     |     |     |
| Codigo |            | Cermet  |         | Recubierto |         |         |         |        |        |        |        | Sin Rec. |        |        |        | pag. |        |       |     |     |     |     |
|        |            | CN2000  | CN30    | NCM325     | NCM335  | NC5330  | NCM535  | NCM545 | PC3600 | PC3700 | PC6510 | PC9630   | PC9640 | PC5300 | PC5400 |      | PD1010 | ST30A | G10 | H01 | H05 |     |
| SDET   | 130504R-MA |         |         |            |         |         |         |        |        |        |        |          |        |        |        |      |        |       |     |     | E17 |     |
|        | 130508R-MF |         |         |            |         |         |         |        |        |        |        |          |        |        |        |      |        |       |     |     |     | E18 |
|        | 130508R-MM |         |         |            |         |         |         |        |        |        |        |          |        |        |        |      |        |       |     |     |     |     |
| SDXT   | 130508R-MF |         |         |            |         |         |         |        |        |        |        |          |        |        |        |      |        |       |     |     |     |     |
|        | 130508R-MM |         |         |            |         |         |         |        |        |        |        |          |        |        |        |      |        |       |     |     |     |     |
|        | 130508R-MA |         |         |            |         |         |         |        |        |        |        |          |        |        |        |      |        |       |     |     |     |     |

## Adaptadores disponibles

| Codigo               | Ød    | Adaptadores NC   | Designation  | Ød     | Adaptadores NC    |
|----------------------|-------|------------------|--------------|--------|-------------------|
| FMPCM 4063S-□        | 22    | BT□□-FMC22-□□    | FMPC (FMPCM) | 38.1   | BT□□-FMA38.1-□□   |
| FMPC (FMPCM) 4080S-□ | 25.4  | BT□□-FMA25.4-□□  |              | 40     | BT□□-FMB40-□□     |
|                      | 27    | BT□□-FMC27-□□    |              | 25.4   | BT□□-FMA25.4-□□   |
| 4100S-□              | 31.75 | BT□□-FMA31.75-□□ |              | 50.8   | BT□□-FMA38.1-□□   |
|                      | 32    | BT□□-FMC32-□□    |              | 40     | BT□□-FMB/FMC40-□□ |
| 4100S-25.4-□         | 25.4  | BT□□-FMA25.4-□□  |              | 47.625 | BT□□-FMA47.625-□□ |
|                      |       |                  |              | 60     | BT□□-FMB60-□□     |
|                      |       |                  |              | 60     | BT□□-FMB60-□□     |

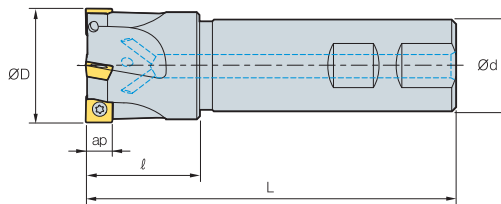
## Partes

| Especificaciones |           |               |             |           |                   |              |                      |
|------------------|-----------|---------------|-------------|-----------|-------------------|--------------|----------------------|
|                  | Tornillo  | Llave Inserto | Llave Placa | Cartucho  | Tornillo Cartucho | Rompeviruta  | Tornillo Rompeviruta |
| Ø63~Ø80          | FTNC04509 | TW20S         | HW40L       | LFMP4R1-A | DHA0825           | CFMP3R14R1-A | PXMA0306             |
| Ø100~Ø315        | FTNC04509 | TW20S         | HW40L       | LFMP4R-A  | DHA0830           | CFMP4R-A     | PXMA0306             |

Insertos disponibles E17, E18

Detalles del cortador E400~E402

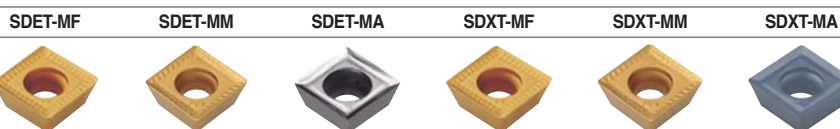
# FMPS3000



(mm)

| Codigo      | Flutes | ØD | Ød | l  | L   | ap | kg  |
|-------------|--------|----|----|----|-----|----|-----|
| <b>FMPS</b> |        |    |    |    |     |    |     |
| 3025HS      | 2      | 25 | 25 | 35 | 115 | 7  | 0.4 |
| 3032HS      | 3      | 32 | 25 | 40 | 125 | 7  | 0.5 |
| 3040HS      | 4      | 40 | 32 | 40 | 130 | 7  | 0.8 |
| 3040HS-S40  | 4      | 40 | 40 | 45 | 140 | 7  | 1.2 |
| 3040HS-S42  | 4      | 40 | 42 | 45 | 140 | 7  | 1.3 |
| 3050HS      | 5      | 50 | 32 | 40 | 135 | 7  | 1   |
| 3050HS-S40  | 5      | 50 | 40 | 40 | 140 | 7  | 1.3 |
| 3050HS-S42  | 5      | 50 | 42 | 40 | 140 | 7  | 1.4 |
| 3063HS      | 6      | 63 | 32 | 45 | 135 | 7  | 1.2 |
| 3063HS-S40  | 6      | 63 | 40 | 45 | 145 | 7  | 1.6 |
| 3063HS-S42  | 6      | 63 | 42 | 45 | 145 | 7  | 1.7 |

## Insertos disponibles

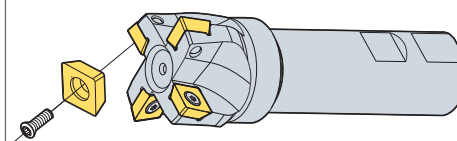


| Codigo      | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        |       | pag. |     |     |     |
|-------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|-------|------|-----|-----|-----|
|             | CN2000 | CN30 | NCM325     | NCM335 | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | PD2000 | ST30A |      | G10 | H01 | H05 |
| <b>SDET</b> |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| 09M402R-MA  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| 09M405R-MF  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| 09M405R-MM  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| <b>SDXT</b> |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |
| 09M405R-MF  |        |      | ●          |        |        |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      |        |       |      |     |     | E17 |
| 09M405L-MF  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     | E18 |
| 09M405R-MM  |        |      | ●          | ●      |        |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      |        |       |      |     |     |     |
| 09M405L-MM  |        |      |            |        |        |        |        | ●      |        | ●      |        |        |          |        |        |       |      |     |     |     |
| 09M405R-MA  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      | ●   | ●   |     |

## Partes

| Especificaciones | Tornillo  | Llave |
|------------------|-----------|-------|
| Ø25~Ø63          | FTGA03508 | TW15S |

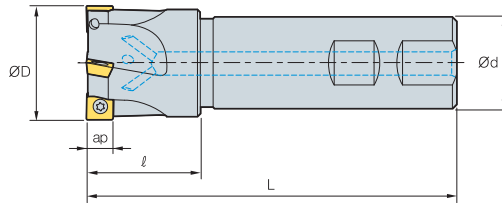
## Ensamblado



Insertos disponibles E17, E18



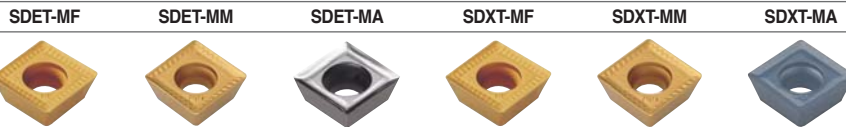
# FMPS4000



AA  
90°  
• AR: 10°  
• RR: -9° ~ -8°

| Codigo     |            |    | ØD | Ød | ℓ   | L   | ap  |     |
|------------|------------|----|----|----|-----|-----|-----|-----|
| FMPS       | 4040HS     | 3  | 40 | 32 | 40  | 130 | 11  | 1   |
|            | 4040HS-S40 | 3  | 40 | 40 | 40  | 140 | 11  | 1.3 |
|            | 4040HS-S42 | 3  | 40 | 42 | 40  | 140 | 11  | 1.4 |
|            | 4050HS     | 4  | 50 | 32 | 45  | 135 | 11  | 1.5 |
|            | 4050HS-S40 | 4  | 50 | 40 | 45  | 145 | 11  | 1.7 |
|            | 4050HS-S42 | 4  | 50 | 42 | 45  | 145 | 11  | 1.6 |
|            | 4063HS     | 5  | 63 | 32 | 45  | 135 | 11  | 2.1 |
|            | 4063HS-S40 | 5  | 63 | 40 | 45  | 145 | 11  | 2.4 |
| 4063HS-S42 | 5          | 63 | 42 | 45 | 145 | 11  | 2.6 |     |

## Insertos disponibles

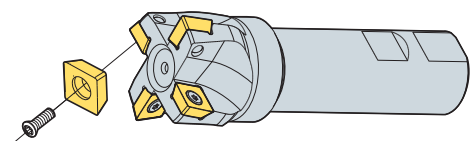


| Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        |       | pag. |     |     |     |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|-------|------|-----|-----|-----|-----|
|        | CN2000     | CN30 | NCM325     | NCM335 | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | PD1010 | ST30A |      | G10 | H01 | H05 |     |
| SDET   | 130504R-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     | E17 |     |
|        | 130508R-MF |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     | E18 |
|        | 130508R-MM |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      |     |     |     |     |
| SDXT   | 130508R-MF |      |            | ●      |        |        |        | ●      |        | ●      | ●      |        | ●        | ●      |        |       |      |     |     | E18 |     |
|        | 130508R-MM |      |            | ●      | ●      |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      |        |       |      |     |     |     | E18 |
|        | 130508R-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |       |      | ●   | ●   |     |     |

## Partes

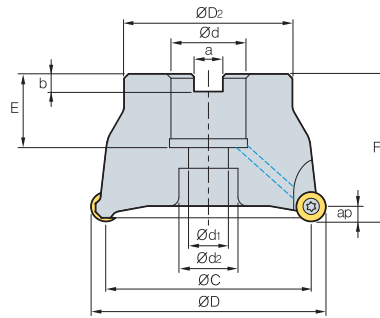
| Especificaciones |                       |                |
|------------------|-----------------------|----------------|
| Ø40~Ø63          | Tornillo<br>FTNC04511 | Llave<br>TW20S |

## Ensamblado



Insertos disponibles E17, E18

# FMRC(M)3000



• AR: 5°  
• RR: -5°

(mm)

| Codigo              | ØD               | ØC | ØD <sub>2</sub> | Ød | a  | b          | E           | F       | Ød <sub>1</sub> | Ød <sub>2</sub> | ap | kg   |     |      |
|---------------------|------------------|----|-----------------|----|----|------------|-------------|---------|-----------------|-----------------|----|------|-----|------|
| <b>FMRCM</b>        | <b>3040HRD</b>   | 3  | 40              | 30 | 36 | 16         | 8.4         | 5.6     | 18              | 40              | 9  | 14   | 5.0 | 0.2  |
|                     | <b>3040HRD-H</b> | 4  | 40              | 30 | 36 | 16         | 8.4         | 5.6     | 18              | 40              | 9  | 14   | 5.0 | 0.2  |
|                     | <b>3050HRD</b>   | 4  | 50              | 40 | 42 | 22         | 10.4        | 6.3     | 20              | 40              | 11 | 16.5 | 5.0 | 0.3  |
|                     | <b>3050HRD-H</b> | 5  | 50              | 40 | 42 | 22         | 10.4        | 6.3     | 20              | 40              | 11 | 16.5 | 5.0 | 0.3  |
|                     | <b>3063HRD</b>   | 5  | 63              | 53 | 49 | 22         | 10.4        | 6.3     | 20              | 50              | 11 | 16.5 | 5.0 | 0.64 |
|                     | <b>3063HRD-H</b> | 6  | 63              | 53 | 49 | 22         | 10.4        | 6.3     | 20              | 50              | 11 | 16.5 | 5.0 | 0.64 |
| <b>FMRC (FMRCM)</b> | <b>3080HRD</b>   | 6  | 80              | 70 | 57 | 25.4 (27)  | 9.5 (12.4)  | 6 (7.0) | 25 (22)         | 50 (50)         | 14 | 19   | 5.0 | 1.1  |
|                     | <b>3080HRD-H</b> | 7  | 80              | 70 | 57 | 25.4 (27)  | 9.5 (12.4)  | 6 (7.0) | 25 (22)         | 50 (50)         | 14 | 19   | 5.0 | 1.1  |
|                     | <b>3100HRD</b>   | 7  | 100             | 90 | 67 | 31.75 (32) | 12.7 (14.4) | 8 (8.0) | 32 (28)         | 63 (63)         | 18 | 26   | 5.0 | 2.1  |
|                     | <b>3100HRD-H</b> | 8  | 100             | 90 | 67 | 31.75 (32) | 12.7 (14.4) | 8 (8.0) | 32 (28)         | 63 (63)         | 18 | 26   | 5.0 | 2.1  |

Nota) En general, se miden a diametro interno cuando se llevan diametro de FNRC/FMRCM son de Ø40-Ø63

( ) Tamaño métrico

## Insertos disponibles

RDKT-MF      RDKT-MM      RDCT-MA



| Codigo | Cermet    |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |       |            |
|--------|-----------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-------|------------|
|        | CN2000    | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | ST30A | H01        |
| RDCT   | 10T3M0-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        | ●     | E15<br>E16 |
| RDKT   | 10T3M0-MF |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       |            |
|        | 10T3M0-MM |      |            | ●      |        |        |        |        |        | ●      | ●      | ●      |          | ●      |      |        |       |            |

## Adaptadores disponibles

| Codigo              | Ød   | Adaptadores NC |                     |
|---------------------|--|----------------|---------------------|
| <b>FMRCM</b>        | <b>3040HRD</b><br><b>3040HRD-H</b>                                       | 16             | BT□□-FMC16-□□       |
|                     | <b>3050HRD</b><br><b>3050HRD-H</b><br><b>3063HRD</b><br><b>3063HRD-H</b> | 22             | BT□□-FMC22-□□       |
| <b>FMRC (FMRCM)</b> | <b>3080HRD</b>   | 25.4           | BT□□-FMA/FMB25.4-□□ |
|                     | <b>3080HRD-H</b>   | 27             | BT□□-FMB/FMC27-□□   |
|                     | <b>3100HRD</b>   | 31.75          | BT□□-FMA31.75-□□    |
|                     | <b>3100HRD-H</b>   | 32             | BT□□-FMC32-□□       |

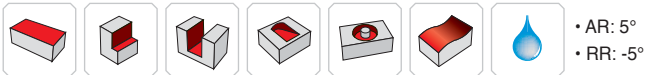
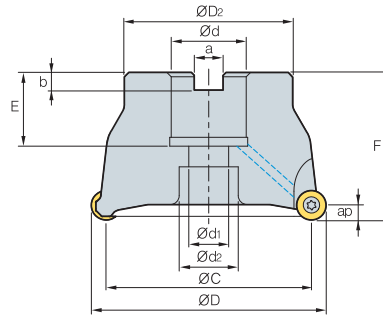
## Partes

| Especificaciones | Tornillo  | Llave |
|------------------|-----------|-------|
| Ø40~Ø100         | FTGA03508 | TW15S |

Insertos disponibles E15, E16      Detalles del cortador E400-E402



# FMRC(M)4000



| Codigo       |           | ØD  | ØC  | ØD <sub>2</sub> | Ød        | a           | b           | E        | F       | Ød <sub>1</sub> | Ød <sub>2</sub> | ap  |     |           |
|--------------|-----------|-----|-----|-----------------|-----------|-------------|-------------|----------|---------|-----------------|-----------------|-----|-----|-----------|
| FMRCM        | 4050HRD   | 4   | 50  | 38              | 42        | 22          | 10.4        | 6.3      | 20      | 50              | 11              | 18  | 6.0 | 0.4       |
|              | 4063HRD   | 4   | 63  | 51              | 49        | 22          | 10.4        | 6.3      | 20      | 50              | 11              | 18  | 6.0 | 0.6       |
|              | 4063HRD-M | 5   | 63  | 51              | 49        | 22          | 10.4        | 6.3      | 20      | 50              | 11              | 18  | 6.0 | 0.6       |
| FMRC (FMRCM) | 4080HRD   | 5   | 80  | 68              | 57        | 25.4 (27)   | 9.5 (12.4)  | 6 (7.0)  | 25 (23) | 50 (50)         | 14              | 20  | 6.0 | 1.0       |
|              | 4080HRD-M | 6   | 80  | 68              | 57        | 25.4 (27)   | 9.5 (12.4)  | 6 (7.0)  | 25 (23) | 50 (50)         | 14              | 20  | 6.0 | 1.0       |
|              | 4100HRD   | 6   | 100 | 88              | 67        | 31.75 (32)  | 12.7 (14.4) | 8 (8.0)  | 33 (25) | 63 (50)         | 18              | 26  | 6.0 | 1.9 (1.5) |
|              | 4100HRD-M | 7   | 100 | 88              | 67        | 31.75 (32)  | 12.7 (14.4) | 8 (8.0)  | 33 (25) | 63 (50)         | 18              | 26  | 6.0 | 1.9 (1.5) |
|              | 4125HRD   | 7   | 125 | 113             | 87        | 38.1 (40)   | 15.9 (16.4) | 10 (9.0) | 35 (29) | 63 (63)         | 22              | 32  | 6.0 | 3.0       |
| 4125HRD-M    | 8         | 125 | 113 | 87              | 38.1 (40) | 15.9 (16.4) | 10 (9.0)    | 35 (29)  | 63 (63) | 22              | 32              | 6.0 | 3.0 |           |

Nota) En general, se miden a diametro interno cuando se llevan diametro de FNRC/FMRCM son de Ø50~Ø63 ( )Tamaño métrico

## Insertos disponibles

RDKT-MF RDKT-MM RDCT-MA



| Codigo | Cermet    |      | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |     |
|--------|-----------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|-----|
|        | CN2000    | CN30 | NCM925     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01 |
| RDCT   | 1204M0-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●     | E15 |
| RDKT   | 1204M0-MF |      |            |        |        |        |        |        | ●      |        | ●      |        |        | ●        |        |      |       | E16 |
|        | 1204M0-MM |      |            | ●      |        |        |        |        | ●      | ●      | ●      |        |        | ●        |        |      |       |     |

## Adaptadores disponibles

| Codigo       | Ød                   | Adaptadores NC              |
|--------------|----------------------|-----------------------------|
| FMRCM        | 4063HRD<br>4063HRD-M | 22<br>BT□□-FMC22-□□         |
| FMRC (FMRCM) | 4080HRD              | 25.4<br>BT□□-FMA/FMB25.4-□□ |
|              | 4080HRD-M            | 27<br>BT□□-FMB/FMC27-□□     |
|              | 4100HRD              | 31.75<br>BT□□-FMA31.75-□□   |
|              | 4100HRD-M            | 32<br>BT□□-FMC32-□□         |
|              | 4125HRD              | 38.1<br>BT□□-FMA/FMB38.1-□□ |
|              | 4125HRD-M            | 40<br>BT□□-FMB/FMC40-□□     |

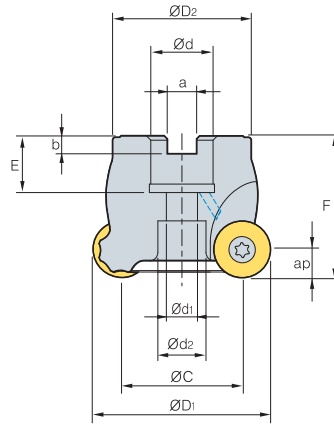
## Partes

| Especificaciones |                      |                |
|------------------|----------------------|----------------|
| Ø50~Ø125         | Tornillo<br>FTKA0410 | Llave<br>TW15S |

Insertos disponibles E15, E16 Detalles del cortador E400~E402



## FMRC(M)5000



• AR: 5°  
• RR: -5°

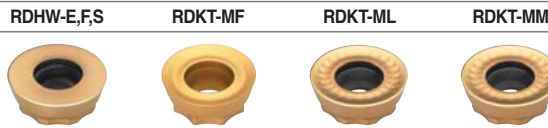
(mm)

| Codigo       | ØD        | ØC  | ØD2 | Ød  | a         | b           | E           | F       | Ød1     | Ød2     | ap | kg   |     |           |
|--------------|-----------|-----|-----|-----|-----------|-------------|-------------|---------|---------|---------|----|------|-----|-----------|
| FMRCM        | 5050HRD   | 3   | 50  | 34  | 42        | 22          | 10.4        | 6.3     | 20      | 50      | 11 | 16.5 | 8.0 | 0.4       |
|              | 5063HRD   | 4   | 63  | 47  | 49        | 22          | 10.4        | 6.3     | 20      | 50      | 11 | 18   | 8.0 | 0.6       |
|              | 5063HRD-H | 5   | 63  | 47  | 49        | 22          | 10.4        | 6.3     | 20      | 50      | 11 | 18   | 8.0 | 0.6       |
| FMRC (FMRCM) | 5080HRD   | 5   | 80  | 64  | 57        | 25.4 (27)   | 9.5 (12.4)  | 6 (7.0) | 25 (23) | 50 (50) | 14 | 20   | 8.0 | 0.9       |
|              | 5080HRD-H | 6   | 80  | 64  | 57        | 25.4 (27)   | 9.5 (12.4)  | 6 (7.0) | 25 (23) | 50 (50) | 14 | 20   | 8.0 | 0.9       |
|              | 5100HRD   | 6   | 100 | 84  | 67        | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 33 (25) | 63 (50) | 18 | 26   | 8.0 | 1.9 (1.4) |
|              | 5100HRD-H | 7   | 100 | 84  | 67        | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 33 (25) | 63 (50) | 18 | 26   | 8.0 | 1.9 (1.4) |
|              | 5125HRD   | 7   | 125 | 109 | 87        | 38.1 (40)   | 15.9 (16.4) | 10 (9)  | 35 (29) | 63 (63) | 22 | 32   | 8.0 | 3         |
| 5125HRD-H    | 8         | 125 | 109 | 87  | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 35 (29) | 63 (63) | 22      | 32 | 8.0  | 3   |           |

Nota) En general, se miden a diametro interno cuando se llevan diametro de FNRC/FMRCM son de Ø50-Ø63

( ) Tamaño métrico

### Insertos disponibles



| Codigo | Cermet    |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |     |
|--------|-----------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|-----|
|        | CN2000    | CN80 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01 |
| RDHW   | 1605MOE   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       | E15 |
|        | 1605MOF   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
|        | 1605MOS   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
| RDKT   | 1605M0-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       | E16 |
|        | 1605M0-MF |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
|        | 1605M0-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |

### Adaptadores disponibles

| Codigo       | Ød        | Adaptadores NC      |
|--------------|-----------|---------------------|
| FMRCM        | 5050HRD   | BT□□-FMC22-□□       |
|              | 5063HRD   |                     |
|              | 5063HRD-H |                     |
| FMRC (FMRCM) | 5080HRD   | BT□□-FMA/FMB25.4-□□ |
|              | 5080HRD-H | BT□□-FMB/FMC27-□□   |
|              | 5100HRD   | BT□□-FMA31.75-□□    |
|              | 5100HRD-H | BT□□-FMC32-□□       |
|              | 5125HRD   | BT□□-FMA/FMB38.1-□□ |
|              | 5125HRD-H | BT□□-FMB/FMC40-□□   |

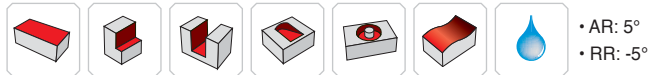
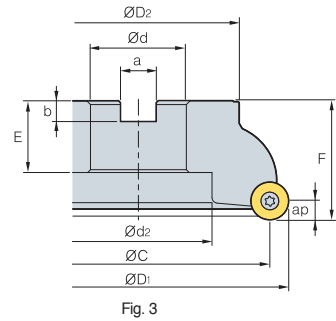
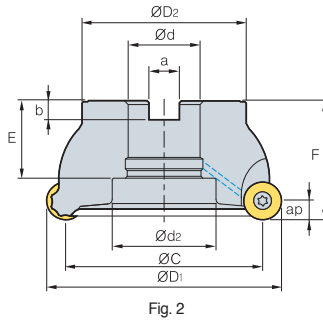
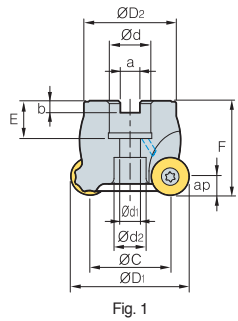
### Partes

| Especificaciones | Tornillo   | Llave    |
|------------------|------------|----------|
| Ø50-Ø125         | FTGA0513-P | TW20-100 |

Insertos disponibles E15, E16 Detalles del cortador E400-E402



# FMRC(M)6000



| Codigo              | ØD               | ØC | ØD <sub>2</sub> | Ød  | a   | b          | E           | F       | Ød <sub>1</sub> | Ød <sub>2</sub> | ap     | kg      | Fig. |           |       |
|---------------------|------------------|----|-----------------|-----|-----|------------|-------------|---------|-----------------|-----------------|--------|---------|------|-----------|-------|
| <b>FMRCM</b>        | <b>6063HRD</b>   | 3  | 63              | 43  | 49  | 22         | 10.4        | 6.3     | 20              | 50              | 11     | 17      | 10.0 | 0.5       | 1     |
|                     | <b>6063HRD-M</b> | 4  | 63              | 43  | 49  | 22         | 10.4        | 6.3     | 20              | 50              | 11     | 17      | 10.0 | 0.5       | 1     |
| <b>FMRC (FMRCM)</b> | <b>6080HRD</b>   | 4  | 80              | 60  | 57  | 25.4 (27)  | 9.5 (12.4)  | 6 (7.0) | 25 (22)         | 50              | 14     | 20      | 10.0 | 0.8       | 1     |
|                     | <b>6080HRD-M</b> | 5  | 80              | 60  | 57  | 25.4 (27)  | 9.5 (12.4)  | 6 (7.0) | 25 (22)         | 50              | 14     | 20      | 10.0 | 0.8       | 1     |
|                     | <b>6100HRD</b>   | 5  | 100             | 80  | 67  | 31.75 (32) | 12.7 (14.4) | 8 (8)   | 32 (28)         | 63              | 18     | 26      | 10.0 | 1.6       | 1     |
|                     | <b>6100HRD-M</b> | 6  | 100             | 80  | 67  | 31.75 (32) | 12.7 (14.4) | 8 (8)   | 32 (28)         | 63              | 18     | 26      | 10.0 | 1.6       | 1     |
|                     | <b>6125HRD</b>   | 6  | 125             | 105 | 87  | 38.1 (40)  | 15.9 (16.4) | 10 (9)  | 41 (29)         | 63              | - (22) | 55 (32) | 10.0 | 2.7 (2.9) | 2 (1) |
|                     | <b>6125HRD-M</b> | 7  | 125             | 105 | 87  | 38.1 (40)  | 15.9 (16.4) | 10 (9)  | 41 (29)         | 63              | - (22) | 55 (32) | 10.0 | 2.7 (2.9) | 2 (1) |
|                     | <b>6160RD</b>    | 7  | 160             | 140 | 107 | 50.8 (40)  | 19 (16.4)   | 11 (9)  | 38 (35)         | 63              | -      | 78      | 10.0 | 4.4       | 3     |
|                     | <b>6160RD-M</b>  | 8  | 160             | 140 | 107 | 50.8 (40)  | 19 (16.4)   | 11 (9)  | 38 (35)         | 63              | -      | 78      | 10.0 | 4.4       | 3     |

( ) Tamaño métrico

## Insertos disponibles

RDHW-E,F,S      RDKT-MM



| Codigo      | Cermet           |      | Recubierta |       |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |     |
|-------------|------------------|------|------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|-----|
|             | CN2000           | CN30 | NCM325     | NC530 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01 |
| <b>RDHW</b> | <b>2006MOE</b>   |      |            |       |        |        |        |        |        |        |        |        |        |          |        |      |       | E15 |
|             | <b>2006MOF</b>   |      |            |       |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
|             | <b>2006MOS</b>   |      |            |       |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
| <b>RDKT</b> | <b>2006M0-MM</b> |      |            |       |        |        |        |        |        | ●      |        |        |        |          |        |      |       |     |

## Adaptadores disponibles

| Codigo              | Ød               | Adaptadores NC      |
|---------------------|------------------|---------------------|
| <b>FMRCM</b>        | <b>6063HRD</b>   | BT□□-FMC22-□□       |
|                     | <b>6063HRD-M</b> |                     |
| <b>FMRC (FMRCM)</b> | <b>6080HRD</b>   | BT□□-FMA/FMB25.4-□□ |
|                     | <b>6080HRD-M</b> | BT□□-FMB/FMC27-□□   |
|                     | <b>6100HRD</b>   | BT□□-FMA31.75-□□    |
|                     | <b>6100HRD-M</b> | BT□□-FMC32-□□       |
|                     | <b>6125HRD</b>   | BT□□-FMA/FMB38.1-□□ |
|                     | <b>6125HRD-M</b> | BT□□-FMB/FMC40-□□   |
|                     | <b>6160RD</b>    | BT□□-FMA50.8-□□     |
|                     | <b>6160RD-M</b>  | BT□□-FMB/FMC40-□□   |

## Partes

| Especificaciones | Tornillo   | Llave    |
|------------------|------------|----------|
| Ø63-Ø160         | FTGA0515-P | TW20-100 |

Insertos disponibles E15, E16      Detalles del cortador E400~E402

# FMRS1000/1500

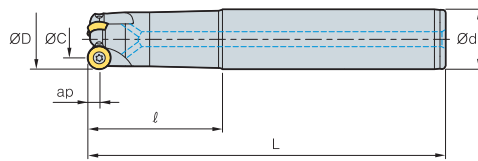


Fig. 1

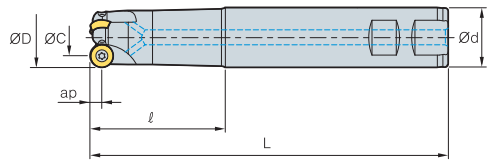


Fig. 2



- AR: 5°
- RR: -5° ~ -1°

(mm)

| Codigo      | Fig.      | ØD | ØC | Ød  | ℓ  | L   | ap  | kg  |     |   |
|-------------|-----------|----|----|-----|----|-----|-----|-----|-----|---|
| <b>FMRS</b> | 1008HRD-M | 1  | 8  | 5.5 | 10 | 30  | 80  | 2.5 | 0.2 | 1 |
|             | 1008HRD-L | 1  | 8  | 5.5 | 10 | 50  | 100 | 2.5 | 0.2 | 1 |
|             | 1010HRD-M | 1  | 10 | 5   | 12 | 44  | 100 | 2.5 | 0.2 | 1 |
|             | 1010HRD-L | 1  | 10 | 5   | 12 | 64  | 120 | 2.5 | 0.2 | 1 |
|             | 1012HRD-M | 2  | 12 | 7   | 12 | 44  | 100 | 2.5 | 0.3 | 1 |
|             | 1012HRD-L | 2  | 12 | 7   | 16 | 80  | 160 | 2.5 | 0.3 | 1 |
|             | 1015HRD-M | 3  | 15 | 10  | 16 | 80  | 160 | 2.5 | 0.3 | 1 |
|             | 1015HRD-L | 3  | 15 | 10  | 16 | 100 | 200 | 2.5 | 0.4 | 1 |
| <b>FMRS</b> | 1510HRD-M | 1  | 10 | 6   | 12 | 44  | 100 | 3.0 | 0.2 | 1 |
|             | 1510HRD-L | 1  | 10 | 6   | 12 | 64  | 120 | 3.0 | 0.2 | 1 |
|             | 1512HRD-M | 2  | 12 | 6   | 12 | 54  | 110 | 3.0 | 0.3 | 1 |
|             | 1512HRD-L | 2  | 12 | 6   | 16 | 80  | 160 | 3.0 | 0.3 | 1 |
|             | 1516HRD-M | 3  | 16 | 10  | 16 | 60  | 130 | 3.0 | 0.3 | 1 |
|             | 1516HRD-L | 3  | 16 | 10  | 20 | 90  | 180 | 3.0 | 0.4 | 1 |
|             | 1520HRD-M | 3  | 20 | 14  | 20 | 80  | 150 | 3.0 | 0.4 | 1 |
|             | 1520HRD-L | 3  | 20 | 14  | 20 | 90  | 200 | 3.0 | 0.5 | 1 |

## Insertos disponibles

RDHW-E,FS      RDKW



| Tipo      | Codigo | Cermet  |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |       |            |
|-----------|--------|---------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-------|------------|
|           |        | CN2000  | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | ST30A | H01        |
| 1000 Tipo | RDHW   | 0501M0E |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       | E15<br>E16 |
|           |        | 0501M0F |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       |            |
|           |        | 0501M0S |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       |            |
| 1500 Tipo | RDHW   | 06T1M0E |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       |            |
|           |        | 06T1M0F |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       |            |
|           |        | 06T1M0S |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       |            |
|           | RDKW   | 06T1M0E |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       |            |

## Partes

| Especificaciones    | Tornillo  | Llave |
|---------------------|-----------|-------|
| Ø8~Ø15 (1000 Tipo)  | FTNA0203  | TW06P |
| Ø10~Ø20 (1500 Tipo) | FTNA02205 | TW06P |

Insertos disponibles E15, E16





# FMRS2000/2500

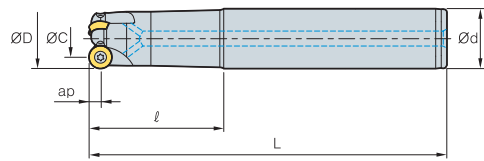


Fig. 1

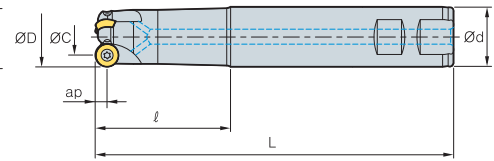


Fig. 2



• AR: 5°  
• RR: -5° ~ -1°

(mm)

| Codigo    |           | ØD | ØC | Ød | l   | L   | ap  |     | Fig. |
|-----------|-----------|----|----|----|-----|-----|-----|-----|------|
| FMRS      | 2015HRD-S | 2  | 15 | 8  | 16  | 55  | 115 | 0.3 | 2    |
|           | 2015HRD-M | 2  | 15 | 8  | 20  | 80  | 150 | 0.4 | 1    |
|           | 2015HRD-L | 2  | 15 | 8  | 20  | 90  | 200 | 0.5 | 1    |
|           | 2020HRD-S | 3  | 20 | 14 | 20  | 65  | 125 | 0.3 | 2    |
|           | 2020HRD-M | 3  | 20 | 14 | 20  | 80  | 150 | 0.4 | 1    |
|           | 2020HRD-L | 3  | 20 | 14 | 25  | 90  | 200 | 0.5 | 1    |
| FMRS      | 2516HRD-S | 2  | 16 | 8  | 16  | 65  | 125 | 0.3 | 2    |
|           | 2516HRD-M | 2  | 16 | 8  | 16  | 80  | 150 | 0.4 | 1    |
|           | 2516HRD-L | 2  | 16 | 8  | 20  | 90  | 200 | 0.5 | 1    |
|           | 2520HRD-S | 2  | 20 | 12 | 20  | 65  | 125 | 0.4 | 2    |
|           | 2520HRD-M | 2  | 20 | 12 | 20  | 80  | 150 | 0.5 | 1    |
|           | 2520HRD-L | 2  | 20 | 12 | 25  | 90  | 200 | 0.6 | 1    |
|           | 2525HRD-S | 3  | 25 | 17 | 25  | 55  | 125 | 0.5 | 2    |
|           | 2525HRD-M | 3  | 25 | 17 | 25  | 90  | 200 | 0.6 | 1    |
| 2525HRD-L | 3         | 25 | 17 | 32 | 110 | 250 | 0.7 | 1   |      |

## Insertos disponibles

RDHW-E,F,S      RDKW



| Tipo      | Codigo | Cermet  |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |     |            |
|-----------|--------|---------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|-----|------------|
|           |        | CN2000  | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01 |            |
| 2000 Tipo | RDHW   | 0702M0E |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     | E15<br>E16 |
|           |        | 0702M0F |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |
|           |        | 0702M0S |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |
| 2500 Tipo | RDKW   | 0702M0E |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |
|           | RDHW   | 0803M0E |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |
|           |        | 0803M0F |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |
|           |        | 0803M0S |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |
|           | RDKW   | 0803M0E |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |

## Partes

| Especificaciones    |                                   |                |
|---------------------|-----------------------------------|----------------|
| Ø15-Ø20 (2000 Tipo) | Tornillo<br>FTNA02555             | Llave<br>TW07S |
| Ø16-Ø25 (2500 Tipo) | FTNA0305<br>FTNA0306 (Ø20 más de) | TW09S          |

Insertos disponibles E15, E16

# FMRS3000

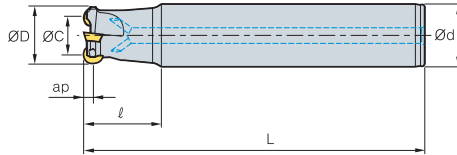


Fig. 1

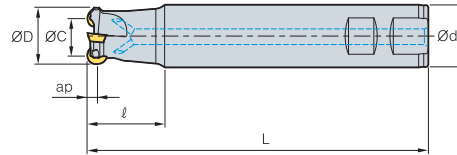


Fig. 2



- AR: 5°
- RR: -8° ~ -5°

(mm)

| Codigo | ØD         | ØC | Ød | l  | L  | ap  | kg  | Fig. |      |   |
|--------|------------|----|----|----|----|-----|-----|------|------|---|
| FMRS   | 3021HRD-M  | 1  | 21 | 11 | 20 | 40  | 150 | 5    | 0.4  | 1 |
|        | 3021HRD-M2 | 2  | 21 | 11 | 20 | 40  | 150 | 5    | 0.4  | 1 |
|        | 3021HRD-L  | 1  | 21 | 11 | 20 | 50  | 200 | 5    | 0.6  | 1 |
|        | 3021HRD-L2 | 2  | 21 | 11 | 20 | 50  | 200 | 5    | 0.6  | 1 |
|        | 3025HRD-S  | 2  | 25 | 15 | 25 | 35  | 115 | 5    | 0.5  | 2 |
|        | 3025HRD-M  | 2  | 25 | 15 | 25 | 70  | 200 | 5    | 0.7  | 1 |
|        | 3025HRD-L  | 2  | 25 | 15 | 25 | 100 | 250 | 5    | 1    | 1 |
|        | 3026HRD-M  | 2  | 26 | 16 | 25 | 70  | 200 | 5    | 0.65 | 1 |
|        | 3026HRD-L  | 2  | 26 | 16 | 25 | 100 | 250 | 5    | 0.7  | 1 |
|        | 3032HRD-S  | 3  | 32 | 22 | 32 | 40  | 125 | 5    | 1    | 2 |
|        | 3032HRD-M  | 3  | 32 | 22 | 32 | 70  | 200 | 5    | 1.3  | 1 |
|        | 3032HRD-L  | 3  | 32 | 22 | 32 | 150 | 300 | 5    | 1.6  | 1 |
|        | 3040HRD-S  | 4  | 40 | 30 | 32 | 40  | 125 | 5    | 1.3  | 2 |
|        | 3040HRD-M  | 4  | 40 | 30 | 32 | 70  | 200 | 5    | 1.5  | 1 |
|        | 3040HRD-L  | 4  | 40 | 30 | 32 | 150 | 300 | 5    | 1.8  | 1 |

## Insertos disponibles

RDKT-MF      RDKT-MM      RDCT-MA



| Codigo         | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |            |  |
|----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|------------|--|
|                | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01        |  |
| RDCT 10T3M0-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      | ●     | E15<br>E16 |  |
| RDKT 10T3M0-MF |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |            |  |
| 10T3M0-MM      |        |      | ●          |        |        |        |        |        |        | ●      | ●      | ●      |        | ●        |        |      |       |            |  |

## Partes

| Especificaciones | Tornillo               | Llave |
|------------------|------------------------|-------|
| Ø21<br>Ø25-Ø40   | FTGA03507<br>FTGA03508 | TW15S |

Insertos disponibles E15, E16



# FMRS4000

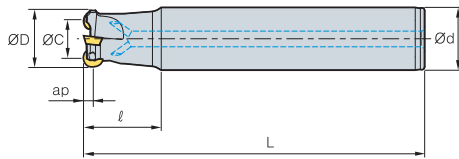


Fig. 1

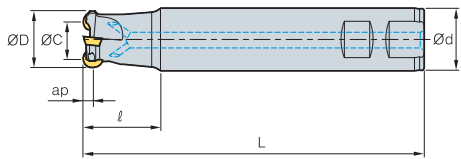


Fig. 2



• AR: 5°  
• RR: -8° ~ -5°

(mm)

| Codigo      |   | ØD | ØC | Ød | l   | L   | ap |     | Fig. |
|-------------|---|----|----|----|-----|-----|----|-----|------|
| <b>FMRS</b> |   |    |    |    |     |     |    |     |      |
| 4032HRD-S   | 2 | 32 | 20 | 32 | 40  | 125 | 6  | 0.8 | 2    |
| 4032HRD-M   | 2 | 32 | 20 | 32 | 70  | 200 | 6  | 1.1 | 1    |
| 4032HRD-L   | 2 | 32 | 20 | 32 | 150 | 300 | 6  | 1.6 | 1    |
| 4033HRD-S   | 2 | 33 | 21 | 32 | 40  | 125 | 6  | 0.9 | 2    |
| 4033HRD-M   | 2 | 33 | 21 | 32 | 70  | 200 | 6  | 1.1 | 1    |
| 4033HRD-L   | 2 | 33 | 21 | 32 | 150 | 300 | 6  | 1.7 | 1    |
| 4040HRD-S   | 3 | 40 | 28 | 32 | 40  | 125 | 6  | 1   | 2    |
| 4040HRD-M   | 3 | 40 | 28 | 32 | 70  | 200 | 6  | 1.6 | 1    |
| 4040HRD-L   | 3 | 40 | 28 | 32 | 150 | 300 | 6  | 1.8 | 1    |
| 4040HRD-S40 | 3 | 40 | 28 | 40 | 40  | 125 | 6  | 1.3 | 2    |
| 4040HRD-M40 | 3 | 40 | 28 | 40 | 70  | 200 | 6  | 2   | 1    |
| 4040HRD-L40 | 3 | 40 | 28 | 40 | 150 | 300 | 6  | 2.4 | 1    |
| 4040HRD-S42 | 3 | 40 | 28 | 42 | 40  | 125 | 6  | 1.6 | 2    |
| 4040HRD-M42 | 3 | 40 | 28 | 42 | 70  | 200 | 6  | 2.4 | 1    |
| 4040HRD-L42 | 3 | 40 | 28 | 42 | 150 | 300 | 6  | 2.8 | 1    |
| 4050HRD-S   | 4 | 50 | 38 | 42 | 50  | 125 | 6  | 1.5 | 2    |
| 4050HRD-M   | 4 | 50 | 38 | 42 | 50  | 250 | 6  | 2.1 | 1    |
| 4050HRD-L   | 4 | 50 | 38 | 42 | 50  | 300 | 6  | 2.7 | 1    |
| 4050HRD-S40 | 4 | 50 | 38 | 40 | 50  | 150 | 6  | 2   | 2    |
| 4050HRD-M40 | 4 | 50 | 38 | 40 | 50  | 250 | 6  | 2.6 | 1    |
| 4050HRD-L40 | 4 | 50 | 38 | 40 | 50  | 300 | 6  | 3.2 | 1    |

## Insertos disponibles

RDKT-MF      RDKT-MM      RDCT-MA



| Codigo         | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |       |            |
|----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-------|------------|
|                | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3800 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | ST30A | H01        |
| RDCT 1204M0-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        | ●     | E15<br>E16 |
| RDKT 1204M0-MF |        |      |            |        |        |        |        |        |        | ●      |        | ●      |          | ●      |      |        |       |            |
| RDKT 1204M0-MM |        |      | ●          |        |        |        |        |        |        | ●      | ●      | ●      |          | ●      |      |        |       |            |

## Partes

| Especificaciones |                      |                |
|------------------|----------------------|----------------|
| Ø32~Ø50          | Tornillo<br>FTKA0410 | Llave<br>TW15S |

Insertos disponibles E15, E16

# FMRS5000

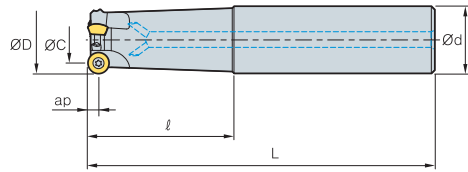


Fig. 1

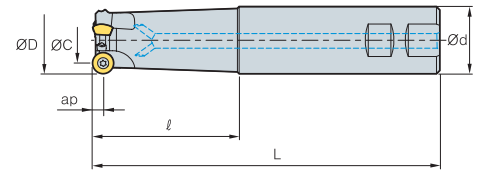


Fig. 2



- AR: 5°
- RR: -8° ~ -5°

(mm)

| Codigo      |   | ØD | ØC | Ød | ℓ   | L   | ap |     | Fig. |
|-------------|---|----|----|----|-----|-----|----|-----|------|
| <b>FMRS</b> |   |    |    |    |     |     |    |     |      |
| 5040HRD-S   | 2 | 40 | 24 | 32 | 40  | 125 | 8  | 1.4 | 2    |
| 5040HRD-M   | 2 | 40 | 24 | 32 | 70  | 200 | 8  | 1.8 | 1    |
| 5040HRD-L   | 2 | 40 | 24 | 32 | 150 | 300 | 8  | 2.0 | 1    |
| 5040HRD-S40 | 2 | 40 | 24 | 40 | 40  | 125 | 8  | 1.6 | 2    |
| 5040HRD-M40 | 2 | 40 | 24 | 40 | 70  | 200 | 8  | 2.0 | 1    |
| 5040HRD-L40 | 2 | 40 | 24 | 40 | 150 | 300 | 8  | 2.4 | 1    |
| 5040HRD-S42 | 2 | 40 | 24 | 42 | 40  | 125 | 8  | 2.0 | 2    |
| 5040HRD-M42 | 2 | 40 | 24 | 42 | 70  | 200 | 8  | 2.4 | 1    |
| 5040HRD-L42 | 2 | 40 | 24 | 42 | 150 | 300 | 8  | 2.8 | 1    |
| 5050HRD-S40 | 3 | 50 | 34 | 40 | 50  | 150 | 8  | 2.0 | 2    |
| 5050HRD-M40 | 3 | 50 | 34 | 40 | 50  | 250 | 8  | 2.4 | 1    |
| 5050HRD-L40 | 3 | 50 | 34 | 40 | 50  | 300 | 8  | 2.6 | 1    |
| 5050HRD-S   | 3 | 50 | 34 | 42 | 50  | 150 | 8  | 1.5 | 2    |
| 5050HRD-M   | 3 | 50 | 34 | 42 | 50  | 250 | 8  | 1.8 | 1    |
| 5050HRD-L   | 3 | 50 | 34 | 42 | 50  | 300 | 8  | 2.0 | 1    |
| 5063HRD-S40 | 4 | 63 | 47 | 40 | 50  | 150 | 8  | 1.7 | 2    |
| 5063HRD-M40 | 4 | 63 | 47 | 40 | 50  | 250 | 8  | 2.0 | 1    |
| 5063HRD-L40 | 4 | 63 | 47 | 40 | 50  | 300 | 8  | 2.3 | 1    |
| 5063HRD-S   | 4 | 63 | 47 | 42 | 50  | 150 | 8  | 1.6 | 2    |
| 5063HRD-M   | 4 | 63 | 47 | 42 | 50  | 250 | 8  | 1.8 | 1    |
| 5063HRD-L   | 4 | 63 | 47 | 42 | 50  | 300 | 8  | 2.0 | 1    |

## Insertos disponibles

RDHW-E,F,S      RDKT-MF      RDKT-ML      RDKT-MM



| Codigo | Cermet    |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |     |     |
|--------|-----------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|-----|-----|
|        | CN2000    | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01 |     |
| RDHW   | 1605M0E   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |     |
|        | 1605M0F   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |     |
|        | 1605M0S   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     | E15 |
| RDKT   | 1605M0-MF |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     | E16 |
|        | 1605M0-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |     |
|        | 1605M0-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |     |

## Partes

| Especificaciones |            |          |
|------------------|------------|----------|
| Ø40~Ø63          | FTGA0513-P | TW20-100 |

Insertos disponibles E15, E16



# FMRS6000

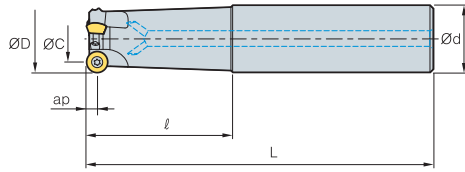


Fig. 1

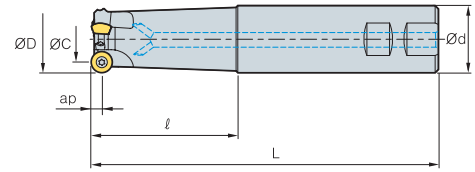


Fig. 2



• AR: 5°  
• RR: -8° ~ -5°

(mm)

| Codigo |             | ØD | ØC | Ød | l  | L  | ap  | kg  | Fig. |
|--------|-------------|----|----|----|----|----|-----|-----|------|
| FMRS   | 6050HRD-S40 | 3  | 50 | 31 | 40 | 50 | 150 | 1.3 | 2    |
|        | 6050HRD-S42 | 3  | 50 | 31 | 42 | 50 | 150 | 1.4 | 2    |
|        | 6050HRD-M40 | 3  | 50 | 31 | 40 | 50 | 250 | 2.2 | 1    |
|        | 6050HRD-M42 | 3  | 50 | 31 | 42 | 50 | 250 | 2.4 | 1    |
|        | 6050HRD-L40 | 3  | 50 | 31 | 40 | 50 | 300 | 2.7 | 1    |
|        | 6050HRD-L42 | 3  | 50 | 31 | 42 | 50 | 300 | 3.0 | 1    |
|        | 6063HRD-S40 | 4  | 63 | 44 | 40 | 50 | 150 | 1.5 | 2    |
|        | 6063HRD-S42 | 4  | 63 | 44 | 42 | 50 | 150 | 1.6 | 2    |
|        | 6063HRD-M40 | 4  | 63 | 44 | 40 | 50 | 250 | 2.5 | 1    |
|        | 6063HRD-M42 | 4  | 63 | 44 | 42 | 50 | 250 | 2.7 | 1    |
|        | 6063HRD-L40 | 4  | 63 | 44 | 40 | 50 | 300 | 3.0 | 1    |
|        | 6063HRD-L42 | 4  | 63 | 44 | 42 | 50 | 300 | 3.2 | 1    |

## Insertos disponibles

RDHW-E,F,S      RDKT-MM



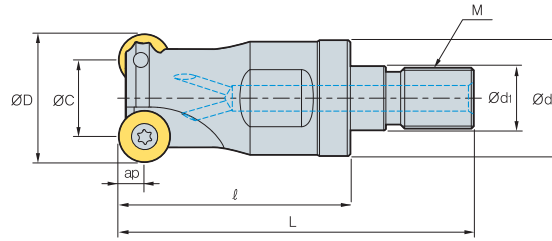
| Codigo | Cermet    |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |            |
|--------|-----------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|------------|
|        | CN2000    | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01        |
| RDHW   | 2006MOE   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       | E15<br>E16 |
|        | 2006MOF   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |            |
|        | 2006MOS   |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |            |
| RDKT   | 2006M0-MM |      |            |        |        |        |        |        | ●      |        |        |        |        |          |        |      |       |            |

## Partes

| Especificaciones | Tornillo   | Llave    |
|------------------|------------|----------|
| Ø50~Ø63          | FTGA0515-P | TW20-100 |

Insertos disponibles E15, E16

# FMRM1000/1500



• AR: 0°~5°  
• RR: -5°~ -1°

(mm)

| Codigo |             | ØD | ØC | Ød  | Ød1  | l    | L  | M  | ap  |     |      |
|--------|-------------|----|----|-----|------|------|----|----|-----|-----|------|
| FMRM   | 1008HRD-M06 | 1  | 8  | 5.5 | 9.5  | 6.5  | 25 | 40 | M06 | 2.5 | 0.02 |
|        | 1010HRD-M06 | 2  | 10 | 5   | 9.5  | 6.5  | 25 | 40 | M06 | 2.5 | 0.02 |
|        | 1012HRD-M06 | 2  | 12 | 7   | 11   | 6.5  | 25 | 40 | M06 | 2.5 | 0.02 |
|        | 1015HRD-M08 | 3  | 15 | 10  | 14.5 | 8.5  | 30 | 47 | M08 | 2.5 | 0.04 |
|        | 1510HRD-M06 | 1  | 10 | 7   | 9.5  | 6.5  | 25 | 40 | M06 | 3.0 | 0.02 |
|        | 1512HRD-M06 | 2  | 12 | 6   | 11   | 6.5  | 25 | 40 | M06 | 3.0 | 0.02 |
|        | 1516HRD-M08 | 3  | 16 | 10  | 14.5 | 8.5  | 30 | 47 | M08 | 3.0 | 0.02 |
|        | 1520HRD-M10 | 3  | 20 | 14  | 18   | 10.5 | 35 | 56 | M10 | 3.0 | 0.07 |

## Insertos disponibles

RDHW-E,F,S      RDKW



| Tipo      | Codigo | Cermet  |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |     |            |
|-----------|--------|---------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|-----|------------|
|           |        | CN2000  | CN80 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01 |            |
| 1000 Tipo | RDHW   | 0501M0E |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     | E15<br>E16 |
|           |        | 0501M0F |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |
|           |        | 0501M0S |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |
| 1500 Tipo | RDKW   | 0501M0E |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |
|           | RDHW   | 06T1M0E |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |
|           |        | 06T1M0F |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |
|           | RDKW   | 06T1M0E |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |            |

## Adaptador modular disponible

| Codigo           | Adaptador modular disponible |
|------------------|------------------------------|
| FMRM 1008HRD-M06 | MAT-M06                      |
| 1010HRD-M06      |                              |
| 1012HRD-M06      |                              |
| 1015HRD-M08      | MAT-M08                      |
| 1510HRD-M06      | MAT-M06                      |
| 1512HRD-M06      |                              |
| 1515HRD-M08      | MAT-M08                      |
| 1520HRD-M10      | MAT-M10                      |

Codigo: FMRM1008HRD-M06  
Especificacion de la Cabeza Modulos (M06)

II

Codigo del Zanco: MAT-M06-020-S10S  
Especificacion del Zanco (M06)

## Partes

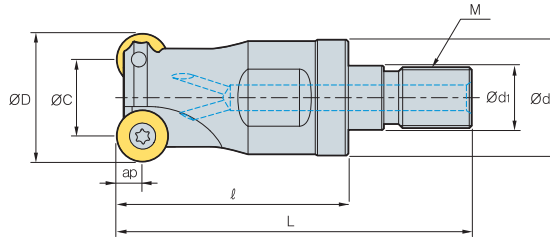
| Especificaciones    | Tornillo  | Llave |
|---------------------|-----------|-------|
| Ø8~Ø15 (1000 Tipo)  | FTNA0203  | TW06P |
| Ø10~Ø20 (1500 Tipo) | FTNA02205 | TW06P |

Insertos disponibles E15, E16

Adaptador modular disponible E371~E372



# FMRM2000/2500



• AR: 0°~5°  
• RR: -5°~ -1°

| Codigo | ØD          | ØC | Ød | Ød1 | ℓ    | L    | M  | ap | kg  |     |      |
|--------|-------------|----|----|-----|------|------|----|----|-----|-----|------|
| FMRM   | 2015HRD-M08 | 2  | 15 | 8   | 14.5 | 8.5  | 30 | 47 | M08 | 3.5 | 0.04 |
|        | 2020HRD-M10 | 3  | 20 | 13  | 18   | 10.5 | 35 | 56 | M10 | 3.5 | 0.07 |
|        | 2516HRD-M08 | 2  | 16 | 8   | 14.5 | 8.5  | 30 | 47 | M08 | 4.0 | 0.04 |
|        | 2520HRD-M10 | 2  | 20 | 12  | 18   | 10.5 | 35 | 56 | M10 | 4.0 | 0.07 |
|        | 2525HRD-M12 | 3  | 25 | 17  | 22.5 | 12.5 | 45 | 69 | M12 | 4.0 | 0.13 |

## Insertos disponibles

RDHW-E,FS      RDKW



| Tipo      | Codigo | Cermet  |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |     |
|-----------|--------|---------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|-----|
|           |        | CN2000  | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01 |
| 2000 Tipo | RDHW   | 0702M0E |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
|           |        | 0702M0F |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
|           |        | 0702M0S |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
|           | RDKW   | 0702M0E |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       | E15 |
| 2500 Tipo | RDHW   | 0803M0E |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       | E16 |
|           |        | 0803M0F |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
|           |        | 0803M0S |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
|           | RDKW   | 0803M0E |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |

## Adaptador modular disponible

| Codigo           | Adaptador modular disponible |
|------------------|------------------------------|
| FMRM 2015HRD-M08 | MAT-M08                      |
| 2020HRD-M10      | MAT-M10                      |
| 2516HRD-M08      | MAT-M08                      |
| 2520HRD-M10      | MAT-M10                      |
| 2525HRD-M12      | MAT-M12                      |

Codigo: FMRM1008HRD-M06  
Especificacion de la Cabeza Modulos (M06)

||

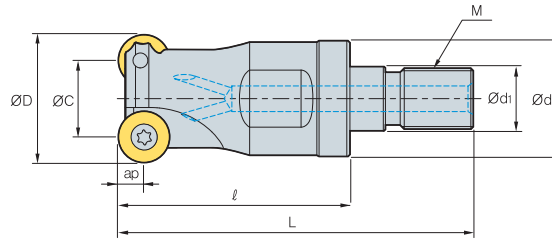
Codigo del Zanco: MAT-M06-020-S10S  
Especificacion del Zanco (M06)

## Partes

| Especificaciones    | Tornillo  | Llave |
|---------------------|-----------|-------|
| Ø15-Ø20 (2000 Tipo) | FTNA02555 | TW07S |
| Ø16-Ø25 (2500 Tipo) | FTNA0305  | TW09S |

Insertos disponibles E15, E16      Adaptador modular disponible E371~E372

## FMRM3000



• AR: 5°  
• RR: -8° ~ -5°

(mm)

| Codigo           | ØD | ØC | Ød   | Ød1  | ℓ  | L  | M   | ap  |      |
|------------------|----|----|------|------|----|----|-----|-----|------|
| FMRM 3021HRD-M10 | 21 | 11 | 18   | 10.5 | 35 | 56 | M10 | 5.0 | 0.1  |
| 3025HRD-M12      | 25 | 15 | 22.5 | 12.5 | 45 | 69 | M12 | 5.0 | 0.15 |
| 3032HRD-M16      | 32 | 22 | 29   | 17   | 50 | 77 | M16 | 5.0 | 0.2  |
| 3042HRD-M16      | 42 | 32 | 29   | 17   | 50 | 77 | M16 | 5.0 | 0.24 |

### Insertos disponibles

RDHW-E,FS    RDCT-MA    RDKT-MF    RDKT-ML    RDKT-MM



| Codigo         | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |     |     |
|----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|-----|-----|
|                | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01 |     |
| RDCT 10T3M0-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       | ●   | E15 |
| RDKT 10T3M0-MF |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     | E16 |
| RDKT 10T3M0-MM |        |      | ●          |        |        |        |        |        |        | ●      | ●      | ●      |        | ●        |        |      |       |     |     |

### Adaptador modular disponible

| Codigo           | Adaptador modular disponible |
|------------------|------------------------------|
| FMRM 3021HRD-M10 | MAT-M10                      |
| 3025HRD-M12      | MAT-M12                      |
| 3032HRD-M16      | MAT-M16                      |
| 3042HRD-M16      |                              |

Codigo: FMRM1008HRD-M06  
Especificacion de la Cabeza Modulos (M06)

II

Codigo del Zanco: MAT-M06-020-S10S  
Especificacion del Zanco (M06)

### Partes

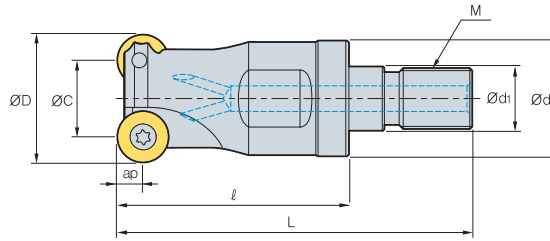
| Especificaciones | Tornillo               | Llave |
|------------------|------------------------|-------|
| Ø21<br>Ø25-Ø42   | FTGA03507<br>FTGA03508 | TW15S |

Insertos disponibles E15, E16    Adaptador modular disponible E371~E372





# FMRM4000/5000



• AR: 5°  
• RR: -8° ~ -5°

| Codigo |             | ØD | ØC | Ød   | Ød <sub>1</sub> | ℓ  | L  | M   | ap  | kg   |
|--------|-------------|----|----|------|-----------------|----|----|-----|-----|------|
| FMRM   | 4025HRD-M12 | 25 | 13 | 22.5 | 12.5            | 45 | 69 | M12 | 6.0 | 0.12 |
|        | 4032HRD-M16 | 32 | 20 | 29   | 17              | 50 | 77 | M16 | 6.0 | 0.22 |
|        | 4040HRD-M16 | 40 | 28 | 29   | 17              | 50 | 77 | M16 | 6.0 | 0.23 |
|        | 4042HRD-M16 | 42 | 28 | 29   | 17              | 50 | 77 | M16 | 6.0 | 0.25 |
|        | 5040HRD-M16 | 40 | 24 | 29   | 17              | 50 | 77 | M16 | 8.0 | 0.25 |

## Insertos disponibles



| Tipo      | Codigo         | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |       |     |
|-----------|----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-------|-----|
|           |                | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | ST30A | H01 |
| 4000 Tipo | RDCT 1204M0-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       | E15 |
|           | RDKT 1204M0-MF |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       |     |
|           | 1204M0-MM      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       |     |
| 5000 Tipo | RDHW 1605M0-E  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       | E16 |
|           | RDKT 1605M0-MF |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       |     |
|           | 1605M0-ML      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       |     |
|           | 1605M0-MM      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       |     |

## Adaptador modular disponible

| Codigo           | Adaptador modular disponible |
|------------------|------------------------------|
| FMRM 4025HRD-M12 | MAT-M12                      |
| 4032HRD-M16      |                              |
| 4040HRD-M16      | MAT-M16                      |
| 4042HRD-M16      |                              |
| 5040HRD-M16      | MAT-M16                      |

Codigo: FMRM1008HRD-M06  
Especificacion de la Cabeza Modulos (M06)

II

Codigo del Zanco: MAT-M06-020-S10S  
Especificacion del Zanco (M06)

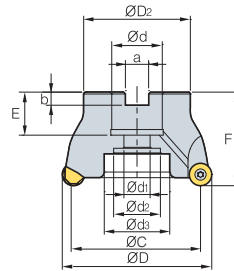
## Partes

| Especificaciones    | Tornillo   | Llave    |
|---------------------|------------|----------|
| Ø25~Ø42 (4000 Tipo) | FTKA0410   | TW15S    |
| Ø40 (5000 Tipo)     | FTGA0513-P | TW20-100 |

Insertos disponibles E15, E16

Adaptador modular disponible E371~E372

## FMRCM3000 new



• AR: 5°  
• RR: -4°~0°

| Codigo |           | ØD | ØC | ØD <sub>2</sub> | Ød | Ød <sub>1</sub> | Ød <sub>2</sub> | d <sub>3</sub> | a    | b   | E  | F  | ap | kg   | Tamaño insertos |
|--------|-----------|----|----|-----------------|----|-----------------|-----------------|----------------|------|-----|----|----|----|------|-----------------|
| FMRCM  | 3040HRP-5 | 40 | 30 | 38              | 16 | 9               | 14              | -              | 8.4  | 5.6 | 19 | 40 | 5  | 0.22 | 10              |
|        | 3050HRP-6 | 50 | 40 | 45              | 22 | 11              | 18              | -              | 10.4 | 6.3 | 20 | 40 | 5  | 0.35 | 10              |
|        | 3052HRP-6 | 52 | 42 | 45              | 22 | 11              | 18              | -              | 10.4 | 6.3 | 20 | 40 | 5  | 0.37 | 10              |
|        | 3063HRP-6 | 63 | 53 | 50              | 22 | 11              | 18              | -              | 10.4 | 6.3 | 20 | 40 | 5  | 0.55 | 10              |
|        | 3063HRP-7 | 63 | 53 | 50              | 22 | 11              | 18              | -              | 10.4 | 6.3 | 20 | 40 | 5  | 0.56 | 10              |
|        | 3066HRP-7 | 66 | 56 | 50              | 22 | 11              | 18              | -              | 10.4 | 6.3 | 20 | 40 | 5  | 0.60 | 10              |

### Insertos disponibles

|        |            | RPCT-MA | RPET-ML | RPMT-MF    | RPMT-MM | RPMW   | Sin Rec. |        | pag.   |        |        |        |        |          |        |      |        |       |     |  |
|--------|------------|---------|---------|------------|---------|--------|----------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-------|-----|--|
|        |            |         |         |            |         |        |          |        |        |        |        |        |        |          |        |      |        |       |     |  |
| Codigo |            | Cermet  |         | Recubierto |         |        |          |        |        |        |        |        |        | Sin Rec. |        | pag. |        |       |     |  |
|        |            | CN2000  | CN80    | NCM325     | NC5330  | NCM535 | NCM545   | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | ST30A | H01 |  |
| RPCT   | 10T3M0-MA  |         |         |            |         |        |          |        |        |        |        |        |        |          |        |      |        |       |     |  |
| RPET   | 10T3M0E-ML |         |         |            |         |        |          |        |        |        |        |        |        |          | ●      | ●    |        | ●     |     |  |
| RPMT   | 10T3M0E-MF |         |         |            |         |        |          |        | ●      |        |        |        |        |          | ●      | ●    |        |       |     |  |
|        | 10T3M0S-MM |         |         |            |         |        |          | ●      | ●      | ●      | ●      |        |        |          | ●      | ●    |        |       |     |  |
| RPMW   | 10T3M0E1   |         |         |            |         |        |          | ●      | ●      | ●      |        |        |        |          | ●      | ●    |        |       |     |  |

### Adaptadores disponibles

| Codigo          | Ød | Adaptadores disponibles |
|-----------------|----|-------------------------|
| FMRCM 3040HRP-5 | 16 | BT□□-FMC16-□□           |
| 3050HRP-6       | 22 | BT□□-FMC22-□□           |
| 3052HRP-6       |    |                         |
| 3063HRP-6       |    |                         |
| 3063HRP-7       |    |                         |
| 3066HRP-7       |    |                         |

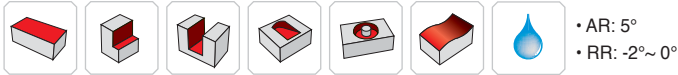
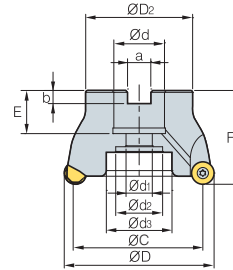
### Partes

| Especificaciones | Tornillo  | Llave |
|------------------|-----------|-------|
| Ø40~Ø66          | FTGA03508 | TW15S |

Insertos disponibles E16    Detalles del cortador E400~E402



# FMRC(M)4000 new



| Codigo       | ØD        | ØC | ØD2 | Ød | Ød1 | Ød2        | Ød3 | a  | b  | E           | F     | ap      | kg      | Tamaño insertos |      |    |
|--------------|-----------|----|-----|----|-----|------------|-----|----|----|-------------|-------|---------|---------|-----------------|------|----|
| FMRCM        | 4050HRP-4 | 4  | 50  | 38 | 45  | 22         | 11  | 18 | -  | 10.4        | 6.3   | 20      | 40      | 6               | 0.26 | 12 |
|              | 4050HRP-5 | 5  | 50  | 38 | 45  | 22         | 11  | 18 | -  | 10.4        | 6.3   | 20      | 40      | 6               | 0.28 | 12 |
|              | 4052HRP-5 | 5  | 52  | 40 | 45  | 22         | 11  | 18 | -  | 10.4        | 6.3   | 20      | 40      | 6               | 0.30 | 12 |
|              | 4063HRP-5 | 5  | 63  | 51 | 50  | 22         | 11  | 18 | -  | 10.4        | 6.3   | 20      | 40      | 6               | 0.44 | 12 |
|              | 4063HRP-6 | 6  | 63  | 51 | 50  | 22         | 11  | 18 | -  | 10.4        | 6.3   | 20      | 40      | 6               | 0.48 | 12 |
|              | 4066HRP-6 | 6  | 66  | 54 | 50  | 22         | 11  | 18 | -  | 10.4        | 6.3   | 20      | 40      | 6               | 0.50 | 12 |
| FMRC (FMRCM) | 4080HRP-6 | 6  | 80  | 68 | 57  | 25.4 (27)  | 14  | 25 | 35 | 9.5 (12.4)  | 6 (7) | 24 (23) | 50      | 6               | 0.92 | 12 |
|              | 4080HRP-7 | 7  | 80  | 68 | 57  | 25.4 (27)  | 14  | 25 | 35 | 9.5 (12.4)  | 6 (7) | 24 (23) | 50      | 6               | 0.90 | 12 |
|              | 4100HRP-7 | 7  | 100 | 88 | 67  | 31.75 (32) | 18  | 26 | 42 | 12.7 (14.4) | 8 (8) | 32 (25) | 63 (53) | 6               | 1.46 | 12 |

( )Tamaño métrico

## Insertos disponibles

| Codigo | Cermet     |      | Recubierta |       |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |       |     |
|--------|------------|------|------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-------|-----|
|        | CN2000     | CN30 | NCM325     | NC330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | ST30A | H01 |
| RPCT   | 1204M0-MA  |      |            |       |        |        |        |        |        |        |        |        |          |        |      |        |       | ●   |
| RPET   | 1204M0E-ML |      |            |       |        |        |        |        |        |        |        |        |          | ●      | ●    |        |       |     |
| RPMT   | 1204M0E-MF |      |            |       |        |        |        |        |        |        |        |        | ●        | ●      | ●    |        |       |     |
| RPMW   | 1204M0S-MM |      |            |       |        |        |        |        |        |        |        |        | ●        | ●      | ●    |        |       |     |
|        | 1204M0S1   |      |            |       |        |        |        |        |        |        |        |        | ●        | ●      | ●    |        |       |     |
|        | 1204M0S2   |      |            |       |        |        |        |        |        |        |        |        | ●        | ●      |      |        |       |     |

## Adaptadores disponibles

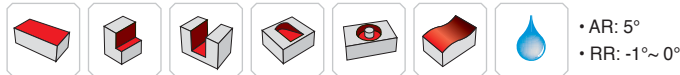
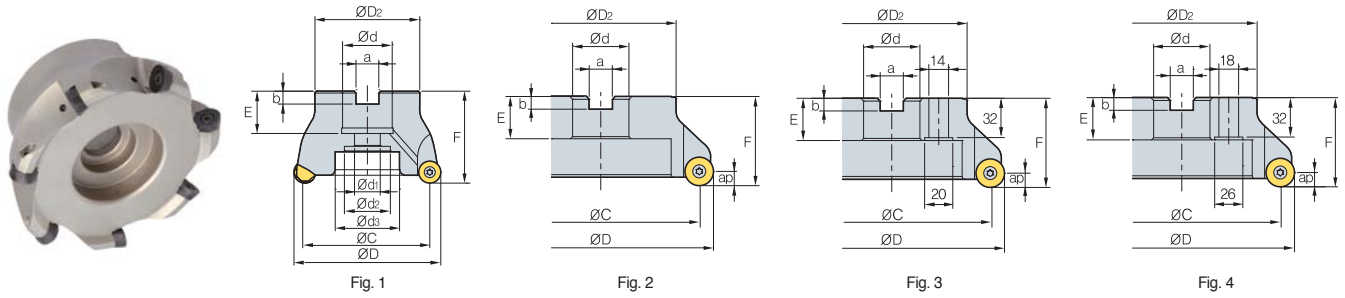
| Codigo       | Ød    | Adaptadores disponibles |
|--------------|-------|-------------------------|
| FMRCM        | 22    | BT□□-FMC22-□□           |
| FMRC (FMRCM) | 25.4  | BT□□-FMA25.4-□□         |
|              | 27    | BT□□-FMC27-□□           |
|              | 25.4  | BT□□-FMA25.4-□□         |
|              | 27    | BT□□-FMC27-□□           |
|              | 31.75 | BT□□-FMA31.75-□□        |
| 4100HRP-7    | 32    | BT□□-FMC32-□□           |

## Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø50~Ø100         | FTKA0410 | TW15S |

Insertos disponibles E16    Detalles del cortador E400~E402

## FMRC(M)5000 new



| Codigo       |           | ØD | ØC  | ØD2 | Ød  | Ød1        | Ød2 | Ød3 | a   | b           | E      | F       | ap      | kg | Fig. | Tamaño insertos |    |
|--------------|-----------|----|-----|-----|-----|------------|-----|-----|-----|-------------|--------|---------|---------|----|------|-----------------|----|
| FMRCM        | 5063HRP-4 | 4  | 63  | 47  | 50  | 22         | 11  | 18  | -   | 10.4        | 6.3    | 20      | 40      | 8  | 0.43 | 1               | 16 |
|              | 5063HRP-5 | 5  | 63  | 47  | 50  | 22         | 11  | 18  | -   | 10.4        | 6.3    | 20      | 40      | 8  | 0.44 | 1               | 16 |
|              | 5066HRP-5 | 5  | 66  | 50  | 50  | 22         | 11  | 18  | -   | 10.4        | 6.3    | 20      | 40      | 8  | 0.48 | 1               | 16 |
| FMRC (FMRCM) | 5080HRP-5 | 5  | 80  | 64  | 57  | 25.4 (27)  | 14  | 25  | 35  | 9.5 (12.4)  | 6 (7)  | 24 (23) | 50      | 8  | 0.77 | 1               | 16 |
|              | 5080HRP-6 | 6  | 80  | 64  | 57  | 25.4 (27)  | 14  | 25  | 35  | 9.5 (12.4)  | 6 (7)  | 24 (23) | 50      | 8  | 0.82 | 1               | 16 |
|              | 5100HRP-6 | 6  | 100 | 84  | 67  | 31.75 (32) | 18  | 26  | 42  | 12.7 (14.4) | 8 (8)  | 32 (25) | 63 (55) | 8  | 1.42 | 1               | 16 |
|              | 5125HRP-7 | 7  | 125 | 109 | 87  | 38.1 (40)  | 22  | 32  | 52  | 15.9 (16.4) | 10 (9) | 35 (29) | 68 (63) | 8  | 2.78 | 1               | 16 |
|              | 5125HRP-8 | 8  | 125 | 109 | 87  | 38.1 (40)  | 22  | 32  | 52  | 15.9 (16.4) | 10 (9) | 35 (29) | 68 (63) | 8  | 2.79 | 1               | 16 |
|              | 5160RP-8  | 8  | 160 | 144 | 107 | 50.8 (40)  | -   | -   | 100 | 19 (16.4)   | 11 (9) | 38 (32) | 63      | 8  | 4.01 | 2 (3)           | 16 |

( ) Tamaño métrico

### Insertos disponibles

|        |            | RPCT-MA | RPET-ML | RPMT-MF    | RPMT-MM | RPMW   |        |        |        |        |        |        |        |          |        |      |        |       |     |
|--------|------------|---------|---------|------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-------|-----|
|        |            |         |         |            |         |        |        |        |        |        |        |        |        |          |        |      |        |       |     |
| Codigo |            | Cermet  |         | Recubierto |         |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |       |     |
|        |            | CN2000  | CN30    | NCM325     | NC5330  | NCM635 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | ST30A | H01 |
| RPCT   | 1606M0-MA  |         |         |            |         |        |        |        |        |        |        |        |        |          |        |      |        |       | E16 |
| RPET   | 1606M0E-ML |         |         |            |         |        |        |        |        |        |        |        |        |          |        |      |        |       |     |
| RPMT   | 1606M0E-MF |         |         |            |         |        |        |        |        |        |        |        |        |          |        |      |        |       |     |
|        | 1606M0S-MM |         |         |            |         |        |        |        |        |        |        |        |        |          |        |      |        |       |     |
| RPMW   | 1606M0S1   |         |         |            |         |        |        |        |        |        |        |        |        |          |        |      |        |       |     |

### Adaptadores disponibles

| Codigo       |           | Ød    | Adaptadores disponibles |
|--------------|-----------|-------|-------------------------|
| FMRCM        | 5063HRP-4 | 22    | BT□□-FMC22-□□           |
|              | 5063HRP-5 |       |                         |
|              | 5066HRP-5 |       |                         |
| FMRC (FMRCM) | 5080HRP-5 | 25.4  | BT□□-FMA25.4-□□         |
|              |           | 27    | BT□□-FMC27-□□           |
|              | 5080HRP-6 | 25.4  | BT□□-FMA25.4-□□         |
|              |           | 27    | BT□□-FMC27-□□           |
|              | 5100HRP-6 | 31.75 | BT□□-FMA31.75-□□        |
|              |           | 32    | BT□□-FMC32-□□           |
|              | 5125HRP-7 | 38.1  | BT□□-FMA38.1-□□         |
|              |           | 40    | BT□□-FMC40-□□           |
|              | 5125HRP-8 | 38.1  | BT□□-FMA38.1-□□         |
|              |           | 40    | BT□□-FMC40-□□           |
|              | 5160RP-8  | 50.8  | BT□□-FMA50.8-□□         |
|              |           | 40    | BT□□-FMC40-□□           |

### Partes

| Especificaciones | Tornillo   | Llave    |
|------------------|------------|----------|
| Ø63~Ø160         | FTGA0512-P | TW20-100 |

Insertos disponibles E16 Detalles del cortador E400~E402



# FMRC(M)6000 new

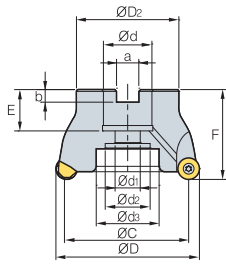


Fig. 1

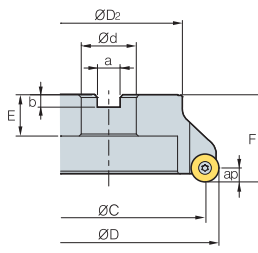


Fig. 2

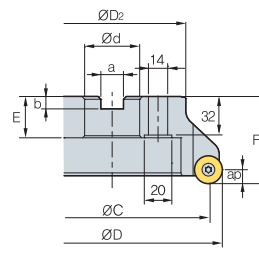


Fig. 3

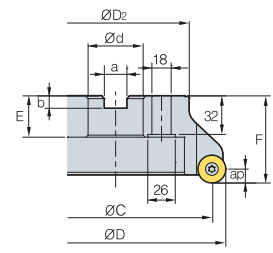


Fig. 4



• AR: 5°  
• RR: 0°

| Codigo                 | ØD  | ØC  | ØD2 | Ød          | Ød1 | Ød2 | Ød3 | a           | b       | E       | F       | ap | Fig. | Tamaño insertos |    |
|------------------------|-----|-----|-----|-------------|-----|-----|-----|-------------|---------|---------|---------|----|------|-----------------|----|
| FMRCM 6063HRP-4        | 63  | 43  | 50  | 22          | 11  | 18  | -   | 10.4        | 6.3     | 20      | 40      | 10 | 0.37 | 1               | 20 |
| FMRC (FMRCM) 6080HRP-5 | 80  | 60  | 57  | 25.4 (27)   | 14  | 25  | 35  | 9.5 (12.4)  | 6 (7)   | 24 (23) | 50      | 10 | 0.87 | 1               | 20 |
| 6100HRP-5              | 100 | 80  | 67  | 31.75 (32)  | 18  | 26  | 42  | 12.7 (14.4) | 8 (8)   | 32 (25) | 63 (55) | 10 | 1.31 | 1               | 20 |
| 6100HRP-6              | 100 | 80  | 67  | 31.75 (32)  | 18  | 26  | 42  | 12.7 (14.4) | 8 (8)   | 32 (25) | 63 (55) | 10 | 1.40 | 1               | 20 |
| 6125HRP-5              | 125 | 105 | 87  | 38.1 (40)   | 22  | 32  | 52  | 15.9 (16.4) | 10 (9)  | 35 (29) | 68 (63) | 10 | 2.77 | 1               | 20 |
| 6125HRP-7              | 125 | 105 | 87  | 38.1 (40)   | 22  | 32  | 52  | 15.9 (16.4) | 10 (9)  | 35 (29) | 68 (63) | 10 | 2.89 | 1               | 20 |
| 6160RP-6               | 160 | 140 | 107 | 50.8 (40)   | -   | -   | 100 | 19 (16.4)   | 11 (9)  | 38 (32) | 63      | 10 | 3.58 | 2 (3)           | 20 |
| 6160RP-8               | 160 | 140 | 107 | 50.8 (40)   | -   | -   | 100 | 19 (16.4)   | 11 (9)  | 38 (32) | 63      | 10 | 3.53 | 2 (3)           | 20 |
| 6200RP-8               | 200 | 180 | 130 | 47.625 (60) | -   | -   | 132 | 25.4 (25.7) | 14 (14) | 38      | 63      | 10 | 5.15 | 4               | 20 |
| 6250RP-9               | 250 | 230 | 180 | 47.625 (60) | -   | -   | 180 | 25.4 (25.7) | 14 (14) | 38      | 63      | 10 | 9.72 | 4               | 20 |

( ) Tamaño métrico

## Insertos disponibles

RPCT-MA RPET-ML RPMT-MF RPMT-MM RPMW



| Codigo          | Cermet |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |       |     |
|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-------|-----|
|                 | CN2000 | CN30 | NCM625     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | ST30A | H01 |
| RPCT 2007M0-MA  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       | ●   |
| RPET 2007M0E-ML |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |       |     |
| RPMT 2007M0E-MF |        |      |            |        |        |        |        |        | ●      |        |        |        |          | ●      | ●    |        |       |     |
| 2007M0S-MM      |        |      |            |        |        |        | ●      | ●      | ●      | ●      |        |        |          | ●      | ●    |        |       |     |
| RPMW 2007M0S1   |        |      |            |        |        |        | ●      | ●      | ●      |        |        |        |          | ●      | ●    |        |       |     |

## Adaptadores disponibles

| Codigo                 | Ød    | Adaptadores disponibles |
|------------------------|-------|-------------------------|
| FMRCM 6063HRP-4        | 22    | BT□□-FMC22-□□           |
| FMRC (FMRCM) 6080HRP-5 | 25.4  | BT□□-FMA25.4-□□         |
|                        | 27    | BT□□-FMC27-□□           |
| 6100HRP-5              | 31.75 | BT□□-FMA31.75-□□        |
|                        | 32    | BT□□-FMC32-□□           |
| 6100HRP-6              | 31.75 | BT□□-FMA31.75-□□        |
|                        | 32    | BT□□-FMC32-□□           |
| 6125HRP-5              | 38.1  | BT□□-FMA38.1-□□         |
|                        | 40    | BT□□-FMC40-□□           |

| Codigo                 | Ød     | Adaptadores disponibles |
|------------------------|--------|-------------------------|
| FMRC (FMRCM) 6125HRP-7 | 38.1   | BT□□-FMA38.1-□□         |
|                        | 40     | BT□□-FMC40-□□           |
| 6160RP-6               | 50.8   | BT□□-FMA50.8-□□         |
|                        | 40     | BT□□-FMC40-□□           |
| 6160RP-8               | 50.8   | BT□□-FMA50.8-□□         |
|                        | 40     | BT□□-FMC40-□□           |
| 6200RP-8               | 47.625 | BT□□-FMA47.625-□□       |
|                        | 60     | BT□□-FMC60-□□           |
| 6250RP-9               | 47.625 | BT□□-FMA47.625-□□       |
|                        | 60     | BT□□-FMC60-□□           |

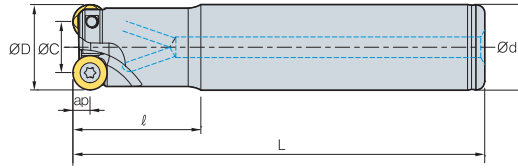
## Partes

| Especificaciones | Tornillo   | Llave    |
|------------------|------------|----------|
| Ø63~Ø250         | FTKA0615-P | TW25-100 |

Insertos disponibles E16 Detalles del cortador E400~E402



## FMRS2500 new



• AR: -4°  
• RR: -4° ~ -1°

(mm)

| Codigo            | ØD | ØC | Ød | l   | L   | ap | kg   | Tamaño insertos |
|-------------------|----|----|----|-----|-----|----|------|-----------------|
| FMRS 2517HRP-2S16 | 17 | 9  | 16 | 35  | 90  | 4  | 0.11 | 8               |
| 2517HRP-2M16      | 17 | 9  | 16 | 35  | 150 | 4  | 0.20 | 8               |
| 2517HRP-2L16      | 17 | 9  | 16 | 35  | 200 | 4  | 0.27 | 8               |
| 2518HRP-2M16      | 18 | 10 | 16 | 35  | 150 | 4  | 0.20 | 8               |
| 2518HRP-2L16      | 18 | 10 | 16 | 35  | 200 | 4  | 0.28 | 8               |
| 2520HRP-3S20      | 20 | 12 | 20 | 35  | 130 | 4  | 0.27 | 8               |
| 2520HRP-3M20      | 20 | 12 | 20 | 100 | 180 | 4  | 0.36 | 8               |
| 2520HRP-3L20      | 20 | 12 | 20 | 130 | 250 | 4  | 0.50 | 8               |
| 2521HRP-3S20      | 21 | 13 | 20 | 35  | 130 | 4  | 0.28 | 8               |
| 2521HRP-3M20      | 21 | 13 | 20 | 35  | 180 | 4  | 0.40 | 8               |
| 2521HRP-3L20      | 21 | 13 | 20 | 35  | 250 | 4  | 0.55 | 8               |
| 2525HRP-4S25      | 25 | 17 | 25 | 35  | 150 | 4  | 0.48 | 8               |
| 2525HRP-4M25      | 25 | 17 | 25 | 60  | 180 | 4  | 0.60 | 8               |
| 2525HRP-4L25      | 25 | 17 | 25 | 130 | 250 | 4  | 0.81 | 8               |
| 2526HRP-4S25      | 26 | 18 | 25 | 35  | 150 | 4  | 0.48 | 8               |
| 2526HRP-4L25      | 26 | 18 | 25 | 130 | 250 | 4  | 0.85 | 8               |

### Insertos disponibles



| Codigo          | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |       | pag. |     |
|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-------|------|-----|
|                 | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | ST30A |      | H01 |
| RPET 0803M0E-ML |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |      | E16 |
| RPMT 0803M0E-MF |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |      |     |
| 0803M0S-MM      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |      |     |
| RPMW 0803M0E1   |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |      |     |

### Partes

| Especificaciones | Tornillo             | Llave |
|------------------|----------------------|-------|
| Ø17<br>Ø18-Ø26   | FTNA0305<br>FTNA0306 | TW09S |

Insertos disponibles E16



# FMRS3000 new

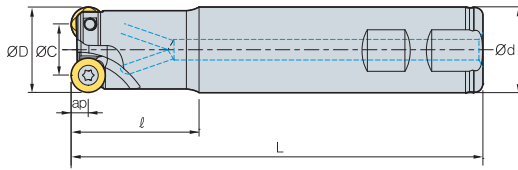


Fig. 1

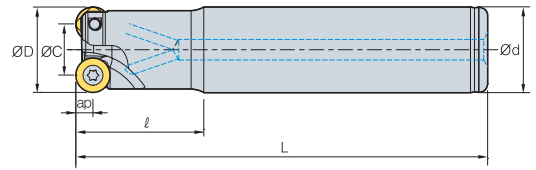
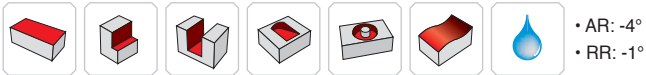


Fig. 2



| Codigo |              |  | ØD | ØC | Ød | l   | L   | ap |      | Fig. | Tamaño insertos |
|--------|--------------|--|----|----|----|-----|-----|----|------|------|-----------------|
| FMRS   | 3025HRP-2M20 |  | 25 | 15 | 20 | 40  | 170 | 5  | 0.40 | 2    | 10              |
|        | 3025HRP-2S25 |  | 25 | 15 | 25 | 40  | 120 | 5  | 0.39 | 1    | 10              |
|        | 3025HRP-2M25 |  | 25 | 15 | 25 | 60  | 160 | 5  | 0.52 | 2    | 10              |
|        | 3025HRP-2L25 |  | 25 | 15 | 25 | 130 | 250 | 5  | 0.80 | 2    | 10              |
|        | 3026HRP-2L25 |  | 26 | 16 | 25 | 30  | 200 | 5  | 0.69 | 2    | 10              |
|        | 3032HRP-3S32 |  | 32 | 22 | 32 | 40  | 125 | 5  | 0.68 | 1    | 10              |
|        | 3032HRP-3L32 |  | 32 | 22 | 32 | 60  | 200 | 5  | 1.08 | 2    | 10              |
|        | 3032HRP-4S32 |  | 32 | 22 | 32 | 40  | 125 | 5  | 0.66 | 1    | 10              |
|        | 3032HRP-4L25 |  | 32 | 22 | 25 | 60  | 200 | 5  | 0.74 | 2    | 10              |
|        | 3033HRP-4S32 |  | 33 | 23 | 32 | 40  | 125 | 5  | 0.67 | 1    | 10              |
|        | 3033HRP-4M32 |  | 33 | 23 | 32 | 60  | 180 | 5  | 1.00 | 2    | 10              |
|        | 3033HRP-4L32 |  | 33 | 23 | 32 | 180 | 300 | 5  | 1.64 | 2    | 10              |

## Insertos disponibles

RPCT-MA    RPET-ML    RPMT-MF    RPMT-MM    RPMW



| Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|-----|
|        | CN2000     | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01 |
| RPCT   | 10T3M0-MA  |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
| RPET   | 10T3M0E-ML |      |            |        |        |        |        |        |        |        |        |        |        | •        | •      |      |       |     |
| RPMT   | 10T3M0E-MF |      |            |        |        |        |        |        |        |        |        |        |        | •        | •      |      |       |     |
|        | 10T3M0S-MM |      |            |        |        |        | •      | •      | •      | •      |        |        |        | •        | •      |      |       |     |
| RPMW   | 10T3M0E1   |      |            |        |        |        | •      | •      | •      |        |        |        |        | •        | •      |      |       |     |

## Partes

| Especificaciones   |                        |                |
|--------------------|------------------------|----------------|
| Ø25~Ø26<br>Ø32~Ø33 | FTGA03507<br>FTGA03508 | Llave<br>TW15S |

Insertos disponibles E16

## FMRS4000 new

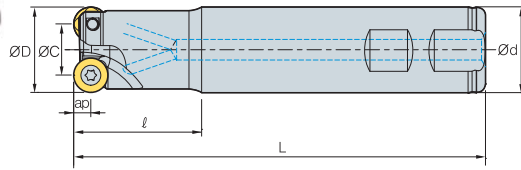


Fig. 1

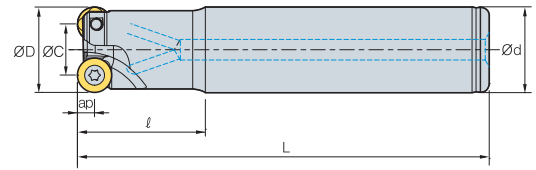


Fig. 2



- AR: -4°
- RR: -2°~0°

(mm)

| Codigo       |   | ØD | ØC | Ød | ℓ  | L   | ap |      | Fig. | Tamaño insertos |
|--------------|---|----|----|----|----|-----|----|------|------|-----------------|
| <b>FMRS</b>  |   |    |    |    |    |     |    |      |      |                 |
| 4025HRP-2S25 | 2 | 25 | 13 | 25 | 60 | 160 | 6  | 0.46 | 1    | 12              |
| 4026HRP-2L25 | 2 | 26 | 14 | 25 | 60 | 200 | 6  | 0.48 | 2    | 12              |
| 4032HRP-2L25 | 2 | 32 | 20 | 25 | 40 | 190 | 6  | 0.68 | 2    | 12              |
| 4032HRP-2S32 | 2 | 32 | 20 | 32 | 50 | 125 | 6  | 0.64 | 1    | 12              |
| 4032HRP-2L32 | 2 | 32 | 20 | 32 | 50 | 250 | 6  | 1.40 | 2    | 12              |
| 4032HRP-3S32 | 3 | 32 | 20 | 32 | 50 | 125 | 6  | 0.64 | 1    | 12              |
| 4032HRP-3M32 | 3 | 32 | 20 | 32 | 60 | 160 | 6  | 0.85 | 2    | 12              |
| 4033HRP-3M32 | 3 | 33 | 21 | 32 | 60 | 200 | 6  | 1.01 | 2    | 12              |
| 4033HRP-3L32 | 3 | 33 | 21 | 32 | 60 | 300 | 6  | 1.67 | 2    | 12              |
| 4040HRP-3S32 | 3 | 40 | 28 | 32 | 35 | 105 | 6  | 0.60 | 1    | 12              |
| 4040HRP-3M32 | 3 | 40 | 28 | 32 | 50 | 160 | 6  | 0.96 | 2    | 12              |
| 4040HRP-4S32 | 4 | 40 | 28 | 32 | 35 | 105 | 6  | 0.60 | 1    | 12              |
| 4040HRP-4M32 | 4 | 40 | 28 | 32 | 35 | 150 | 6  | 0.87 | 2    | 12              |
| 4040HRP-4L32 | 4 | 40 | 28 | 32 | 35 | 250 | 6  | 1.46 | 2    | 12              |
| 4050HRP-4M32 | 4 | 50 | 38 | 32 | 50 | 150 | 6  | 1.10 | 2    | 12              |
| 4050HRP-4M40 | 4 | 50 | 38 | 40 | 50 | 150 | 6  | 1.44 | 2    | 12              |
| 4050HRP-4M42 | 4 | 50 | 38 | 42 | 50 | 150 | 6  | 1.55 | 2    | 12              |

### Insertos disponibles

RPCT-MA    RPET-ML    RPMT-MF    RPMT-MM    RPMW



| Codigo          | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |     |
|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|-----|
|                 | CN2000 | CN30 | NCM825     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01 |
| RPCT 1204M0-MA  |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
| RPET 1204M0E-ML |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |       |     |
| RPMT 1204M0E-MF |        |      |            |        |        |        |        |        | ●      |        |        |        |        | ●        | ●      | ●    |       |     |
| 1204M0S-MM      |        |      |            |        |        |        | ●      | ●      | ●      | ●      |        |        | ●      | ●        | ●      |      |       |     |
| RPMW 1204M0S1   |        |      |            |        |        |        | ●      | ●      | ●      | ●      |        |        |        | ●        | ●      |      |       |     |
| 1204M0S2        |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |      |       |     |

### Partes

| Especificaciones |          |       |
|------------------|----------|-------|
| Ø25-Ø26          | FTKA0408 | Llave |
| Ø32-Ø50          | FTKA0410 | TW15S |

Insertos disponibles E16





# FMRS5000/6000 **new**

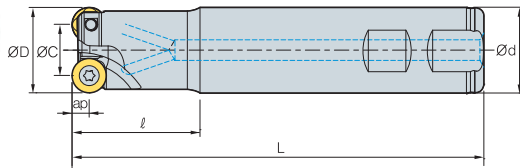


Fig. 1

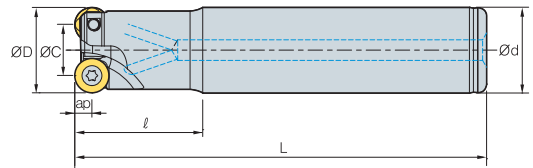
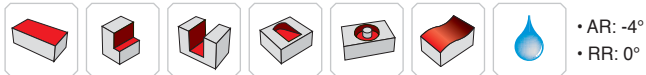


Fig. 2



| Codigo |              |  | ØD | ØC | Ød | ℓ  | L   | ap |      | Fig. | Tamaño insertos |
|--------|--------------|--|----|----|----|----|-----|----|------|------|-----------------|
| FMRS   | 5040HRP-2M32 |  | 40 | 24 | 32 | 50 | 160 | 8  | 0.92 | 2    | 16              |
|        | 5040HRP-2L32 |  | 40 | 24 | 32 | 50 | 250 | 8  | 1.45 | 2    | 16              |
|        | 5050HRP-3M40 |  | 50 | 34 | 40 | 50 | 160 | 8  | 1.48 | 2    | 16              |
|        | 5050HRP-3L40 |  | 50 | 34 | 40 | 50 | 300 | 8  | 2.86 | 2    | 16              |
|        | 6050HRP-3S32 |  | 50 | 30 | 32 | 50 | 160 | 10 | 1.06 | 1    | 20              |
|        | 6050HRP-3M32 |  | 50 | 30 | 32 | 50 | 200 | 10 | 1.30 | 2    | 20              |
|        | 6050HRP-3S40 |  | 50 | 30 | 40 | 50 | 125 | 10 | 1.45 | 1    | 20              |
|        | 6050HRP-3M40 |  | 50 | 30 | 40 | 50 | 200 | 10 | 1.85 | 2    | 20              |

## Insertos disponibles



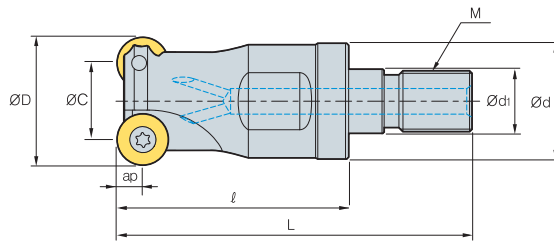
| Tipo          | Codigo          | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |       |     |
|---------------|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-------|-----|
|               |                 | CN2000 | CN30 | NCM325     | NC5330 | NCM635 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | ST30A | H01 |
| 5000 Tipo     | RPCT 1606M0-MA  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        | ●     | E16 |
|               | RPET 1606M0E-ML |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |       |     |
|               | RPMT 1606M0E-MF |        |      |            |        |        |        |        | ●      |        |        |        |        |          | ●      | ●    |        |       |     |
|               | RPMT 1606M0S-MM |        |      |            |        |        |        | ●      | ●      | ●      | ●      |        |        |          | ●      | ●    |        |       |     |
| RPMW 1606M0S1 |                 |        |      |            |        |        | ●      | ●      | ●      |        |        |        |        | ●        | ●      |      |        |       |     |
| 5000 Tipo     | RPCT 2007M0-MA  |        |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        | ●     | E16 |
|               | RPET 2007M0E-ML |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |       |     |
|               | RPMT 2007M0E-MF |        |      |            |        |        |        |        | ●      |        |        |        |        |          | ●      | ●    |        |       |     |
|               | RPMT 2007M0S-MM |        |      |            |        |        |        | ●      | ●      | ●      | ●      |        |        |          | ●      | ●    |        |       |     |
| RPMW 2007M0S1 |                 |        |      |            |        |        | ●      | ●      | ●      |        |        |        |        | ●        | ●      |      |        |       |     |

## Partes

| Especificaciones    |            |          |
|---------------------|------------|----------|
| Ø40~Ø50 (5000 Tipo) | FTGA0511-P | TW20-100 |
| Ø50 (6000 Tipo)     | FTKA0615-P | TW25-100 |

Insertos disponibles E16

## FMRM2500 new



• AR: -4°  
• RR: -4°~0°

| Codigo |             |   | ØD | ØC | Ød   | Ød <sub>1</sub> | l  | L  | M   | ap |      | Tamaño insertos |
|--------|-------------|---|----|----|------|-----------------|----|----|-----|----|------|-----------------|
| FMRM   | 2517HRP-M08 | 2 | 17 | 9  | 14.5 | 8.5             | 25 | 42 | M08 | 4  | 0.03 | 8               |
|        | 2521HRP-M10 | 3 | 21 | 13 | 18   | 10.5            | 30 | 51 | M10 | 4  | 0.06 | 8               |
|        | 2526HRP-M12 | 4 | 26 | 18 | 23   | 12.5            | 35 | 59 | M12 | 4  | 0.11 | 8               |
|        | 2533HRP-M16 | 4 | 33 | 25 | 29   | 17              | 40 | 67 | M16 | 4  | 0.22 | 8               |
|        | 2540HRP-M16 | 5 | 40 | 32 | 29   | 17              | 40 | 67 | M16 | 4  | 0.26 | 8               |

### Insertos disponibles

|        |            | RPCT-MA | RPET-ML | RPMT-MF    | RPMT-MM | RPMW   |        |        |        |        |        |          |        |      |        |        |        |       |
|--------|------------|---------|---------|------------|---------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|--------|--------|-------|
|        |            |         |         |            |         |        |        |        |        |        |        |          |        |      |        |        |        |       |
| Codigo |            | Cermet  |         | Recubierto |         |        |        |        |        |        |        | Sin Rec. |        | pag. |        |        |        |       |
|        |            | CN2000  | CN80    | NCM825     | NC5330  | NCM635 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510   | PC9530 |      | PC9540 | PC5300 | PC5400 | ST30A |
| RPET   | 0803M0E-ML |         |         |            |         |        |        |        |        |        |        |          |        | ●    | ●      |        |        | E16   |
| RPMT   | 0803M0E-MF |         |         |            |         |        |        |        |        |        |        |          |        | ●    | ●      |        |        |       |
|        | 0803M0S-MM |         |         |            |         |        | ●      | ●      | ●      |        |        |          |        | ●    | ●      |        |        |       |
| RPMW   | 0803M0E1   |         |         |            |         |        | ●      | ●      | ●      |        |        |          |        | ●    | ●      |        |        |       |

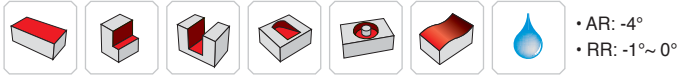
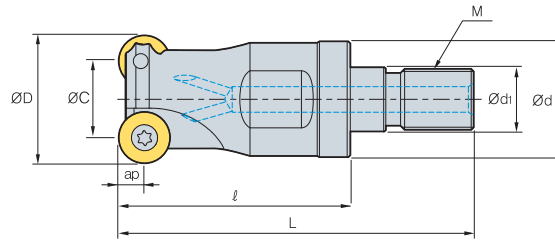
### Partes

| Especificaciones |                                  |                |
|------------------|----------------------------------|----------------|
| Ø17<br>Ø21~Ø40   | Tornillo<br>FTNA0305<br>FTNA0306 | Llave<br>TW09S |

Insertos disponibles E16 Adaptador modular disponible E371~E372



# FMRM3000 new



| Codigo |             | 3 | ØD | ØC | Ød | Ød <sub>1</sub> | ℓ  | L  | M   | ap | kg   | Tamaño insertos |
|--------|-------------|---|----|----|----|-----------------|----|----|-----|----|------|-----------------|
| FMRM   | 3026HRP-M12 | 3 | 26 | 16 | 23 | 12.5            | 35 | 59 | M12 | 5  | 0.10 | 10              |
|        | 3033HRP-M16 | 3 | 33 | 23 | 29 | 17              | 40 | 67 | M16 | 5  | 0.20 | 10              |
|        | 3035HRP-M16 | 3 | 35 | 25 | 29 | 17              | 40 | 67 | M16 | 5  | 0.22 | 10              |
|        | 3040HRP-M16 | 3 | 40 | 30 | 29 | 17              | 40 | 67 | M16 | 5  | 0.25 | 10              |
|        | 3042HRP-M16 | 3 | 42 | 32 | 29 | 17              | 40 | 67 | M16 | 5  | 0.27 | 10              |

## Insertos disponibles

RPCT-MA    RPET-ML    RPMT-MF    RPMT-MM    RPMW



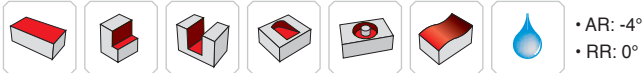
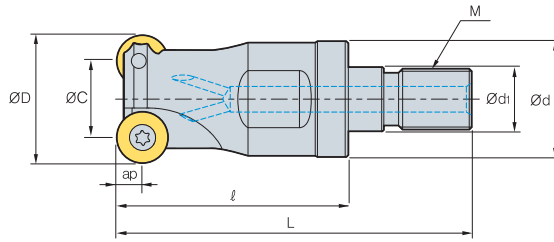
| Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |       |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-------|-----|
|        | CN2000     | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | ST30A | H01 |
| RPCT   | 10T3M0-MA  |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       | ●   |
| RPET   | 10T3M0E-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |       |     |
| RPMT   | 10T3M0E-MF |      |            |        |        |        |        |        | ●      |        |        |        |          | ●      | ●    |        |       |     |
|        | 10T3M0S-MM |      |            |        |        |        | ●      | ●      | ●      | ●      |        |        |          | ●      | ●    |        |       |     |
| RPMW   | 10T3M0E1   |      |            |        |        |        | ●      | ●      | ●      |        |        |        |          | ●      | ●    |        |       |     |

## Partes

| Especificaciones | Tornillo               | Llave |
|------------------|------------------------|-------|
| Ø26<br>Ø33~Ø42   | FTGA03507<br>FTGA03508 | TW15S |

Insertos disponibles E16    Adaptador modular disponible E371~E372

## FMRM4000 new



| Codigo |             |   |    |    |    |                 |    |    |     |    |      |                 | (mm) |
|--------|-------------|---|----|----|----|-----------------|----|----|-----|----|------|-----------------|------|
|        |             |   | ØD | ØC | Ød | Ød <sub>1</sub> | l  | L  | M   | ap |      | Tamaño insertos |      |
| FMRM   | 4026HRP-M12 | 2 | 26 | 14 | 23 | 12.5            | 35 | 59 | M12 | 6  | 0.10 | 12              |      |
|        | 4033HRP-M16 | 3 | 33 | 21 | 29 | 17              | 40 | 67 | M16 | 6  | 0.21 | 12              |      |
|        | 4035HRP-M16 | 3 | 35 | 23 | 29 | 17              | 40 | 67 | M16 | 6  | 0.21 | 12              |      |
|        | 4040HRP-M16 | 4 | 40 | 28 | 29 | 17              | 40 | 67 | M16 | 6  | 0.24 | 12              |      |
|        | 4042HRP-M16 | 4 | 42 | 30 | 29 | 17              | 40 | 67 | M16 | 6  | 0.25 | 12              |      |

### Insertos disponibles



| Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |       |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-------|-----|
|        | CN2000     | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | ST30A | H01 |
| RPCT   | 1204M0-MA  |      |            |        |        |        |        |        |        |        |        |        |          |        |      |        |       | ●   |
| RPET   | 1204M0E-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |       |     |
| RPMT   | 1204M0E-MF |      |            |        |        |        |        |        | ●      |        |        |        | ●        | ●      | ●    |        |       |     |
|        | 1204M0S-MM |      |            |        |        |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      | ●    |        |       |     |
| RPMW   | 1204M0S1   |      |            |        |        |        |        | ●      | ●      | ●      | ●      |        |          | ●      | ●    |        |       |     |
|        | 1204M0S2   |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●    |        |       |     |

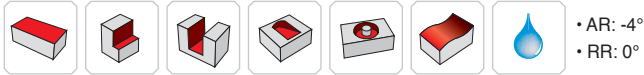
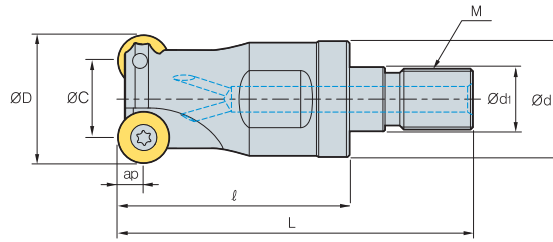
### Partes

| Especificaciones |                      |       |
|------------------|----------------------|-------|
| Ø26<br>Ø33-Ø42   | FTKA0408<br>FTKA0410 | TW15S |

Insertos disponibles E16 Adaptador modular disponible E371~E372



# FMRM5000 **new**



| Codigo |             | Flutes | ØD | ØC | Ød | Ød1 | ℓ  | L  | M   | ap | kg   | Tamaño insertos |
|--------|-------------|--------|----|----|----|-----|----|----|-----|----|------|-----------------|
| FMRM   | 5040HRP-M16 | 2      | 40 | 24 | 29 | 17  | 40 | 67 | M16 | 8  | 0.21 | 16              |
|        | 5042HRP-M16 | 2      | 42 | 26 | 29 | 17  | 40 | 67 | M16 | 8  | 0.23 | 16              |

## Insertos disponibles

|        |            | RPCT-MA | RPET-ML | RPMT-MF    | RPMT-MM | RPMW   |        |        |        |        |        |        |        |          |        |      |        |       |     |
|--------|------------|---------|---------|------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|--------|-------|-----|
|        |            |         |         |            |         |        |        |        |        |        |        |        |        |          |        |      |        |       |     |
| Codigo |            | Cermet  |         | Recubierto |         |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |        |       |     |
|        |            | CN2000  | CN30    | NCM325     | NC5330  | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |      | PC5400 | ST30A | H01 |
| RPCT   | 1606M0-MA  |         |         |            |         |        |        |        |        |        |        |        |        |          |        |      |        | ●     | E16 |
| RPET   | 1606M0E-ML |         |         |            |         |        |        |        |        |        |        |        |        |          |        |      |        | ● ●   |     |
| RPMT   | 1606M0E-MF |         |         |            |         |        |        |        |        |        |        |        |        |          |        |      |        | ● ●   |     |
|        | 1606M0S-MM |         |         |            |         |        |        |        |        |        |        |        |        |          |        |      |        | ● ●   |     |
| RPMW   | 1606M0S1   |         |         |            |         |        |        |        |        |        |        |        |        |          |        |      |        | ● ●   |     |

## Partes

| Especificaciones |                     |         |                |
|------------------|---------------------|---------|----------------|
| Ø40~Ø42          | Tornillo FTGA0511-P | Llave - | Llave TW20-100 |

Insertos disponibles E16 Adaptador modular disponible E371~E372

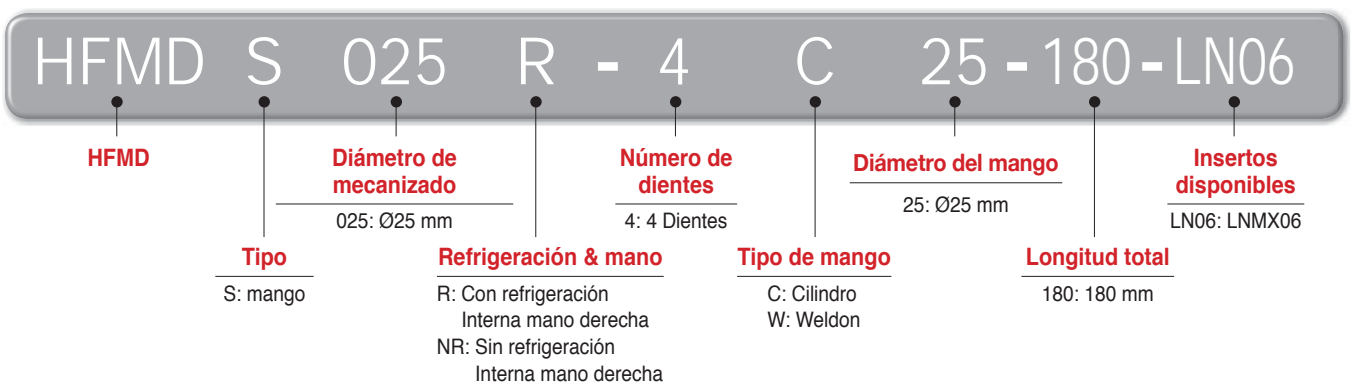
## Fresa de alto avance con cuatro filos de corte por inserto

# HFMD **new**

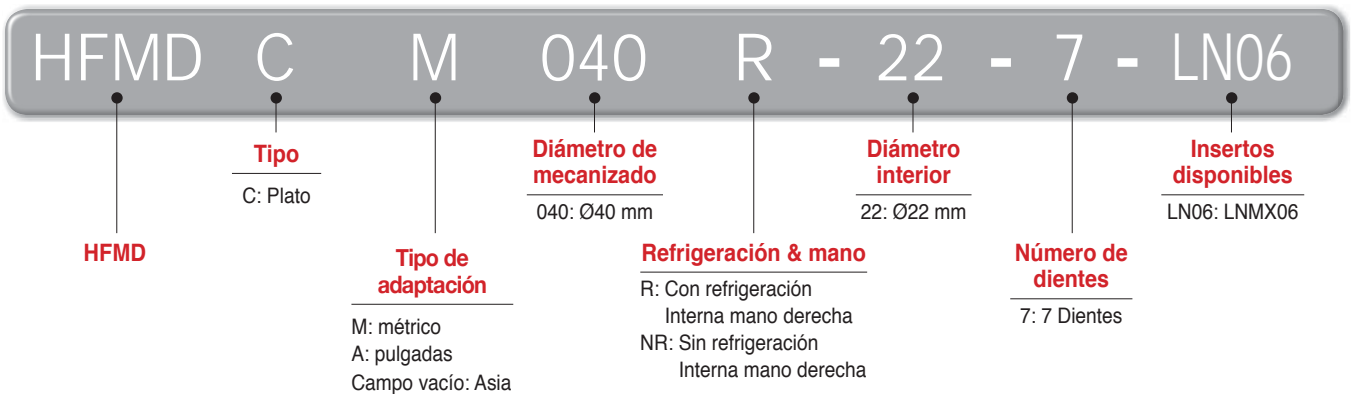
- Inserto económico de doble cara con 4 filos de corte disponibles
- Mayor productividad debido al ancho de los insertos, posibilitando un paso más estrecho y mayores avances
- Inserto diseñado para disminuir la carga de corte, con un alto ángulo de ataque y ángulo de hélice que reducen la carga de corte
- Inhibición de astillado y rotura debido al sistema de sujeción cóncavo y el amarre con tornillos más fuertes

### 🔗 Sistema de codificación

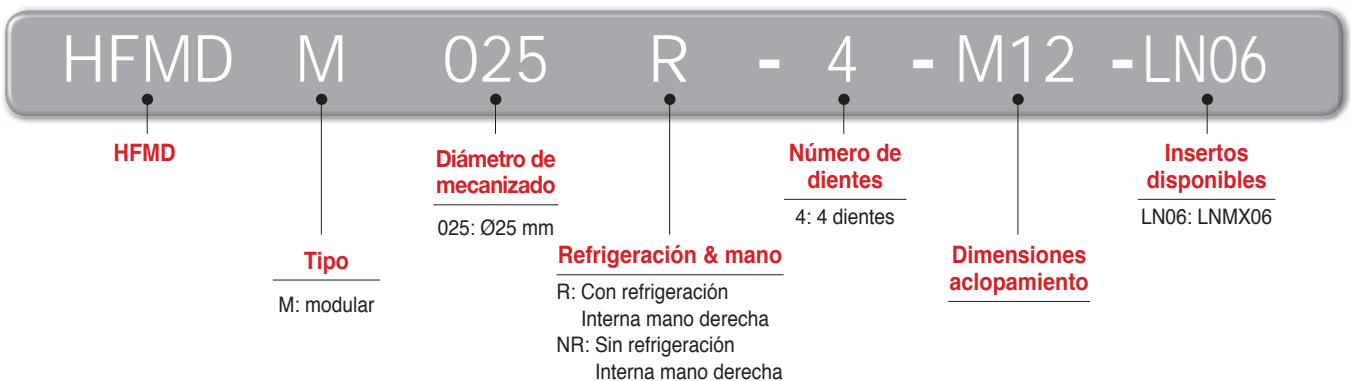
#### • Tipo Mango



#### • Tipo Plato



#### • Tipo Modular

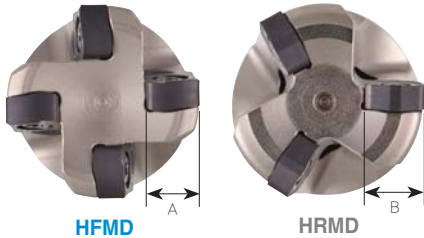


### Características

• **Inserto que posibilitan pasos estrechos mejorando la eficiencia**

- Pasos muy estrechos disponibles
- Pasos más estrechos que otras fresas de igual diámetro, debido al núcleo (círculo inscrito) de menor diámetro (A < B)

※ Diámetro de herramienta: Ø25 mm



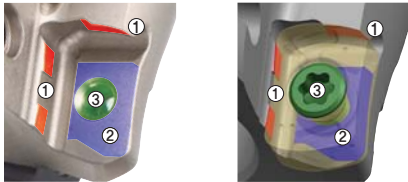
• **Insertos económicos de 4 filos de corte**

- Dos caras disponibles
- Paso muy estrecho que posibilita un alto avance



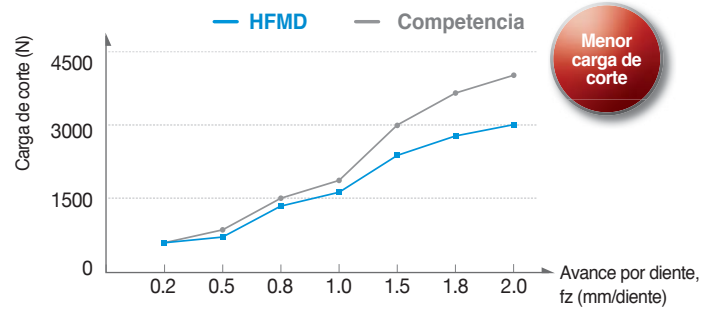
• **Inserto garantiza una fuerte fuerza de sujeción**

- ① Sistema de sujeción cóncavo
- ② Área de sujeción de la cara inferior más ancha
- ③ Tornillo de mayor diámetro



• **Inserto diseñado para bajar la carga de corte**

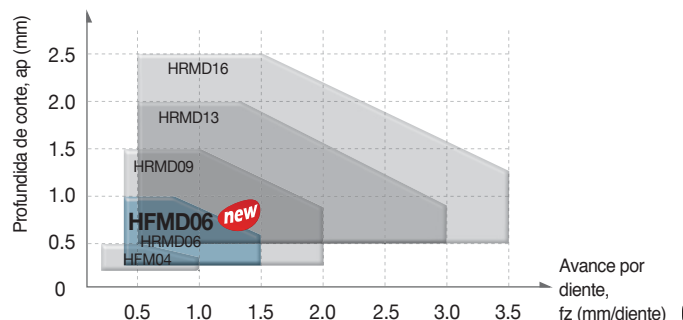
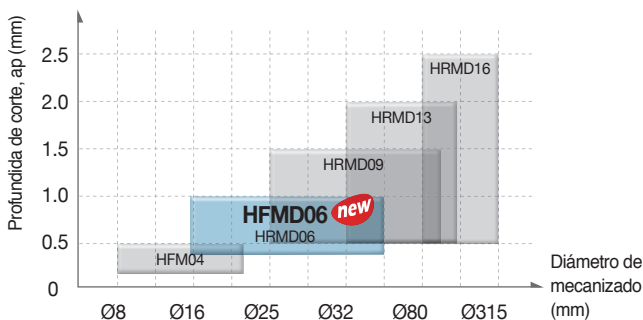
- Alto ángulo de ataque y ángulo de hélice minimizan la carga de corte en comparación con los productos de la competencia y otros insertos positivos



### Características del rompevirutas

| Inserto | Filo de corte | Usos   | Características   |
|---------|---------------|--|---|
| ML      |               | Para aleaciones termorresistentes, Titanio e Inconel | Garantiza una calidad de mecanizado superior gracias a la acción del rompevirutas de baja resistencia al corte y el diseño del filo, de alta resistencia, adecuado para mecanizar aleaciones termorresistentes. |
| MF      |               | Para corte ligero                                    | Para mecanizado ligero con un rompevirutas que minimiza la carga de corte.  |
| MM      |               | Propósitos múltiples                                 | Disponible para distintos materiales. Diseño general para mecanizado de alto avance.  |

### Área de aplicación



## Condición de corte recomendada

(●: 1ª opción, ○: 2ª opción)

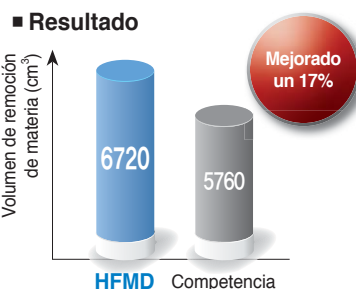


| Pieza Trabajo           |                                   |                    |                |                                 | HB (HrC)                               | Calidades       | Condicion Cortes |                |           |           | Rompeviruta |    |    |   |
|-------------------------|-----------------------------------|--------------------|----------------|---------------------------------|--|-----------------|------------------|----------------|-----------|-----------|-------------|----|----|---|
| ISO                     | Pieza Trabajo                     | KS                 | AISI           | ISO (DIN)*                      |  |                 | vc (m/min)       | fz (mm/diente) | ap (mm)   | ae        | ML          | MF | MM |   |
| P                       | Acero Suave                       | SM20C              | 1020           | C25 (CK22)*                     | 120~180                                | PC5400 (PC5300) | 100~220          | 0.3~1.2        | 0.2~1.0   | 0.7D~0.1D | ○           | ●  | -  |   |
|                         | Acero al Carbon                   | SM45C              | 1042<br>1045   | C45/C45E4 (C45/CK45)*           | 200                                    | PC5400 (PC5300) | 100~200          | 0.3~1.2        | 0.2~1.0   | 0.7D~0.1D | ○           | ●  | -  |   |
|                         | Acero aleado                      | SCM440             | 4140           | 41CrMo4                         | 270(28)                                | PC3700 (PC5300) | 100~200          | 0.3~1.2        | 0.2~1.0   | 0.7D~0.1D | ○           | ●  | -  |   |
|                         | Acero pre-endurecido              | KP4M               | P20 (Mejorado) | -                               | (1,2738)*                              | 300(32)         | PC3700 (PC5300)  | 100~180        | 0.3~1.0   | 0.2~0.8   | 0.7D~0.1D   | -  | ●  | ○ |
|                         |                                   | NIMAX              | P21 (Mejorado) | -                               | -                                      | 370(40)         | PC3700 (PC5300)  | 100~180        | 0.3~1.0   | 0.2~0.8   | 0.7D~0.1D   | -  | ●  | ○ |
|                         |                                   | CENA1              | P21 (Mejorado) | -                               | -                                      | 370(40)         | PC3700 (PC5300)  | 100~180        | 0.3~1.0   | 0.2~0.8   | 0.7D~0.1D   | -  | ●  | ○ |
|                         |                                   | NAK80              | P21 (Mejorado) | -                               | -                                      | 400(43)         | PC3700 (PC5300)  | 100~180        | 0.3~1.0   | 0.2~0.8   | 0.7D~0.1D   | -  | ●  | ○ |
| STAVAX                  | 420                               | -                  | (X30Cr13)*     | 510(52)                         | PC3700 (PC2510)                        | 80~150          | 0.3~0.7          | 0.2~0.8        | 0.7D~0.1D | -         | ●           | ○  |    |   |
| Acero para herramientas | STD11<br>STD61                    | D2<br>H13          | -              | (X165CrVMo12-1<br>X40CrMoV5-1)* | -                                      | PC2510 (PC3700) | 80~130           | 0.3~0.65       | 0.2~0.6   | 0.7D~0.1D | -           | ○  | ●  |   |
| M                       | Acero Inoxidable                  | STS316             | 316            | -                               | Por debajo de 270                      | PC5400          | 90~180           | 0.3~0.8        | 0.2~0.8   | 0.7D~0.1D | ●           | ○  | -  |   |
| K                       | Fundición gris, Fundición dúctil  | GCD450             | 65-45-12       | 450-10 (GGG40.3)*               | Tensión de rotura por encima de 450Mpa | PC5300 (PC5400) | 130~220          | 0.3~0.9        | 0.2~1.0   | 0.7D~0.1D | -           | ●  | ○  |   |
| S                       | Superaleaciones termorresistentes | Basadas en hierro  | Incoloy901     | N09901                          | -                                      | -               | PC5300           | 30~100         | 0.3~0.6   | 0.2~0.6   | 0.4D~0.7D   | ●  | ○  | - |
|                         |                                   | Basadas en Ni o Co | Inconel718     | N07718                          | -                                      | -               | PC5300           | 30~45          | 0.3~0.7   | 0.2~0.6   | 0.4D~0.7D   | ○  | ●  | - |
|                         | Titanio                           | Ti-6Al-4V          | R56400         | -                               | (TiAl6V4)*                             | -               | PC5300           | 30~50          | 0.3~1.0   | 0.2~0.6   | 0.7D~0.1D   | ●  | ○  | - |

## Pruebas de rendimiento

### Acero Aleado (SCM440, HB250)

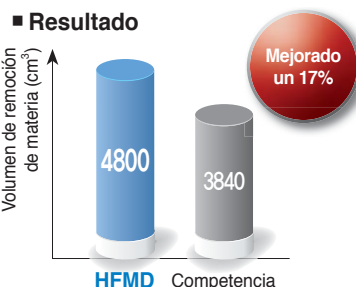
- Pieza** Superficie de acero rectangular (300x200x100)
- Condiciones de corte** vc (m/min) = 180, fz (mm/diente) = 1.0, ap (mm) = 0.8, ae (mm) = 20, seco
- Herramientas** Insertos LNMx060310R-MF  
Porta HFMDs032R-5C32-200-LN06 herramienta (Ø32, 5T)



- Régimen de arranque de viruta, Q (cm³/min): 143.2
- Tiempo de corte (min): 46.9

### Acero pre-endurecido (KP4M, HRC30)

- Pieza** Superficie de acero rectangular (300x200x100)
- Condiciones de corte** vc (m/min) = 160, fz (mm/diente) = 1.2, ap (mm) = 0.8, ae (mm) = 20, seco
- Herramientas** Insertos LNMx060310R-MF  
Porta HFMDs032R-5C32-200-LN06 herramienta (Ø32, 5T)



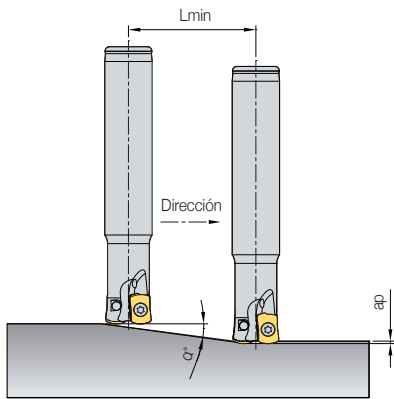
- Régimen de arranque de viruta, Q (cm³/min): 152.8
- Tiempo de corte (min): 31.4





## Rampeado e interpolación helicoidal

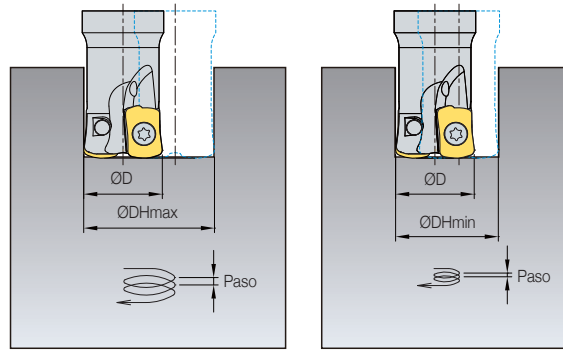
### Rampeado



$$L_{min} = \frac{ap}{\tan \alpha^\circ} \text{ (mm)}$$

※ Lmin: longitud mínima de filo de corte  
 α°: ángulo máximo de rampa  
 ap: Profundidad de corte

### Interpolación helicoidal

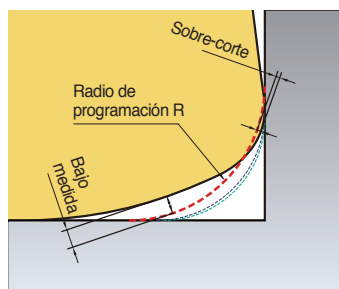


• ØD = Dia. Herramienta. (mm)  
 • Ød = Paso (mm) = ØDHmin, Max - ØD

| Referencia | Dia. Hrta. ØD | Prof. corte ap | Rampeado                   |      | Interpolación helicoidal |                |                     |                |                     |                |
|------------|---------------|----------------|----------------------------|------|--------------------------|----------------|---------------------|----------------|---------------------|----------------|
|            |               |                | Ángulo máx. de rampa α (°) | Lmin | Max diametro ØDHmax      | Paso máx. dmax | Min diametro ØDHmin | Paso máx. dmax | Min diametro ØDHmin | Paso máx. dmax |
| HFMS016    | 16            | 0.7            | 3.0                        | 13   | 30                       | 0.7            | 22                  | 0.7            | 21                  | 0.7            |
| HFMS017    | 17            | 1.0            | 2.3                        | 25   | 32                       | 1.0            | 24                  | 1.0            | 22                  | 1.0            |
| HFMS018    | 18            | 1.0            | 2.1                        | 27   | 34                       | 1.0            | 26                  | 1.0            | 24                  | 1.0            |
| HFMS019    | 19            | 1.0            | 1.9                        | 30   | 36                       | 1.0            | 28                  | 1.0            | 26                  | 1.0            |
| HFMS020    | 20            | 1.0            | 1.5                        | 37   | 38                       | 1.0            | 30                  | 1.0            | 28                  | 1.0            |
| HFMS021    | 21            | 1.0            | 1.5                        | 39   | 40                       | 1.0            | 32                  | 1.0            | 30                  | 1.0            |
| HFMS025    | 25            | 1.0            | 1.4                        | 40   | 48                       | 1.0            | 40                  | 1.0            | 38                  | 1.0            |
| HFMS026    | 26            | 1.0            | 1.4                        | 42   | 50                       | 1.0            | 42                  | 1.0            | 40                  | 1.0            |
| HFMS030    | 30            | 1.0            | 1.1                        | 51   | 58                       | 1.0            | 50                  | 1.0            | 48                  | 1.0            |
| HFMS032    | 32            | 1.0            | 1.0                        | 55   | 62                       | 1.0            | 54                  | 1.0            | 52                  | 1.0            |
| HFMS033    | 33            | 1.0            | 1.0                        | 57   | 64                       | 1.0            | 56                  | 1.0            | 54                  | 1.0            |
| HFMS035    | 35            | 1.0            | 0.9                        | 61   | 68                       | 1.0            | 60                  | 1.0            | 58                  | 1.0            |
| HFMS040    | 40            | 1.0            | 0.8                        | 71   | 78                       | 1.0            | 70                  | 1.0            | 68                  | 1.0            |
| HFMC042    | 42            | 1.0            | 0.8                        | 76   | 82                       | 1.0            | 74                  | 1.0            | 72                  | 1.0            |
| HFMC050    | 50            | 1.0            | 0.6                        | 92   | 98                       | 1.0            | 90                  | 1.0            | 88                  | 1.0            |
| HFMC052    | 52            | 1.0            | 0.6                        | 96   | 102                      | 1.0            | 94                  | 1.0            | 92                  | 1.0            |
| HFMC063    | 63            | 1.0            | 0.5                        | 119  | 124                      | 1.0            | 116                 | 1.0            | 114                 | 1.0            |
| HFMC066    | 66            | 1.0            | 0.5                        | 126  | 130                      | 1.0            | 122                 | 1.0            | 120                 | 1.0            |

- Ajustar avance por debajo del 70% de las condiciones de corte recomendadas para maquinados en rampa y helicoidales
- En maquinados helicoidales la profundidad máxima de cada vuelta helicoidal no puede superar la profundidad máxima para cada inserto según su tamaño
- En maquinados en rampa la profundidad máxima de cada vuelta helicoidal no puede superar la profundidad máxima para cada inserto según su tamaño

## Radio de programación R

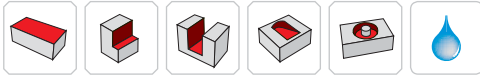
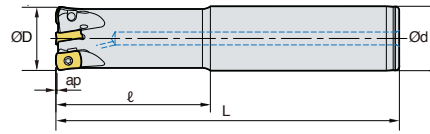


----- R2.0    - - - - - R1.6    - · - · - · R1.5

| Placa  | Radio de programación | Condiciones corte |         | Sobre medida | Bajo medida |
|--|-----------------------|-------------------|---------|--------------|-------------|
|  |                       | Radio R           | Max. ap |              |             |
| LNMX060310R-ML<br>LNMX060310R-MF<br>LNMX060310R-MM | R1.5                  |                   |         | 0            | 0.41        |
|  | R1.6 (estándar)       | 1.0               | 1.0     | 0            | 0.38        |
|  | R2.0                  |                   |         | 0.057        | 0.27        |

- En mecanizado CNC: en caso de introducir el programa normal para cada radio de punta, se produciría un corte excesivo y quedaría una zona sin mecanizar en las esquinas
- Para evitar el sobrecorte, deberá tener en cuenta los datos indicados arriba

# HFMD S-LN06 new



• AR: -9°  
• RR: 10°~15°

(mm)

| Codigo                    |   | ØD | Ød | ℓ   | L   | ap  |      |
|---------------------------|---|----|----|-----|-----|-----|------|
| HFMD S 016R-2C16-100-LN06 | 2 | 16 | 16 | 30  | 100 | 0.7 | 0.13 |
| 016R-2C16-150-LN06        | 2 | 16 | 16 | 50  | 150 | 0.7 | 0.19 |
| 017R-2C16-100-LN06        | 2 | 17 | 16 | 30  | 100 | 1.0 | 0.13 |
| 017R-2C16-150-LN06        | 2 | 17 | 16 | 40  | 150 | 1.0 | 0.20 |
| 017R-2C16-200-LN06        | 2 | 17 | 16 | 40  | 200 | 1.0 | 0.27 |
| 018R-2C16-100-LN06        | 2 | 18 | 16 | 40  | 100 | 1.0 | 0.14 |
| 018R-2C16-160-LN06        | 2 | 18 | 16 | 40  | 160 | 1.0 | 0.18 |
| 018R-2C16-200-LN06        | 2 | 18 | 16 | 40  | 200 | 1.0 | 0.28 |
| 019R-2C16-100-LN06        | 2 | 19 | 16 | 40  | 100 | 1.0 | 0.15 |
| 019R-2C16-160-LN06        | 2 | 19 | 16 | 40  | 160 | 1.0 | 0.19 |
| 019R-2C16-200-LN06        | 2 | 19 | 16 | 40  | 200 | 1.0 | 0.29 |
| 020R-3C20-100-LN06        | 3 | 20 | 20 | 40  | 100 | 1.0 | 0.20 |
| 020R-3C20-130-LN06        | 3 | 20 | 20 | 50  | 130 | 1.0 | 0.26 |
| 020R-3C20-160-LN06        | 3 | 20 | 20 | 80  | 160 | 1.0 | 0.31 |
| 020R-3C20-200-LN06        | 3 | 20 | 20 | 120 | 200 | 1.0 | 0.40 |

## Insertos disponibles

LNX-ML LNX-MF LNX-MM



| Codigo         | Recubierto |        |        |        | pag. |
|----------------|------------|--------|--------|--------|------|
|                | PC2510     | PC3700 | PC5300 | PC5400 |      |
| LNX 060310R-ML |            |        | ●      | ●      | E11  |
| 060310R-MF     | ●          | ●      | ●      | ●      |      |
| 060310R-MM     | ●          | ●      | ●      | ●      |      |

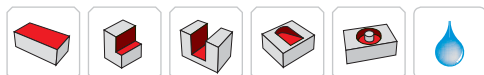
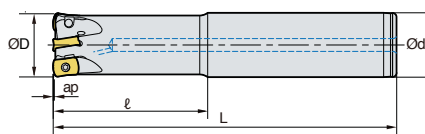
## Partes

| Especificaciones |                      |                |
|------------------|----------------------|----------------|
| Ø16~Ø40          | Tornillo<br>FTNA0306 | Llave<br>TW09S |

Insertos disponibles E11



# HFMDS-LN06 new



• AR: -9°  
• RR: 10°~15°

(mm)

| Codigo                   |   | ØD | Ød | ℓ   | L   | ap  |      |
|--------------------------|---|----|----|-----|-----|-----|------|
| HFMDS 021R-3C20-100-LN06 | 3 | 21 | 20 | 30  | 100 | 1.0 | 0.21 |
| 021R-3C20-130-LN06       | 3 | 21 | 20 | 40  | 130 | 1.0 | 0.27 |
| 021R-3C20-160-LN06       | 3 | 21 | 20 | 40  | 160 | 1.0 | 0.34 |
| 021R-3C20-200-LN06       | 3 | 21 | 20 | 40  | 200 | 1.0 | 0.42 |
| 025R-4C25-100-LN06       | 4 | 25 | 25 | 40  | 100 | 1.0 | 0.33 |
| 025R-4C25-140-LN06       | 4 | 25 | 25 | 60  | 140 | 1.0 | 0.46 |
| 025R-4C25-180-LN06       | 4 | 25 | 25 | 100 | 180 | 1.0 | 0.58 |
| 025R-4C25-250-LN06       | 4 | 25 | 25 | 150 | 250 | 1.0 | 0.67 |
| 026R-4C25-100-LN06       | 4 | 26 | 25 | 30  | 100 | 1.0 | 0.34 |
| 026R-4C25-140-LN06       | 4 | 26 | 25 | 40  | 140 | 1.0 | 0.48 |
| 026R-4C25-180-LN06       | 4 | 26 | 25 | 40  | 180 | 1.0 | 0.63 |
| 026R-4C25-250-LN06       | 4 | 26 | 25 | 40  | 250 | 1.0 | 0.72 |
| 032R-5C32-150-LN06       | 5 | 32 | 32 | 70  | 150 | 1.0 | 0.82 |
| 032R-5C32-200-LN06       | 5 | 32 | 32 | 120 | 200 | 1.0 | 1.08 |
| 032R-5C32-250-LN06       | 5 | 32 | 32 | 150 | 250 | 1.0 | 1.20 |
| 033R-5C32-150-LN06       | 5 | 33 | 32 | 40  | 150 | 1.0 | 0.82 |
| 033R-5C32-200-LN06       | 5 | 33 | 32 | 40  | 200 | 1.0 | 1.08 |
| 033R-5C32-250-LN06       | 5 | 33 | 32 | 40  | 250 | 1.0 | 1.20 |
| 035R-5C32-150-LN06       | 5 | 35 | 32 | 40  | 150 | 1.0 | 0.87 |
| 035R-5C32-200-LN06       | 5 | 35 | 32 | 40  | 200 | 1.0 | 1.13 |
| 035R-5C32-250-LN06       | 5 | 35 | 32 | 40  | 250 | 1.0 | 1.25 |
| 040R-6C32-150-LN06       | 6 | 40 | 32 | 40  | 150 | 1.0 | 0.97 |
| 040R-6C32-200-LN06       | 6 | 40 | 32 | 40  | 200 | 1.0 | 1.28 |
| 040R-6C32-250-LN06       | 6 | 40 | 32 | 40  | 250 | 1.0 | 1.38 |

## Insertos disponibles

LNMX-ML LNMX-MF LNMX-MM



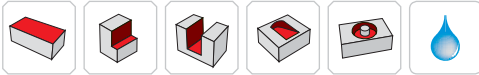
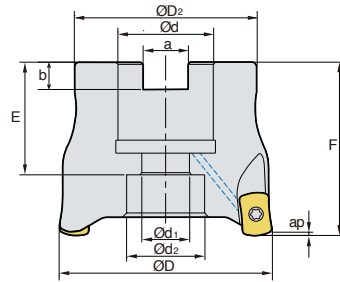
| Codigo          | Recubierto |        |        |        | pag. |
|-----------------|------------|--------|--------|--------|------|
|                 | PC2510     | PC3700 | PC5300 | PC5400 |      |
| LNMX 060310R-ML |            |        | ●      | ●      | E11  |
| 060310R-MF      | ●          | ●      | ●      | ●      |      |
| 060310R-MM      | ●          | ●      | ●      | ●      |      |

## Partes

| Especificaciones |                   |             |
|------------------|-------------------|-------------|
| Ø16~Ø40          | Tornillo FTNA0306 | Llave TW09S |

Insertos disponibles E11

## HFMDCM-LN06 new



• AR: -9°  
• RR: 10°~12°

(mm)

| Codigo                |   | ØD | ØD2 | Ød | Ød1 | Ød2  | a    | b   | E  | F  | ap  |      |
|-----------------------|---|----|-----|----|-----|------|------|-----|----|----|-----|------|
| HFMDCM 032R-16-5-LN06 | 5 | 32 | 30  | 16 | 9   | 13.5 | 8.4  | 5.6 | 19 | 40 | 1.0 | 0.12 |
| 040R-16-6-LN06        | 6 | 40 | 34  | 16 | 9   | 14   | 8.4  | 5.6 | 19 | 40 | 1.0 | 0.21 |
| 050R-22-6-LN06        | 6 | 50 | 42  | 22 | 11  | 18   | 10.4 | 6.3 | 21 | 40 | 1.0 | 0.32 |
| 050R-22-7-LN06        | 7 | 50 | 42  | 22 | 11  | 18   | 10.4 | 6.3 | 21 | 40 | 1.0 | 0.32 |
| 050R-22-8-LN06        | 8 | 50 | 42  | 22 | 11  | 18   | 10.4 | 6.3 | 21 | 40 | 1.0 | 0.32 |
| 052R-22-7-LN06        | 7 | 52 | 42  | 22 | 11  | 18   | 10.4 | 6.3 | 21 | 40 | 1.0 | 0.34 |
| 052R-22-8-LN06        | 8 | 52 | 42  | 22 | 11  | 18   | 10.4 | 6.3 | 21 | 40 | 1.0 | 0.34 |
| 063R-22-8-LN06        | 8 | 63 | 49  | 22 | 11  | 18   | 10.4 | 6.3 | 21 | 40 | 1.0 | 0.53 |
| 063R-22-9-LN06        | 9 | 63 | 49  | 22 | 11  | 18   | 10.4 | 6.3 | 21 | 40 | 1.0 | 0.53 |
| 066R-22-8-LN06        | 8 | 66 | 49  | 22 | 11  | 18   | 10.4 | 6.3 | 21 | 40 | 1.0 | 0.57 |
| 066R-22-9-LN06        | 9 | 66 | 49  | 22 | 11  | 18   | 10.4 | 6.3 | 21 | 40 | 1.0 | 0.57 |

### Insertos disponibles

LNMX-ML LNMX-MF LNMX-MM



| Codigo          | Recubierta |        |        |        | pag. |
|-----------------|------------|--------|--------|--------|------|
|                 | PC2510     | PC3700 | PC5300 | PC5400 |      |
| LNMX 060310R-ML |            |        | ●      | ●      | E11  |
| 060310R-MF      | ●          | ●      | ●      | ●      |      |
| 060310R-MM      | ●          | ●      | ●      | ●      |      |

### Adaptadores disponibles

| Codigo                | Adaptadores disponibles |
|-----------------------|-------------------------|
| HFMDCM 032R-16-□-LN06 | BT□□-FMC16-□□           |
| 040R-16-□-LN06        |                         |
| 050R-22-□-LN06        |                         |
| 052R-22-□-LN06        | BT□□-FMC22-□□           |
| 063R-22-□-LN06        |                         |
| 066R-22-□-LN06        |                         |

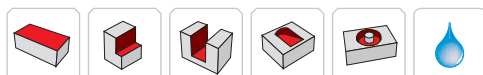
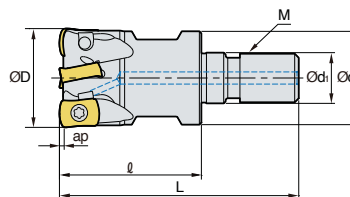
### Partes

| Especificaciones |          |       |
|------------------|----------|-------|
| Ø32-Ø66          | FTNA0306 | TW09S |

Insertos disponibles E11 Detalles del cortador E400-E402



# HFMDM-LN06 new



• AR: -9°  
• RR: 10°~15°

(mm)

| Codigo                       |   | ØD | Ød   | Ød1  | l  | L  | M   | ap  |      |
|------------------------------|---|----|------|------|----|----|-----|-----|------|
| <b>HFMDM</b> 016R-2-M08-LN06 | 2 | 16 | 14.5 | 8.5  | 25 | 42 | M08 | 0.7 | 0.03 |
| 017R-2-M08-LN06              | 2 | 17 | 14.5 | 8.5  | 25 | 42 | M08 | 1.0 | 0.03 |
| 018R-2-M08-LN06              | 2 | 18 | 14.5 | 8.5  | 25 | 42 | M08 | 1.0 | 0.04 |
| 019R-2-M08-LN06              | 2 | 19 | 14.5 | 8.5  | 25 | 42 | M08 | 1.0 | 0.05 |
| 020R-3-M10-LN06              | 3 | 20 | 18   | 10.5 | 30 | 51 | M10 | 1.0 | 0.06 |
| 021R-3-M10-LN06              | 3 | 21 | 18   | 10.5 | 30 | 51 | M10 | 1.0 | 0.07 |
| 025R-4-M12-LN06              | 4 | 25 | 23   | 12.5 | 35 | 59 | M12 | 1.0 | 0.10 |
| 026R-4-M12-LN06              | 4 | 26 | 23   | 12.5 | 35 | 59 | M12 | 1.0 | 0.10 |
| 032R-5-M16-LN06              | 5 | 32 | 29   | 17   | 40 | 67 | M16 | 1.0 | 0.20 |
| 033R-5-M16-LN06              | 5 | 33 | 29   | 17   | 40 | 67 | M16 | 1.0 | 0.20 |
| 035R-5-M16-LN06              | 5 | 35 | 29   | 17   | 40 | 67 | M16 | 1.0 | 0.21 |
| 040R-6-M16-LN06              | 6 | 40 | 29   | 17   | 40 | 67 | M16 | 1.0 | 0.24 |
| 042R-6-M16-LN06              | 6 | 42 | 29   | 17   | 40 | 67 | M16 | 1.0 | 0.25 |

## Insertos disponibles

LNMX-ML      LNMX-MF      LNMX-MM



| Codigo          | Recubierto |        |        |        | pag. |
|-----------------|------------|--------|--------|--------|------|
|                 | PC2510     | PC3700 | PC5300 | PC5400 |      |
| LNMX 060310R-ML |            |        | ●      | ●      | E11  |
| 060310R-MF      | ●          | ●      | ●      | ●      |      |
| 060310R-MM      | ●          | ●      | ●      | ●      |      |

## Partes

| Especificaciones |                      |                |
|------------------|----------------------|----------------|
| Ø16~Ø42          | Tornillo<br>FTNA0306 | Llave<br>TW09S |

Insertos disponibles E11      Adaptador modular disponible E371~E372

Mecanizado fiable, herramientas de fresado de alta eficiencia en diámetros pequeños

## HFM **new**

- Aumento de la productividad debido al nuevo diseño y tamaño de la placa, gran avance por diente, y diferentes aristas de corte, para mecanizado con herramientas de pequeño diámetro.
- Buena durabilidad de la placa debido a la combinación de una arista de corte reforzada en el radio y calidades de alta resistencia en mecanizado de alta velocidad y/o materiales de alta dureza.

### ➤ Sistema de codificación

#### • Tipo Mango

|                    |                            |                               |                         |                              |                            |                   |                                     |                   |
|--------------------|----------------------------|-------------------------------|-------------------------|------------------------------|----------------------------|-------------------|-------------------------------------|-------------------|
| HFM                | S                          | 1                             | 010                     | H                            | R - 2                      | L                 | 10                                  |                   |
| <b>Gran avance</b> | <b>Tipo de herramienta</b> | <b>Circulo inscrito placa</b> | <b>Dia. Herramienta</b> | <b>Sistema refrigerante</b>  | <b>Mano</b>                | <b>No. cortes</b> | <b>Longitud del mango</b>           | <b>Dia. Mango</b> |
|                    | S: mango                   | 1: 04 tipo placa              | 010: Ø10                | Sin código: No<br>H: Interna | R: Derecha<br>L: Izquierda | 2: 2 cortes       | S: Estándar<br>M: Medio<br>L: Largo | 10: Ø10           |

#### • Tipo modular

|                    |                    |                               |                          |                               |                            |                        |
|--------------------|--------------------|-------------------------------|--------------------------|-------------------------------|----------------------------|------------------------|
| HFM                | M                  | 1                             | 010                      | H                             | R - M06                    |                        |
| <b>Gran avance</b> | <b>Tipo Hetta.</b> | <b>Circulo inscrito placa</b> | <b>Dia. Herramienta.</b> | <b>Sistema refrigerante</b>   | <b>Mano</b>                | <b>Tamaño de rosca</b> |
|                    | M: Modular         | 1: 04 tipo placa              | 010: Ø10                 | Sin código: No<br>H: Interior | R: derecha<br>L: Izquierda |                        |

#### • Mango modular

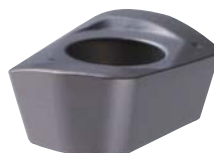
|                       |                     |                        |                   |                       |                                    |                       |
|-----------------------|---------------------|------------------------|-------------------|-----------------------|------------------------------------|-----------------------|
| MAT - M10 - 010 - S20 | S                   | C - 170                |                   |                       |                                    |                       |
| <b>Mango modular</b>  | <b>Tamaño rosca</b> | <b>Longitud cuello</b> | <b>Dia. mango</b> | <b>Tipo cuello</b>    | <b>Material mango</b>              | <b>Longitud mango</b> |
|                       | M10                 | 010: 10 mm             | S20: Ø20          | T: cónico<br>S: recto | Sin código: Acero<br>C: metal duro | 170: 170 mm           |

### ➤ Características

- Debido a la aplicación una arista de corte helicoidal, se consigue una menor carga en el filo y resistencia en la punta
- Incremento de la rigidez debido al doble ángulo de incidencia (11°, 13°), previene las interferencias en gran avance
- Aplicando un ángulo de posición axial negativo al situar la placa en el soporte, se mejora la resistencia al desportillado
- La vida de la herramienta aumenta debido a la variedad de rompevirutas y calidades disponibles para cada material



- **Posición en el soporte**  
- Debido al ángulo axial negativo de montaje, aumenta la resistencia al desportillado.



- **No. de cortes**  
- Mayor número de placas incrementa la vida hrt.  
- HRM(D) Ø20 (2 cortes) --+ HFM Ø20 (5 cortes)

- **Ángulo incidencia**  
- 11, 13 ángulo doble aumenta la estabilidad y disminuye las interferencias

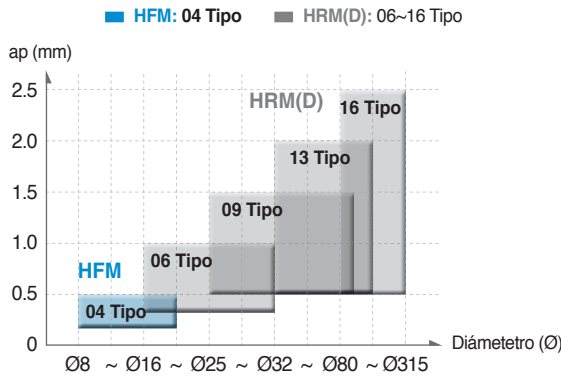
- **Arista de corte principal**  
- Corte de la arista principal mejorado  
- Resistencia de la arista principal mejorada

**Características del rompevirutas**

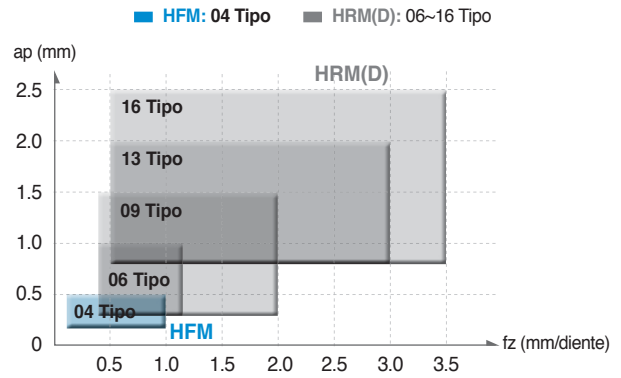
| Inserto  | Filo de corte | Usos  | Características  |
|----------|---------------|---|--|
| MF       |               | Acabado<br>Mecanizado Titanio &<br>Inconel    | Baja Resistencia de corte del rompevirutas, para mecanizado ligero                   |
| None C/B |               | Mecanizado de<br>materiales de alta<br>dureza | Geometría de alta resistencia, para el mecanizado de acero para<br>moldes y matrices |

**Área de aplicación**

Área de aplicación (ap & Diámetro)



Área de aplicación (ap & fz)



**Condiciones de corte recomendadas**

(● : 1ª opción, ○ : 2ª opción)

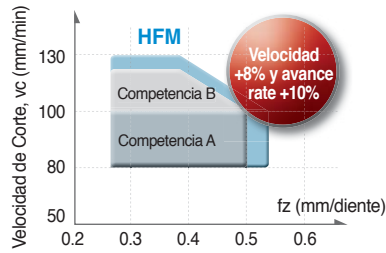


| Pieza Trabajo           |                                     |                    |                              | HB (HrC)          | Calidades                             | Condicion Cortes           |                    |                    |           | Rompeviruta |           |   |   |
|-------------------------|-------------------------------------|--------------------|------------------------------|-------------------|---------------------------------------|----------------------------|--------------------|--------------------|-----------|-------------|-----------|---|---|
| Pieza Trabajo           | KOR (KS)                            | USA (AISI)         | GER (DIN)                    |                   |                                       | vc (m/min)                 | fz (mm/diente)     | ap (mm)            | ae        | MF          | None C/B  |   |   |
| P                       | Acero Suave                         | SM20C              | 1020                         | C22               | 120~180                               | PC5400 (PC5300)            | 100~220            | 0.5~1.0            | ~0.5      | 0.7D~0.1D   | ●         | - |   |
|                         | Acero al Carbon                     | SM45C              | 1045                         | C45               | 200                                   | PC5400 (PC5300)            | 100~200            | 0.5~1.0            | ~0.5      | 0.7D~0.1D   | ●         | - |   |
|                         | Acero aleado                        | SCM440             | 4140                         | 41CrMo4           | 270 (28)                              | PC5300                     | 100~200            | 0.5~1.0            | ~0.5      | 0.7D~0.1D   | ●         | - |   |
|                         | Acero pre-endurecido                | KP4M               | P20 (mejorado)               | 1.2738 (mejorado) | 300 (32)                              | PC5300 (PC2510) <b>new</b> | 100~180            | 0.5~0.9            | ~0.4      | 0.7D~0.1D   | ●         | ○ |   |
|                         |                                     | NIMAX              | P21 (mejorado)               | -                 | 370 (40)                              | PC5300 (PC2510) <b>new</b> | 100~180            | 0.5~0.9            | ~0.4      | 0.7D~0.1D   | ●         | ○ |   |
|                         |                                     | CENA1              | P21 (mejorado)               | -                 | 370 (40)                              | PC5300 (PC2510) <b>new</b> | 100~180            | 0.5~0.9            | ~0.4      | 0.7D~0.1D   | ●         | ○ |   |
|                         |                                     | NAK80              | P21 (mejorado)               | -                 | 400 (43)                              | PC5300                     | 100~160<br>100~180 | 0.5~0.7<br>0.5~0.9 | ~0.4      | 0.7D~0.1D   | ○         | ● |   |
|                         | Acero para herramientas             | STAVAX             | 420                          | X30Cr13           | 510 (52)                              | PC2510 <b>new</b> (PC5300) | 80~150             | 0.3~0.6            | ~0.4      | 0.7D~0.1D   | ●         | - |   |
| STD11<br>STD61          |                                     | D2<br>H13          | X155CrVMo12-1<br>X40CrMoV5-1 | -(40~50)          | PC2510 <b>new</b> (PC2505) <b>new</b> | 80~130                     | 0.3~0.55           | ~0.3               | 0.7D~0.1D | -           | ●         |   |   |
| STD11 (forjado en frío) | D2                                  | X155CrVMo12-1      | 630 (60)                     | PC2505 <b>new</b> | 30~75                                 | 0.3~0.5                    | ~0.2               | 0.7D~0.1D          | -         | ●           |           |   |   |
| M                       | Acero Inoxidable                    | STS316             | 316                          | X5CrNiMo17-12-2   | Debajo 270                            | PC5400 (PC5300)            | 70~150             | 0.5~0.7            | ~0.5      | 0.7D~0.1D   | ●         | - |   |
| K                       | Fundición gris,<br>Fundición dúctil | GCD450             | 65-45-12                     | GGG40.3           | tensión de rotura sobre las 450Mpa    | PC5300                     | 130~220            | 0.6~0.8            | ~0.5      | 0.7D~0.1D   | ●         | - |   |
| S                       | Superalaciones termorresistentes    | Basadas en hierro  | Incoloy901                   | N09901            | - (WS 2.4662)                         | - (25~35)                  | PC5300 (PC5400)    | 30~100             | 0.3~0.5   | ~0.3        | 0.4D~0.7D | ● | ○ |
|                         |                                     | Basadas en Ni o Co | Inconel718                   | N07718            | NiCr19FeNbMo (WS 2.4668)              | - (35~45)                  | PC5300 (PC5400)    | 20~50              | 0.3~0.6   | ~0.3        | 0.4D~0.7D | ● | ○ |
|                         | Titanio                             | Ti-6Al-4V          | R56400                       | TiAl6V4           | - (40~45)                             | PC5300                     | 30~50              | 0.4~1.0            | ~0.3      | 0.7D~0.1D   | ●         | - |   |

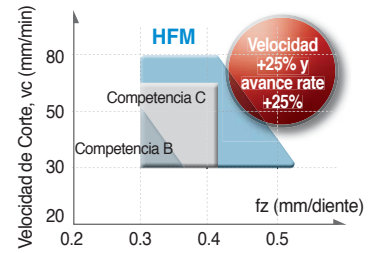
## Evaluación de rendimiento

### Mecanizado de alta velocidad

- Material pieza  
STD11 (HRC40~45)
- Placa  
LPM(E)W0402□□R
- Calidad recomendada  
PC2505 (1<sup>st</sup>), PC2510 (2<sup>nd</sup>)

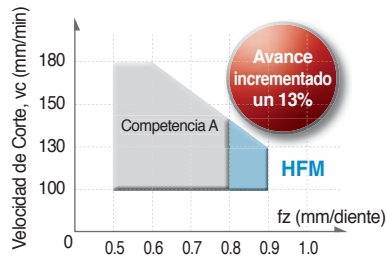


- Material pieza  
STD11 (Over HRC60)
- Placa  
LPM(E)W0402□□R
- Calidad recomendada  
PC2505 (1<sup>st</sup>), PC2510 (2<sup>nd</sup>)

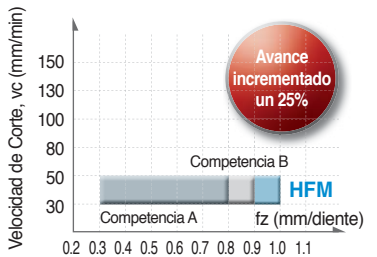


### Mecanizado de gran avance

- Material pieza  
KP4M (HRC32),  
NAK80 (HRC43)
- Placa  
LPMT0402□□R-MF
- Calidad recomendada  
PC5300 (1<sup>st</sup>), PC2510 (2<sup>nd</sup>)

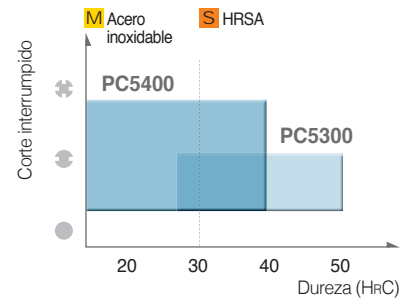
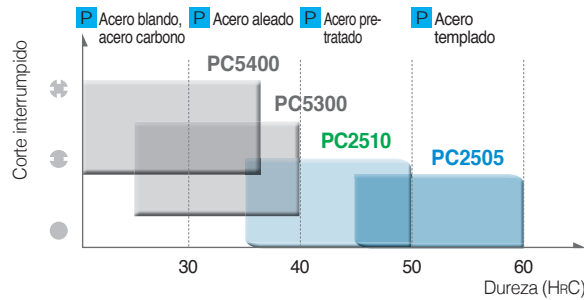


- Material pieza  
Ti-6AL-4V (HRC40~45)
- Placa  
LPMT0402□□R-MF
- Calidad recomendada  
PC5300 (1<sup>st</sup>), PC5400 (2<sup>nd</sup>)

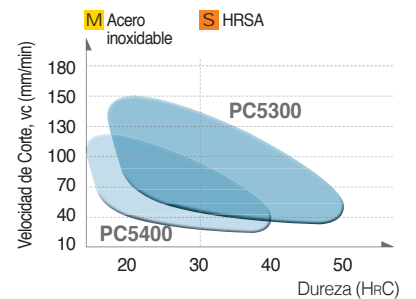
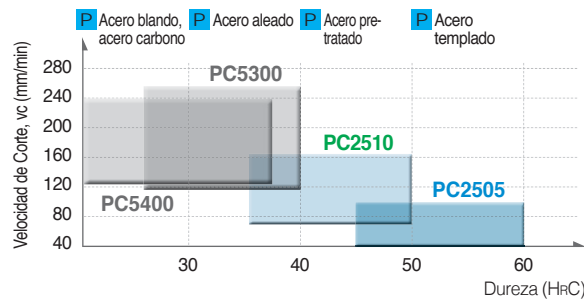


### Mecanizado acero templado

- Calidad recomendada en función del golpe

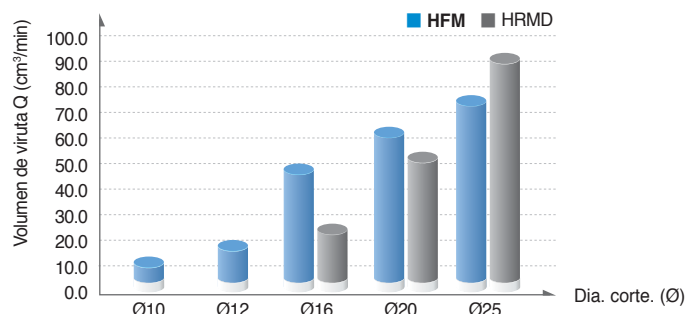


- Calidad recomendada en función de la velocidad de corte



### Efectividad del mecanizado

- Centro de mecanizado
  - BT40 e inferior, se recomienda HFM
  - BT50 y mayor, se recomienda HRM(D)
- Volumen de viruta generado Q (cm<sup>3</sup>/min)
  - Ø8~Ø20, HFM se recomienda
  - Ø20 o superior, se recomienda HRM(D)

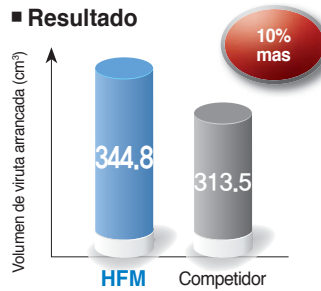




**Evaluación de rendimiento**

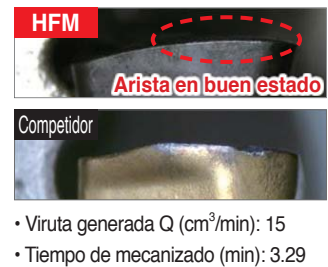
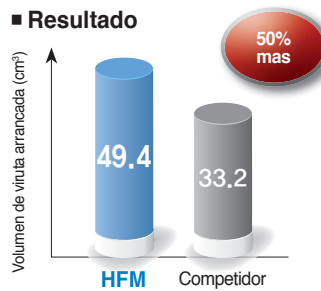
**Acero al carbono [C45 (DIN)/1045 (AISI)/SM45C (KS), HB200]**

- **Pieza** Molde
- **Condición es de corte**  $vc$  (m/min) = 150,  $fz$  (mm/diente) = 0.6  
 $ap$  (mm) = 0.4,  $ae$  (mm) = 5  
seco
- **Herramientas** **Insertos** LPMT040210R-MF (PC5300)  
**Porta** HFMS1010HR-2S10  
herramienta



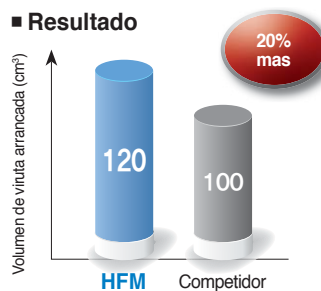
**Acero Pre-endurecido [P21 (mejorado) (AISI)/NAK80 (KS), HRC40~41]**

- **Pieza** Molde
- **Condición es de corte**  $vc$  (m/min) = 100,  $fz$  (mm/diente) = 1.26  
 $ap$  (mm) = 0.3,  $ae$  (mm) = 10  
seco
- **Herramientas** **Insertos** LPMT040210R-MF (PC5300)  
**Porta** HFMS1016HR-4S16  
herramienta



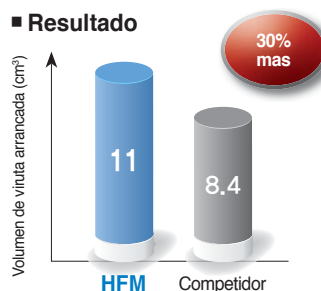
**Acero aleado [X155CrVMo12-1 (DIN)/D2 (AISI)/STD11 (KS), HRC40~45]**

- **Pieza** Molde
- **Condición es de corte**  $vc$  (m/min) = 80,  $fz$  (mm/diente) = 0.5  
 $ap$  (mm) = 0.3,  $ae$  (mm) = 10  
seco
- **Herramientas** **Insertos** LPMW040210R (PC2510)  
**Porta** HFMS1016HR-4S16  
herramienta



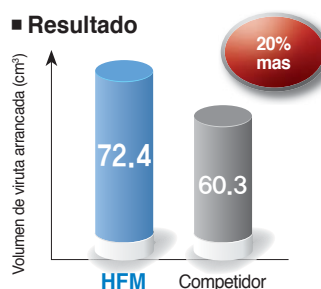
**Acero aleado templado [X155CrVMo12-1 (DIN)/D2 (AISI)/STD11 (KS), HRC60]**

- **Pieza** Molde
- **Condición es de corte**  $vc$  (m/min) = 75,  $fz$  (mm/diente) = 0.4  
 $ap$  (mm) = 0.15,  $ae$  (mm) = 5  
seco
- **Herramientas** **Insertos** LPMW040210R (PC2505)  
**Porta** HFMS1010HR-2S10  
herramienta



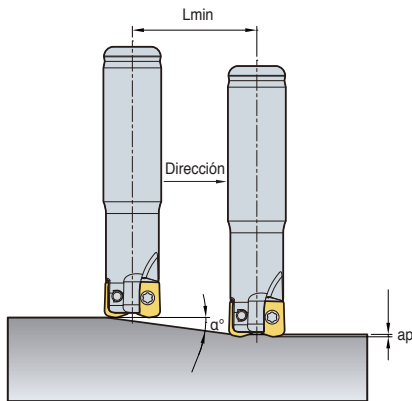
**HRSA [TiAl6V4 (DIN)/R56400 (AISI)/Ti-6Al-4V (KS), HRC48]**

- **Pieza** Partes de Aviación
- **Condición es de corte**  $vc$  (m/min) = 50,  $fz$  (mm/diente) = 1.2  
 $ap$  (mm) = 0.3,  $ae$  (mm) = 10  
Con refrigerante
- **Herramientas** **Insertos** LPMT040210R-MF (PC5300)  
**Porta** HFMS1016HR-4S16  
herramienta



## Rampeado e interpolación helicoidal

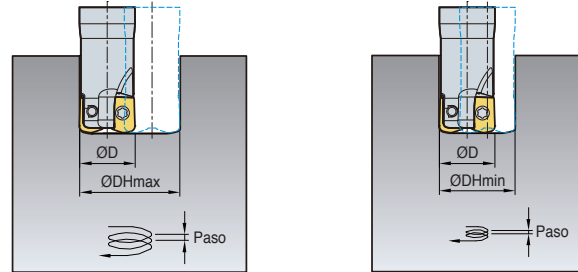
### Rampeado



$$Lmin = \frac{ap}{\tan \alpha} \text{ (mm)}$$

\* Lmin: longitud mínima de filo de corte  
 α: ángulo máximo de rampa  
 ap: Profundidad de corte

### Interpolación helicoidal



- ØD = Dia. Herramienta. (mm)
- Ød = Paso (mm) = ØDHmin, Max - ØD
- ØDHmin (Min diametro, mm) = ØD × 2 - 5.4
- ØDHmax (Max diametro, mm) = ØD × 2 - 2

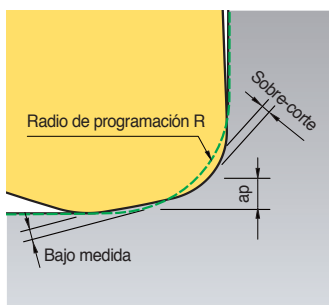
(mm)

| Referencia | Dia. Hrta. ØD | Prof. corte ap | Rampeado                   |      | Interpolación helicoidal |                     |                |
|------------|---------------|----------------|----------------------------|------|--------------------------|---------------------|----------------|
|            |               |                | Ángulo máx. de rampa α (°) | Lmin | Max diametro ØDHmax      | Min diametro ØDHmin | Paso máx. dmax |
| HFMS1010HR | 10            | 0.4~0.5        | 3.5                        | 7    | 18                       | 15                  | 0.4            |
| HFMS1011HR | 11            | 0.4~0.5        | 3.1                        | 8    | 20                       | 17                  | 0.4            |
| HFMS1012HR | 12            | 0.4~0.5        | 2.7                        | 9    | 22                       | 19                  | 0.4            |
| HFMS1013HR | 13            | 0.4~0.5        | 2.4                        | 10   | 24                       | 21                  | 0.4            |
| HFMS1014HR | 14            | 0.4~0.5        | 2.2                        | 11   | 26                       | 23                  | 0.4            |
| HFMS1015HR | 15            | 0.4~0.5        | 2.0                        | 12   | 28                       | 25                  | 0.4            |
| HFMS1016HR | 16            | 0.4~0.5        | 1.8                        | 13   | 30                       | 27                  | 0.4            |
| HFMS1017HR | 17            | 0.4~0.5        | 1.7                        | 14   | 32                       | 29                  | 0.4            |
| HFMS1018HR | 18            | 0.4~0.5        | 1.6                        | 15   | 34                       | 31                  | 0.4            |
| HFMS1019HR | 19            | 0.4~0.5        | 1.5                        | 16   | 36                       | 33                  | 0.4            |
| HFMS1020HR | 20            | 0.4~0.5        | 1.4                        | 17   | 38                       | 35                  | 0.4            |
| HFMS1021HR | 21            | 0.4~0.5        | 1.3                        | 18   | 40                       | 37                  | 0.4            |
| HFMM1025HR | 25            | 0.4~0.5        | 1.1                        | 22   | 48                       | 45                  | 0.4            |
| HFMM1026HR | 26            | 0.4~0.5        | 1.0                        | 23   | 50                       | 47                  | 0.4            |
| HFMM1030HR | 30            | 0.4~0.5        | 0.9                        | 27   | 58                       | 55                  | 0.4            |
| HFMM1032HR | 32            | 0.4~0.5        | 0.8                        | 29   | 62                       | 59                  | 0.4            |
| HFMM1033HR | 33            | 0.4~0.5        | 0.8                        | 30   | 64                       | 61                  | 0.4            |

- Ajustar avance por debajo del 70% de las condiciones de corte recomendadas para maquinados en rampa y helicoidales
- En maquinados helicoidales la profundidad máxima de cada vuelta helicoidal no puede superar la profundidad máxima para cada inserto según su tamaño
- En maquinados en rampa la profundidad máxima de cada vuelta helicoidal no puede superar la profundidad máxima para cada inserto según su tamaño

## Radio de programación R

(mm)

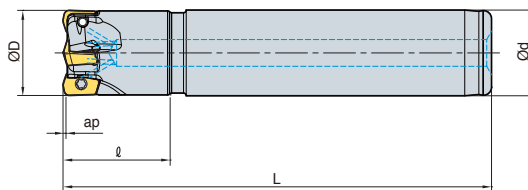


| Placa          | Radio de programación | Condiciones corte |         | Sobre medida | Bajo medida |
|----------------|-----------------------|-------------------|---------|--------------|-------------|
|                |                       | Radio R           | Max. ap |              |             |
| LPMT040210R-MF | R1.0 (estándar)       | 1.0               | 0.4     | 0            | 0.17        |
| LPMW040210R    |                       |                   |         |              |             |
| LPEW040210R    |                       |                   |         |              |             |
| LPMT040220R-MF | R1.0                  | 2.0               | 0.5     | 0            | 0.41        |
| LPMW040220R    |                       |                   |         |              |             |
| LPEW040220R    |                       |                   |         |              |             |
|                | R2.0 (estándar)       |                   |         | 0            | 0           |

- Al programar, en el radio se produce un efecto de sobre y bajo medida al informar el radio correcto de la placa
- Para prevenir la sobre medida, es necesario corregir el programa teniendo en cuenta los valores de sobre medida facilitados.



# HFMS1000 new



AA  
**13°**  
• AR: -4°  
• RR: -14°~ -7°

(mm)

| Codigo           | 1 | 2 | 3 | ØD | Ød | l  | L   | ap      | kg   |
|------------------|---|---|---|----|----|----|-----|---------|------|
| HFMS 1008HR-1S10 | 1 |   |   | 8  | 10 | 20 | 80  | 0.4~0.5 | 0.03 |
| 1008HR-1M10      | 1 |   |   | 8  | 10 | 25 | 100 | 0.4~0.5 | 0.03 |
| 1008HR-1L10      | 1 |   |   | 8  | 10 | 35 | 120 | 0.4~0.5 | 0.03 |
| 1010HR-2S08      | 2 |   |   | 10 | 8  | 20 | 80  | 0.4~0.5 | 0.03 |
| 1010HR-2M08      | 2 |   |   | 10 | 8  | 25 | 100 | 0.4~0.5 | 0.04 |
| 1010HR-2L08      | 2 |   |   | 10 | 8  | 35 | 120 | 0.4~0.5 | 0.04 |
| 1010HR-2S10      | 2 |   |   | 10 | 10 | 20 | 80  | 0.4~0.5 | 0.04 |
| 1010HR-2M10      | 2 |   |   | 10 | 10 | 25 | 105 | 0.4~0.5 | 0.05 |
| 1010HR-2L10      | 2 |   |   | 10 | 10 | 35 | 120 | 0.4~0.5 | 0.06 |
| 1011HR-2S10      | 2 |   |   | 11 | 10 | 20 | 80  | 0.4~0.5 | 0.04 |
| 1011HR-2M10      | 2 |   |   | 11 | 10 | 25 | 105 | 0.4~0.5 | 0.06 |
| 1011HR-2L10      | 2 |   |   | 11 | 10 | 35 | 120 | 0.4~0.5 | 0.07 |
| 1012HR-3S10      | 3 |   |   | 12 | 10 | 20 | 80  | 0.4~0.5 | 0.05 |
| 1012HR-3M10      | 3 |   |   | 12 | 10 | 25 | 105 | 0.4~0.5 | 0.06 |
| 1012HR-3L10      | 3 |   |   | 12 | 10 | 35 | 120 | 0.4~0.5 | 0.07 |
| 1012HR-3S12      | 3 |   |   | 12 | 12 | 20 | 80  | 0.4~0.5 | 0.06 |
| 1012HR-3M12      | 3 |   |   | 12 | 12 | 25 | 105 | 0.4~0.5 | 0.08 |
| 1012HR-3L12      | 3 |   |   | 12 | 12 | 35 | 120 | 0.4~0.5 | 0.09 |
| 1013HR-3S12      | 3 |   |   | 13 | 12 | 20 | 80  | 0.4~0.5 | 0.06 |
| 1013HR-3M12      | 3 |   |   | 13 | 12 | 25 | 105 | 0.4~0.5 | 0.09 |
| 1013HR-3L12      | 3 |   |   | 13 | 12 | 40 | 120 | 0.4~0.5 | 0.10 |
| 1014HR-3S12      | 3 |   |   | 14 | 12 | 20 | 80  | 0.4~0.5 | 0.07 |
| 1014HR-3M12      | 3 |   |   | 14 | 12 | 25 | 105 | 0.4~0.5 | 0.09 |
| 1014HR-3L12      | 3 |   |   | 14 | 12 | 40 | 120 | 0.4~0.5 | 0.10 |

## Insertos disponibles



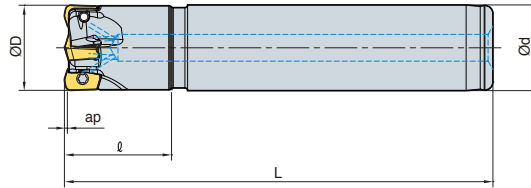
| Codigo          | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|                 | CN2000 | CN30 | NCM625     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| LPMT 040210R-MF |        |      |            |        |        |        | ●      |        | ●      |        |        |        |          | ●      | ●      |      |       |     | E11 |
| 040220R-MF      |        |      |            |        |        |        | ●      |        | ●      |        |        |        |          | ●      | ●      |      |       |     |     |
| LPMW 040210R    |        |      |            |        |        |        | ●      | ●      |        |        |        |        |          | ●      | ●      |      |       |     | E12 |
| 040220R         |        |      |            |        |        |        | ●      | ●      |        |        |        |        |          | ●      | ●      |      |       |     |     |
| LPEW 040210R    |        |      |            |        |        |        | ●      | ●      |        |        |        |        |          | ●      | ●      |      |       |     |     |
| 040220R         |        |      |            |        |        |        | ●      | ●      |        |        |        |        |          | ●      | ●      |      |       |     |     |

## Partes

| Especificaciones | Tornillo  | Llave   |
|------------------|-----------|---------|
| Ø8~Ø10           | FTKA01840 |         |
| Ø11~Ø14          | FTKA01842 | TW06S-A |

Insertos disponibles E11, E12

# HFMS1000 new



• AR: -4°  
• RR: -6° ~ -3°

(mm)

| Codigo           |   | ØD | Ød | ℓ  | L   | ap      |      |
|------------------|---|----|----|----|-----|---------|------|
| HFMS 1015HR-4S12 | 4 | 15 | 12 | 20 | 80  | 0.4~0.5 | 0.07 |
| 1015HR-4M12      | 4 | 15 | 12 | 25 | 105 | 0.4~0.5 | 0.09 |
| 1015HR-4L12      | 4 | 15 | 12 | 40 | 120 | 0.4~0.5 | 0.11 |
| 1016HR-4S16      | 4 | 16 | 16 | 20 | 80  | 0.4~0.5 | 0.11 |
| 1016HR-4M16      | 4 | 16 | 16 | 25 | 105 | 0.4~0.5 | 0.14 |
| 1016HR-4L16      | 4 | 16 | 16 | 40 | 120 | 0.4~0.5 | 0.16 |
| 1017HR-4S16      | 4 | 17 | 16 | 20 | 80  | 0.4~0.5 | 0.11 |
| 1017HR-4M16      | 4 | 17 | 16 | 25 | 105 | 0.4~0.5 | 0.15 |
| 1017HR-4L16      | 4 | 17 | 16 | 40 | 120 | 0.4~0.5 | 0.17 |
| 1018HR-4S16      | 4 | 18 | 16 | 20 | 80  | 0.4~0.5 | 0.11 |
| 1018HR-4M16      | 4 | 18 | 16 | 25 | 105 | 0.4~0.5 | 0.15 |
| 1018HR-4L16      | 4 | 18 | 16 | 40 | 120 | 0.4~0.5 | 0.17 |
| 1019HR-4S16      | 4 | 19 | 16 | 20 | 80  | 0.4~0.5 | 0.12 |
| 1019HR-4M16      | 4 | 19 | 16 | 25 | 105 | 0.4~0.5 | 0.16 |
| 1019HR-4L16      | 4 | 19 | 16 | 40 | 120 | 0.4~0.5 | 0.18 |
| 1020HR-4S20      | 4 | 20 | 20 | 20 | 80  | 0.4~0.5 | 0.17 |
| 1020HR-4M20      | 4 | 20 | 20 | 25 | 105 | 0.4~0.5 | 0.22 |
| 1020HR-4L20      | 4 | 20 | 20 | 40 | 120 | 0.4~0.5 | 0.26 |
| 1020HR-5S20      | 5 | 20 | 20 | 20 | 80  | 0.4~0.5 | 0.17 |
| 1020HR-5M20      | 5 | 20 | 20 | 25 | 105 | 0.4~0.5 | 0.23 |
| 1020HR-5L20      | 5 | 20 | 20 | 40 | 120 | 0.4~0.5 | 0.27 |
| 1021HR-5S20      | 5 | 21 | 20 | 20 | 80  | 0.4~0.5 | 0.17 |
| 1021HR-5M20      | 5 | 21 | 20 | 25 | 105 | 0.4~0.5 | 0.23 |
| 1021HR-5L20      | 5 | 21 | 20 | 40 | 120 | 0.4~0.5 | 0.27 |

## Insertos disponibles



| Codigo          | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|                 | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| LPMT 040210R-MF |        |      |            |        |        |        | ●      |        |        |        |        |        |          | ●      | ●      |      |       |     | E11 |
| 040220R-MF      |        |      |            |        |        |        | ●      |        | ●      |        |        |        |          | ●      | ●      |      |       |     |     |
| LPMW 040210R    |        |      |            |        |        |        | ●      | ●      |        |        |        |        |          | ●      |        |      |       |     | E12 |
| 040220R         |        |      |            |        |        |        | ●      | ●      |        |        |        |        |          | ●      |        |      |       |     |     |
| LPEW 040210R    |        |      |            |        |        |        | ●      | ●      |        |        |        |        |          | ●      |        |      |       |     |     |
| 040220R         |        |      |            |        |        |        | ●      | ●      |        |        |        |        |          | ●      |        |      |       |     |     |

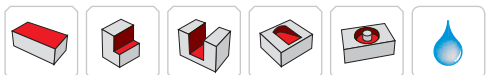
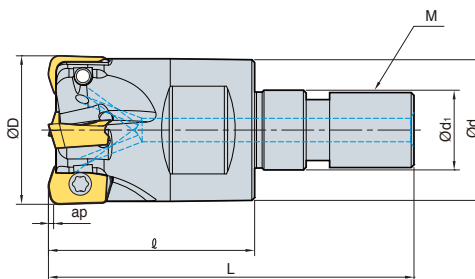
## Partes

| Especificaciones |                       |                  |
|------------------|-----------------------|------------------|
| Ø15~Ø21          | Tornillo<br>FTKA01842 | Llave<br>TW06S-A |

Insertos disponibles E11, E12



# HFMM new



AA  
13°  
• AR: -4°  
• RR: -14° ~ -3°

(mm)

| Codigo                 |   | ØD | Ød   | Ød1  | l  | L  | M   | ap      |      |
|------------------------|---|----|------|------|----|----|-----|---------|------|
| <b>HFMM</b> 1008HR-M06 | 1 | 8  | 9.5  | 6.5  | 17 | 32 | M06 | 0.4~0.5 | 0.01 |
| 1010HR-M06             | 2 | 10 | 9.5  | 6.5  | 17 | 32 | M06 | 0.4~0.5 | 0.01 |
| 1011HR-M06             | 2 | 11 | 9.5  | 6.5  | 17 | 32 | M06 | 0.4~0.5 | 0.01 |
| 1012HR-M06             | 3 | 12 | 11   | 6.5  | 19 | 34 | M6B | 0.4~0.5 | 0.01 |
| 1013HR-M06             | 3 | 13 | 11   | 6.5  | 19 | 34 | M6B | 0.4~0.5 | 0.01 |
| 1016HR-M08             | 4 | 16 | 14.5 | 8.5  | 22 | 39 | M08 | 0.4~0.5 | 0.03 |
| 1017HR-M08             | 4 | 17 | 14.5 | 8.5  | 22 | 39 | M08 | 0.4~0.5 | 0.03 |
| 1020HR-M10             | 5 | 20 | 18   | 10.5 | 25 | 46 | M10 | 0.4~0.5 | 0.06 |
| 1021HR-M10             | 5 | 21 | 18   | 10.5 | 25 | 46 | M10 | 0.4~0.5 | 0.06 |
| 1025HR-M12             | 6 | 25 | 23   | 12.5 | 27 | 51 | M12 | 0.4~0.5 | 0.11 |
| 1026HR-M12             | 6 | 26 | 23   | 12.5 | 27 | 51 | M12 | 0.4~0.5 | 0.11 |
| 1030HR-M16             | 7 | 30 | 29   | 17   | 30 | 60 | M16 | 0.4~0.5 | 0.17 |
| 1032HR-M16             | 8 | 32 | 29   | 17   | 30 | 60 | M16 | 0.4~0.5 | 0.18 |
| 1033HR-M16             | 8 | 33 | 29   | 17   | 30 | 60 | M16 | 0.4~0.5 | 0.18 |

## Insertos disponibles



| Codigo          | Cermet |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |
|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|
|                 | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 |
| LPMT 040210R-MF |        |      |            |        |        |        | ●      |        | ●      |        |        |        |          | ●      | ●      |      |       |     |
| 040220R-MF      |        |      |            |        |        |        | ●      |        | ●      |        |        |        |          | ●      | ●      |      |       |     |
| LPMW 040210R    |        |      |            |        |        |        | ●      | ●      |        |        |        |        |          | ●      |        |      |       |     |
| 040220R         |        |      |            |        |        |        | ●      | ●      |        |        |        |        |          | ●      |        |      |       |     |
| LPEW 040210R    |        |      |            |        |        |        | ●      | ●      |        |        |        |        |          | ●      |        |      |       |     |
| 040220R         |        |      |            |        |        |        | ●      | ●      |        |        |        |        |          | ●      |        |      |       |     |

## Partes

| Especificaciones |           |         |
|------------------|-----------|---------|
| Ø8~Ø10           | FTKA01840 | TW06S-A |
| Ø11~Ø33          | FTKA01842 |         |

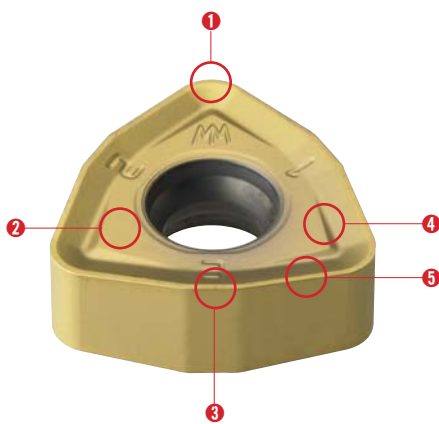
Insertos disponibles E11, E12    Adaptador modular disponible E371~E372

Alto ángulo de incidencia en el filo de corte, con alta eficiencia en maquinado multifuncional debido a la baja carga de corte

## HRMDouble

- Alto ángulo de incidencia en el filo de corte, con alta eficiencia en maquinado multifuncional debido a la baja carga de corte
- Mayor rendimiento económico debido al uso de sus 6 filos
- La geometría negativa ha sido diseñada para la rigidez en el filo de corte y funcionamiento en ambos lados
- Cuenta con un filo simétrico y es aplicable en maquinados derechos, como en maquinados izquierdos
- El sistema de sujeción de tornillo proporciona estabilidad y una excelente sujeción

### Característica del inserto



#### 1 Radio de punta

- Filo rígido especial para maquinado en espacios pequeños
- Bordes redondos adecuados para la alta alimentación
- Geometría del inserto exintrínica al maquinado derecho ó izquierdo

#### 2 Superficie de Sujeción

- Mejor diseño que da una fuerte sujeción
- Previene la fricción con las virutas

#### 3 Filo de corte Menor

- Mejoramiento en la rugosidad de la superficie
- Diseño para disminuir la fuerza de empuje
- Inserto simétrico para su uso en herramientas derechas e izquierdas

#### 4 Rompevirutas

- Reduce la carga de corte debido al alto ángulo de incidencia
- Mejorado flujo de las rompevirutas
- Prevención del Daño en la cara superior del inserto

#### 5 Filo de corte Mayor

- Alta alimentación por la aplicación del filo de corte con ángulo de alta incidencia
- Realización de baja resistencia de corte en alta alimentación

### Características de cortador



#### Sistema de enfriamiento

- Enfriamiento directo para el mejoramiento del control de virutas
- Mayor rendimiento de vida, debido a la reducción de la temperatura

#### Sistema de 3 superficie limitada

- Poderoso sistema de sujeción
- Estable sistema de sujeción en diferentes resistencias y diversas aplicaciones de maquinado

#### Sistema de sujeción de Tornillo

- Poderosa sujeción brindada por el tornillo
- Amplia superficie de contacto, para una estable sujeción
- Amplia cavidad de alojamiento para una mejor evacuación de viruta

➤ Sistema de codificación

• Tipo Cortador

|                             |                              |                                   |  |   |                             |   |  |                                       |
|-----------------------------|------------------------------|-----------------------------------|--|---|-----------------------------|---|--|---------------------------------------|
| HRM                         | D                            | C                                 | (M)  | 13  | 063                         | H   | R-5  |                                       |
| <b>High Removal Milling</b> | <b>Inserto de Doble Lado</b> | <b>Tipo Hetta.</b><br>C: Cortador | <b>Unidad de diámetro interior</b><br>None: Pulgadas<br>M: Metrico | <b>Tam. Filo Corte</b><br>09: 09 Inserto tipo<br>13: 13 Inserto tipo<br>16: 16 Inserto tipo | <b>Diametro</b><br>063: Ø63 | <b>Tipo Refrigeración</b><br>None: No<br>H: Orificio Ref.Int. | <b>Mano Hetta.</b><br>R: Derecho<br>L: Izquierdo | <b>Numero Dientes</b><br>5: 5 dientes |

• Tipo Mango

|                             |                              |                                |   |                            |  |                                       |  |   |                                  |
|-----------------------------|------------------------------|--------------------------------|---|----------------------------|--|---------------------------------------|--|---|----------------------------------|
| HRM                         | D                            | S                              | 09  | 32                         | H  | R-2                                   | S  | 32  |                                  |
| <b>High Removal Milling</b> | <b>Inserto de Doble Lado</b> | <b>Tipo Hetta.</b><br>S: Zanco | <b>Tam. Filo Corte</b><br>06: 06 Inserto tipo<br>09: 09 Inserto tipo<br>13: 13 Inserto tipo | <b>Diametro</b><br>32: Ø32 | <b>Tipo Refrigeración</b><br>No marca: Ninguno<br>H: Orificios | <b>Numero Dientes</b><br>2: 2 dientes | <b>Mano Hetta.</b><br>R: Derecha<br>L: Izquierda | <b>Longitud Hetta.</b><br>S: estándar<br>M: medio<br>L: largo | <b>Diametro Mango</b><br>32: Ø32 |

• Cabeza Modular

|                             |                              |                                  |   |                            |   |   |                    |
|-----------------------------|------------------------------|----------------------------------|---|----------------------------|---|---|--------------------|
| HRM                         | D                            | M                                | 13  | 35                         | H   | R-M16   |                    |
| <b>High Removal Milling</b> | <b>Inserto de Doble Lado</b> | <b>Tipo Hetta.</b><br>M: Modular | <b>Tam. Filo Corte</b><br>06: 06 Inserto tipo<br>09: 09 Inserto tipo<br>13: 13 Inserto tipo | <b>Diametro</b><br>35: Ø35 | <b>Tipo Refrigeración</b><br>No marca: None<br>H: Orificio Ref.Int. | <b>Mano Hetta</b><br>R: Derecho<br>L: Izquierdo | <b>Dimensiones</b> |

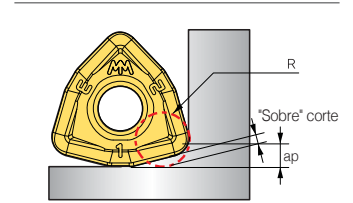
• Adaptador Modular

|                          |                    |                               |                                    |   |  |
|--------------------------|--------------------|-------------------------------|------------------------------------|---|--|
| MAT                      | M16 - 120 - S32    | S                             | -                                  | C   |  |
| <b>Adaptador Modular</b> | <b>Dimensiones</b> | <b>Longitud Cuello</b><br>120 | <b>Diametro Mango</b><br>S32 : Ø32 | <b>Tipo Cuello</b><br>T : Conico<br>S : Recto | <b>Material</b><br>None : Acero<br>C : Carburo |

## Programado Radio R

| Codigo           | Condicion de Corte |                    | Approx. R (mm) |             |
|------------------|--------------------|--------------------|----------------|-------------|
|                  | Max.ap (mm)        | Max.fz (mm/diente) | Input. R       | Bajo medida |
| WNMX060312ZNN-□□ | 1.0                | 1.2                | 1.8            | 0.4         |
| WNMX09T316ZNN-□□ | 1.5                | 2.0                | 2.5            | 0.6         |
| WNMX130520ZNN-□□ | 2.0                | 3.0                | 3.0            | 0.8         |
| WNMX160720ZNN-□□ | 2.5                | 3.5                | 3.5            | 1.2         |

· Información para parte de no corte por uso "input. R" para programa CAM

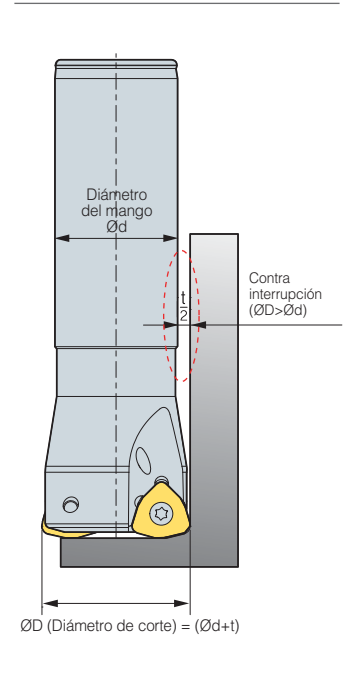


· Parte de no corte se puede ser cambiado por condicion peor de la maquina, o fuerza de montaje de material de trabajo, etc.

## Sistema de prevención de Interferencias

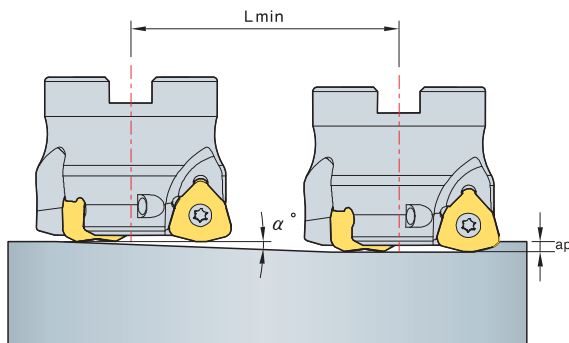
| Codigo           | ØD (mm) | Ød (mm) | t (mm) |
|------------------|---------|---------|--------|
| HRMDS0617HR-2□16 | 17      | 16      | 1      |
| HRMDS0618HR-2□16 | 18      | 16      | 2      |
| HRMDS0621HR-2□20 | 21      | 20      | 1      |
| HRMDS0626HR-3□25 | 26      | 25      | 1      |
| HRMDS0633HR-4□32 | 33      | 32      | 1      |
| HRMDS0926HR-2□25 | 26      | 25      | 1      |
| HRMDS0933HR-3□32 | 33      | 32      | 1      |
| HRMDS0935HR-4□32 | 35      | 32      | 3      |
| HRMDS0940HR-4□32 | 40      | 32      | 8      |
| HRMDS0950HR-5□32 | 50      | 32      | 18     |
| HRMDS0950HR-5□40 | 50      | 40      | 10     |
| HRMDS0950HR-5□42 | 50      | 42      | 8      |
| HRMDS1333HR-3□32 | 33      | 32      | 1      |
| HRMDS1335HR-4□32 | 35      | 32      | 3      |
| HRMDS1340HR-4□30 | 40      | 30      | 8      |
| HRMDS1350HR-4□32 | 50      | 32      | 18     |
| HRMDS1350HR-4□40 | 50      | 40      | 10     |
| HRMDS1350HR-4□42 | 50      | 42      | 8      |
| HRMDS1363HR-5□32 | 63      | 32      | 31     |
| HRMDS1363HR-5□40 | 63      | 40      | 23     |
| HRMDS1363HR-5□42 | 63      | 42      | 21     |

· La holgura lateral impide a la interferencia entre la herramienta y la pieza trabajada, incluso en el maquinado de agujero profundo

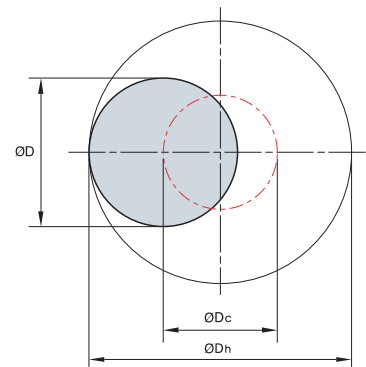


## Datos de corte en rampa y helicoidal

Plano Inclinado



Corte Helicoidal





$$L_{min} = \frac{ap}{\tan \alpha^\circ} \text{ (mm)}$$

$$\varnothing D_c = \varnothing D_h - \varnothing D$$

$\varnothing D_c$  = Trayectoria de la herramienta

$\varnothing D_h$  = Diámetro del agujero deseado

$\varnothing D$  = Diámetro de la Herramienta.

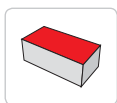
- Ajuste la alineación al 70% inferior de lo recomendado en contra de la condición del palano y del corte helicoidal
- En el plano helicoidal, la profundidad de corte máxima por 1 revolución helicoidal del cortador no debe exceder profundidades de corte máximas según el diseño del inserto.

| Codigo          | Diámetro Herramienta $\varnothing D$ (mm) | Diámetro valido decorte $\varnothing D_e$ (mm) | Plano Inclinado |                              |                       | Plano inclinado helicoidal        |                                   |
|-----------------|---|--|-----------------|------------------------------|-----------------------|-----------------------------------|-----------------------------------|
|                 |   |  | Max. ap (mm)    | Angulo Maximo $\alpha^\circ$ | Longitudde Corte (mm) | Diámetro de Maquinado mínimo (mm) | Diámetro Maximo de maquinado (mm) |
| HRMDS0616HR     | 16  | 9.5  | 1               | 4.8                          | 11                    | 23.8                              | 29.6                              |
| HRMDS0617HR     | 17  | 10.5   | 1               | 4.1                          | 13                    | 25.8                              | 31.6                              |
| HRMDS0618HR     | 18  | 11.5   | 1               | 3.5                          | 16                    | 27.8                              | 33.6                              |
| HRMDS0620HR     | 20  | 13.5   | 1               | 2.5                          | 22                    | 31.8                              | 37.6                              |
| HRMDS0621HR     | 21  | 14.5   | 1               | 2.2                          | 26                    | 33.8                              | 39.6                              |
| HRMDS0625HR     | 25  | 18.5   | 1               | 1.3                          | 44                    | 41.8                              | 47.6                              |
| HRMDS0626HR     | 26  | 19.5   | 1               | 1.2                          | 47                    | 43.8                              | 49.6                              |
| HRMDS0632HR     | 32  | 25.5   | 1               | 0.6                          | 95                    | 55.8                              | 61.6                              |
| HRMDS0633HR     | 33  | 26.5   | 1               | 0.5                          | 114                   | 57.8                              | 63.6                              |
| HRMDS0925HR     | 25  | 15.4   | 1.5             | 5.4                          | 15.8                  | 37.6                              | 46.8                              |
| HRMDS0926HR     | 26  | 16.4   | 1.5             | 5.0                          | 17.0                  | 39.6                              | 48.8                              |
| HRMDS0930HR     | 30  | 20.4   | 1.5             | 3.9                          | 22.0                  | 47.6                              | 56.8                              |
| HRMDS0932HR     | 32  | 22.3   | 1.5             | 3.5                          | 24.5                  | 51.6                              | 60.8                              |
| HRMDS0933HR     | 33  | 23.3   | 1.5             | 3.3                          | 25.8                  | 53.6                              | 62.8                              |
| HRMDS0935HR     | 35  | 25.4   | 1.5             | 3.0                          | 28.3                  | 57.6                              | 66.8                              |
| HRMDS0940HR     | 40  | 30.2   | 1.5             | 2.5                          | 34.5                  | 67.6                              | 76.8                              |
| HRMDS0950HR     | 50  | 40.2   | 1.5             | 1.8                          | 47.0                  | 87.6                              | 96.8                              |
| HRMDS1332HR     | 32  | 19.3   | 2               | 5.7                          | 20.0                  | 47                                | 60                                |
| HRMDS1333HR     | 33  | 20.3   | 2               | 5.4                          | 21.3                  | 49                                | 62                                |
| HRMDS1335HR     | 35  | 22.3   | 2               | 4.8                          | 24.0                  | 53                                | 66                                |
| HRMDS1340HR     | 40  | 27.2   | 2               | 3.7                          | 30.7                  | 63                                | 76                                |
| HRMDS1350HR     | 50  | 37   | 2               | 2.6                          | 44.0                  | 83                                | 96                                |
| HRMDS1363HR     | 63  | 50   | 2               | 1.9                          | 61.3                  | 109                               | 122                               |
| HRMDCM09040HR   | 40  | 30.2   | 1.5             | 2.5                          | 34.5                  | 67.6                              | 76.8                              |
| HRMDCM09050HR   | 50  | 40.2   | 1.5             | 1.8                          | 47.0                  | 87.6                              | 96.8                              |
| HRMDCM09063HR   | 63  | 53.1   | 1.5             | 1.4                          | 63.3                  | 113.6                             | 122.8                             |
| HRMDC(M)09080HR | 80  | 70.1   | 1.5             | 1.0                          | 84.5                  | 147.6                             | 156.8                             |
| HRMDC(M)09100HR | 100                                       | 90   | 1.5             | 0.8                          | 109.5                 | 187.6                             | 196.8                             |
| HRMDCM13050HR   | 50  | 37   | 2               | 2.6                          | 44.0                  | 83                                | 96                                |
| HRMDCM13063HR   | 63  | 50   | 2               | 1.9                          | 61.3                  | 109                               | 122                               |
| HRMDC(M)13080HR | 80  | 66.9   | 2               | 1.4                          | 84.0                  | 143                               | 156                               |
| HRMDC(M)13100HR | 100                                       | 86.9   | 2               | 1.0                          | 110.7                 | 183                               | 196                               |
| HRMDC(M)13125HR | 125                                       | 111.9  | 2               | 0.8                          | 144.0                 | 233                               | 246                               |
| HRMDC(M)16080HR | 80  | 63.3   | 2.5             | 1.4                          | 102                   | 138                               | 156                               |
| HRMDC(M)16100HR | 100                                       | 83.3   | 2.5             | 1                            | 143                   | 178                               | 196                               |
| HRMDC(M)16125HR | 125                                       | 108.3  | 2.5             | 0.7                          | 204                   | 228                               | 246                               |
| HRMDC(M)16160R  | 160                                       | 143.3  | 2.5             | 0.5                          | 286                   | 298                               | 316                               |
| HRMDC(M)16200R  | 200                                       | 183.3  | 2.5             | 0.3                          | 477                   | 378                               | 396                               |
| HRMDC(M)16250R  | 250                                       | 233.3  | 2.5             | 0.2                          | 716                   | 478                               | 496                               |
| HRMDC(M)16315R  | 315                                       | 298.3  | 2.5             | 0.1                          | 1432                  | 608                               | 626                               |

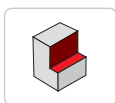
## Usos



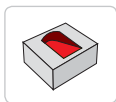
Copiado



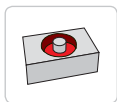
Careado



Mortajado



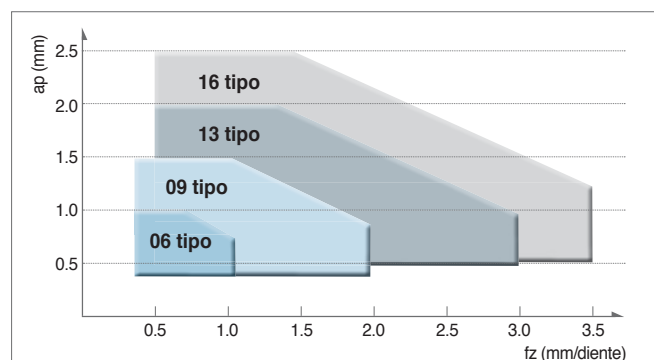
Plano Inclinado



Corte Helicoidal



Sistema de refrigeración interna



## Condiciones de corte recomendadas

| ISO   | Materiales pieza de trabajo                                   |                                     | Material                    | Calidades | Velocidad de Corte, vc (m/min) |     |
|---|---|-------------------------------------|-----------------------------|-----------|--------------------------------|-----|
| P   | Acero al carbono  | Acero con bajo contenido de carbono | SUM22, C = 0.1~25           | PC5300    | 280                            |     |
|   |   |                                     |                             | PC5400    | 245                            |     |
|   |   | Acero al carbono general            | C = 0.30~55                 | PC5300    | 255                            |     |
|   |   |                                     |                             | PC5400    | 220                            |     |
|   | Acero aleado baja aleación (composición material aleado < 5%) | Acero con alto contenido de carbono | C = 0.55~80                 | PC5300    | 240                            |     |
|   |   |                                     |                             | PC5400    | 205                            |     |
|   |   | -                                   | SCM415(H), SCM420, SCM440   | PC5300    | 195                            |     |
|   |   | Endurecido                          |                             | PC5400    | 170                            |     |
|   |   |                                     |                             | PC5300    | 115                            |     |
|   |   |                                     |                             | PC5400    | 100                            |     |
| Acero aleado alta aleación (composición material aleado > 5%) | Recocido  | SKD61                               | PC5300                      | 150       |                                |     |
|   |   |                                     | PC5400                      | 130       |                                |     |
|   | Endurecido  | SKH51, SKH55                        | PC5300                      | 120       |                                |     |
|   |   |                                     | PC5400                      | 105       |                                |     |
| M   | Aleación de aluminio  | Ferrítico, martensítico             | SUS410, SUS420, SUS430      | PC5300    | 160                            |     |
|   |   |                                     |                             | PC5400    | 135                            |     |
|   |   | Austenítico                         | SUS303, SUS304, SUS316      | PC5300    | 130                            |     |
|   |   |                                     |                             | PC5400    | 110                            |     |
|   |   | Duplex (austenítico y ferrítico)    | F51                         | PC5300    | 100                            |     |
|   |   |                                     |                             | PC5400    | 85                             |     |
| K   | Fundición gris  | Baja maleabilidad                   | GC200, GC250                | PC5300    | 170                            |     |
|   |   |                                     |                             | PC5400    | 150                            |     |
|   |   | Alta maleabilidad                   | GC300, GC350                | PC5300    | 150                            |     |
|   |   |                                     |                             | PC5400    | 130                            |     |
|   | Fundición dúctil  | Ferrítico                           | GCD400, GCD500              | PC5300    | 170                            |     |
|   |   |                                     |                             | PC5400    | 150                            |     |
|   | Perlítico   | GCD600, GCD700                      | PC5300                      | 150       |                                |     |
|   |   |                                     | PC5400                      | 130       |                                |     |
| S   | Base Fe   | -                                   | Incoloy                     | PC5300    | 60                             |     |
|   |   |                                     |                             | PC5400    | 50                             |     |
|   | Base Ni   | -                                   | Inconel, Nimonic, Hastelloy | PC5300    | 55                             |     |
|   |   |                                     |                             | PC5400    | 45                             |     |
|   | Base Co   | -                                   | stellite                    | PC5300    | 25                             |     |
|   |   |                                     |                             | PC5400    | 20                             |     |
|   | Aleaciones titanio  |                                     |                             | pure Ti   | PC5300                         | 130 |
|   |   |                                     |                             |           | PC5400                         | 105 |
|   |   |                                     | Aleación (TiAl6V4)          | PC5300    | 65                             |     |
|   |   |                                     |                             | PC5400    | 55                             |     |

## Ejemplo de maquinado



### Condición de Trabajo

|                             |  |                            |                                    |
|-----------------------------|--|----------------------------|------------------------------------|
| ■ <b>Pieza Trabajo</b>      | SM45C (HrC22)  | ■ <b>Herramienta</b>       | Insertos WNMX130520ZNN-MM (PC3500) |
| ■ <b>Velocidad de Corte</b> | vc = 283 m/min (1,803 <sup>+</sup> )<br>fz = 1.4 mm/diente<br>vf = 10,097 mm/min<br>ap = 0.8 mm<br>ae = 35 mm<br>Refrigerante: Seco, Modaniuqa: Copiado<br>Maquina: Horizontal MCT<br>Proyección hetta: 250 mm | ■ <b>Porta herramienta</b> | HRMDCM13050HR-4                    |

Productividad: 40%  
Costo de la herramienta:  
80% menor

### Resultados de la Prueba

En la comparación del HRMD con nuestro competidor, utilizando las mismas condiciones de corte : la velocidad de corte del HRMD fue mayor con la misma profundidad de corte (ap x ae), el tiempo del ciclo se redujo en un 40% y la vida de la herramienta fue aumentada a más del 60%. HRMD es económicamente más eficiente debido a la utilización de sus 6 fillos de corte en comparación con el tipo EDNW de inserción positiva.



### Condición de Trabajo

|                             |   |                            |                                    |
|-----------------------------|---|----------------------------|------------------------------------|
| ■ <b>Pieza Trabajo</b>      | STS304  | ■ <b>Herramienta</b>       | Insertos WNMX130520ZNN-MM (PC3545) |
| ■ <b>Velocidad de Corte</b> | vc = 130 m/min (414-1)<br>fz = 1.2 mm/diente<br>vf = 2,981 mm/min<br>ap = 1.0 mm<br>ae = 80 mm<br>Refrigerante: Sodaniuqa,<br>Maquinado: Careado & Mortajado<br>Maquina: Vertical MCT<br>Proyección hetta: 250 mm | ■ <b>Porta herramienta</b> | HRMDCM13100HR-6                    |

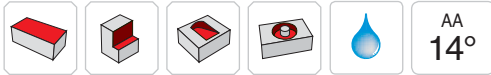
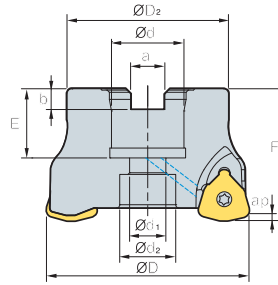
Productividad: 80%  
Costo de la herramienta:  
25% menor

### Resultados de la Prueba

En la comparación del HRMD con nuestros competidor, utilizando las mismas condiciones de corte : la velocidad de corte dl HRMD fue mayor con la misma profundidad de corte (ap x ae), el tiempo del ciclo se redujo en un 80% y la vida de la herramienta fue el misma, pero HRMD es económicamente más eficiente debido a la utilización de sus 6 fillos de corte en comparación con el tipo SDKN de inserción positiva.



# HRMDC(M)09



AA  
14°  
• AR: -7°  
• RR: -12° ~ -18°

(mm)

| Codigo    | ØD              | ØD2 | Ød | Ød1   | Ød2 | a    | b    | E   | F  | ap  | kg  | Perno |        |
|-----------|-----------------|-----|----|-------|-----|------|------|-----|----|-----|-----|-------|--------|
| HRMDCM    | 09040HR-3       | 40  | 34 | 16    | 9   | 14   | 8.4  | 5.6 | 19 | 40  | 1.5 | 0.2   | SB0825 |
|           | 09040HR-4       | 40  | 34 | 16    | 9   | 14   | 8.4  | 5.6 | 19 | 40  | 1.5 | 0.2   |        |
|           | 09050HR-4       | 50  | 42 | 22    | 11  | 18   | 10.4 | 6.3 | 21 | 40  | 1.5 | 0.3   | SB1025 |
|           | 09050HR-5       | 50  | 42 | 22    | 11  | 18   | 10.4 | 6.3 | 21 | 40  | 1.5 | 0.3   |        |
|           | 09063HR-5       | 63  | 49 | 22    | 11  | 18   | 10.4 | 6.3 | 21 | 40  | 1.5 | 0.5   | SB1025 |
|           | 09063HR-6       | 63  | 49 | 22    | 11  | 18   | 10.4 | 6.3 | 21 | 40  | 1.5 | 0.5   |        |
|           | 09080HR-6       | 80  | 57 | 27    | 14  | 20   | 12.4 | 7   | 23 | 50  | 1.5 | 1.1   | SB1230 |
|           | 09080HR-7       | 80  | 57 | 27    | 14  | 20   | 12.4 | 7   | 23 | 50  | 1.5 | 1.1   |        |
|           | 09100HR-7       | 100 | 67 | 32    | 18  | 26   | 14.4 | 8   | 25 | 50  | 1.5 | 1.7   | SB1630 |
| 09100HR-8 | 100             | 67  | 32 | 18    | 26  | 14.4 | 8    | 25  | 50 | 1.5 | 1.7 |       |        |
| HRMDC     | 09080HR-6       | 80  | 57 | 25.4  | 14  | 20   | 9.5  | 6   | 24 | 50  | 1.5 | 1.1   | SB1230 |
|           | 09080HR-7       | 80  | 57 | 25.4  | 14  | 20   | 9.5  | 6   | 24 | 50  | 1.5 | 1.1   |        |
|           | 09080HR-31.75-6 | 80  | 67 | 31.75 | 18  | 26   | 12.7 | 8   | 32 | 63  | 1.5 | 1.5   | SB1630 |
|           | 09080HR-31.75-7 | 80  | 67 | 31.75 | 18  | 26   | 12.7 | 8   | 32 | 63  | 1.5 | 1.5   |        |
|           | 09100HR-7       | 100 | 67 | 31.75 | 18  | 26   | 12.7 | 8   | 32 | 63  | 1.5 | 2.1   | SB1630 |
|           | 09100HR-8       | 100 | 67 | 31.75 | 18  | 26   | 12.7 | 8   | 32 | 63  | 1.5 | 2.1   |        |

## Insertos disponibles

WNMX-MF      WNMX-ML      WNMX-MM

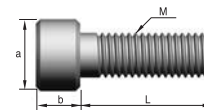


| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |        |        |       |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|--------|--------|-------|-----|-----|
|        | CN2000       | CN80 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC8510   | PC9530 | PC9540 |      | PC5300 | PC5400 | ST30A | G10 | H01 |
| WNMX   | 09T316ZNN-MF |      |            |        |        |        |        |        | ●      | ●      |          |        |        | ●    | ●      |        |       |     | E28 |
|        | 09T316ZNN-ML |      |            |        |        |        |        |        |        |        |          |        |        | ●    | ●      |        |       |     |     |
|        | 09T316ZNN-MM |      |            |        |        |        |        | ●      | ●      | ●      |          |        |        | ●    | ●      |        |       |     |     |

## Adaptadores disponibles

| Codigo          | Adaptadores NC |                                |
|-----------------|----------------|--------------------------------|
| HRMDCM          | 09040HR-□      | BT□□-FMC16-□□<br>SK□□-FMC16-□□ |
|                 | 09050HR-□      | BT□□-FMC22-□□                  |
|                 | 09063HR-□      | SK□□-FMC22-□□                  |
|                 | 09080HR-□      | BT□□-FMC27-□□<br>SK□□-FMC27-□□ |
|                 | 09100HR-□      | BT□□-FMC32-□□<br>SK□□-FMC32-□□ |
|                 | HRMDC          | 09080HR-□                      |
| 09080HR-31.75-□ |                | BT□□-FMA31.75-□□               |
| 09100HR-□       |                | SK□□-FMA31.75-□□               |

## Perno



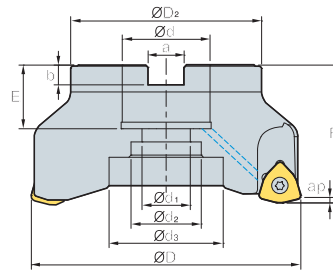
| Codigo | Dimensiones (mm) |    |    |    |      |
|--------|------------------|----|----|----|------|
|        | M                | a  | b  | L  | Paso |
| SB0825 | M08              | 13 | 8  | 25 | 1.25 |
| SB1025 | M10              | 16 | 10 | 25 | 1.5  |
| SB1230 | M12              | 18 | 12 | 30 | 1.75 |
| SB1630 | M16              | 24 | 16 | 30 | 2.0  |

## Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø40-Ø100         | FTKA0307 | TW09S |

Insertos disponibles E28      Detalles del cortador E400~E402

# HRMDC(M)13



AA  
14°  
• AR: -7°  
• RR: -12°~ -4°

(mm)

| Codigo    | ØD              | ØD2 | Ød  | Ød1  | Ød2   | Ød3 | a  | b    | E    | F   | ap | kg | Perno |                   |                   |
|-----------|-----------------|-----|-----|------|-------|-----|----|------|------|-----|----|----|-------|-------------------|-------------------|
| HRMDCM    | 13050HR-3       | 3   | 50  | 42   | 22    | 11  | 17 | -    | 10.4 | 6.3 | 21 | 40 | 2     | 0.3               | SB1025            |
|           | 13050HR-4       | 4   | 50  | 42   | 22    | 11  | 17 | -    | 10.4 | 6.3 | 21 | 40 | 2     | 0.3               |                   |
|           | 13063HR-4       | 4   | 63  | 49   | 22    | 11  | 18 | -    | 10.4 | 6.3 | 21 | 40 | 2     | 0.5               | SB1025            |
|           | 13063HR-5       | 5   | 63  | 49   | 22    | 11  | 18 | -    | 10.4 | 6.3 | 21 | 40 | 2     | 0.5               |                   |
|           | 13080HR-5       | 5   | 80  | 57   | 27    | 14  | 20 | -    | 12.4 | 7   | 23 | 50 | 2     | 1                 | SB1230            |
|           | 13080HR-6       | 6   | 80  | 57   | 27    | 14  | 20 | -    | 12.4 | 7   | 23 | 50 | 2     | 1                 |                   |
|           | 13100HR-6       | 6   | 100 | 67   | 32    | 18  | 26 | -    | 14.4 | 8   | 25 | 50 | 2     | 1.6               | SB1630            |
|           | 13100HR-7       | 7   | 100 | 67   | 32    | 18  | 26 | -    | 14.4 | 8   | 25 | 50 | 2     | 1.6               |                   |
| HRMDC     | 13125HR-7       | 7   | 125 | 87   | 40    | 22  | 32 | 52   | 16.4 | 9   | 29 | 63 | 2     | 3.2               | SB2040<br>MBA-M20 |
|           | 13125HR-8       | 8   | 125 | 87   | 40    | 22  | 32 | 52   | 16.4 | 9   | 29 | 63 | 2     | 3.2               |                   |
|           | 13080HR-5       | 5   | 80  | 57   | 25.4  | 14  | 20 | -    | 9.5  | 6   | 24 | 50 | 2     | 1                 | SB1230            |
|           | 13080HR-6       | 6   | 80  | 57   | 25.4  | 14  | 20 | -    | 9.5  | 6   | 24 | 50 | 2     | 1                 |                   |
|           | 13080HR-31.75-5 | 5   | 80  | 67   | 31.75 | 18  | 26 | -    | 12.7 | 8   | 32 | 63 | 2     | 1.4               | SB1630            |
|           | 13080HR-31.75-6 | 6   | 80  | 67   | 31.75 | 18  | 26 | -    | 12.7 | 8   | 32 | 63 | 2     | 1.4               |                   |
|           | 13100HR-6       | 6   | 100 | 67   | 31.75 | 18  | 26 | -    | 12.7 | 8   | 32 | 63 | 2     | 2.1               | SB1630            |
|           | 13100HR-7       | 7   | 100 | 67   | 31.75 | 18  | 26 | -    | 12.7 | 8   | 32 | 63 | 2     | 2.1               |                   |
| 13125HR-7 | 7               | 125 | 87  | 38.1 | 22    | 32  | 52 | 15.9 | 10   | 35  | 63 | 2  | 3.3   | SB2040<br>MBA-M20 |                   |
| 13125HR-8 | 8               | 125 | 87  | 38.1 | 22    | 32  | 52 | 15.9 | 10   | 35  | 63 | 2  | 3.3   |                   |                   |

## Insertos disponibles



| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| WNMX   | 130520ZNN-MF |      |            |        |        |        |        |        | ●      |        |        |        |          | ●      | ●      |      |       |     | E28 |
|        | 130520ZNN-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |     |
|        | 130520ZNN-MM |      |            |        |        |        |        | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●      |      |       |     |     |

## Adaptadores disponibles

| Codigo    | Adaptadores NC  |                  |
|-----------|-----------------|------------------|
| HRMDCM    | 13050HR-□       | BT□□-FMC22-□□    |
|           |                 | SK□□-FMC22-□□    |
|           | 13063HR-□       | BT□□-FMC22-□□    |
|           | 13080HR-□       | SK□□-FMC27-□□    |
|           | 13100HR-□       | BT□□-FMC32-□□    |
|           | SK□□-FMC32-□□   |                  |
| 13125HR-□ | BT□□-FMC40-□□   |                  |
|           | SK□□-FMC40-□□   |                  |
| HRMDC     | 13080HR-□       | BT□□-FMA25.4-□□  |
|           | 13080HR-31.75-□ | SK□□-FMA25.4-□□  |
|           |                 | BT□□-FMA31.75-□□ |
|           | 13100HR-□       | SK□□-FMA31.75-□□ |
|           | 13125HR-□       | BT□□-FMA38.1-□□  |
|           | SK□□-FMA38.1-□□ |                  |

## Perno

Fig. 1

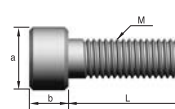
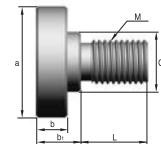


Fig. 2



| Codigo  | Dimensiones (mm) |    |    |    |    |    | Fig. |   |
|---------|------------------|----|----|----|----|----|------|---|
|         | M                | a  | b  | b1 | C  | L  |      |   |
| SB1025  | M10              | 16 | 10 | -  | -  | 25 | 1.5  | 1 |
| SB1230  | M12              | 18 | 12 | -  | -  | 30 | 1.75 | 1 |
| SB1630  | M16              | 24 | 16 | -  | -  | 30 | 2.0  | 1 |
| SB2040  | M20              | 30 | 20 | -  | -  | 40 | 2.5  | 1 |
| MBA-M20 | M20              | 50 | 14 | 20 | 27 | 30 | 2.5  | 2 |

## Partes

| Especificaciones | Tornillo  | Llave |
|------------------|-----------|-------|
| Ø50~Ø125         | FTKA0412B | TW15S |

Insertos disponibles E28 Detalles del cortador E400~E402



# HRMDC(M)16 new

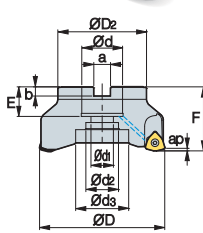


Fig. 1

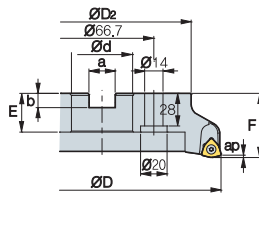


Fig. 2

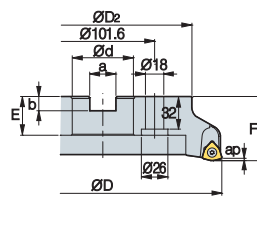


Fig. 3

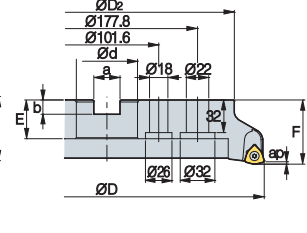
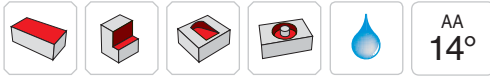


Fig. 4



• AR: -7°  
• RR: -12°~ -4°

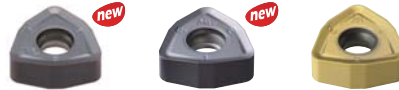
(mm)

| Codigo         | ØD        | ØD2 | Ød  | Ød1 | Ød2         | Ød3 | a   | b  | E           | F      | ap      | kg      | Perno | Fig.  |         |   |
|----------------|-----------|-----|-----|-----|-------------|-----|-----|----|-------------|--------|---------|---------|-------|-------|---------|---|
| HRMDC (HRMDCM) | 16080HR-4 | 4   | 80  | 65  | 25.4 (27)   | 14  | 20  | -  | 9.5 (12.4)  | 6 (7)  | 25 (23) | 50      | 2.5   | 0.99  | SB1230  | 1 |
|                | 16080HR-5 | 5   | 80  | 65  | 25.4 (27)   | 14  | 20  | -  | 9.5 (12.4)  | 6 (7)  | 25 (23) | 50      | 2.5   | 0.91  |         |   |
|                | 16100HR-5 | 5   | 100 | 85  | 31.75 (32)  | 18  | 26  | -  | 12.7 (14.4) | 8      | 33 (25) | 63 (50) | 2.5   | 1.68  | SB1630  | 1 |
|                | 16100HR-6 | 6   | 100 | 85  | 31.75 (32)  | 18  | 26  | -  | 12.7 (14.4) | 8      | 33 (25) | 63 (50) | 2.5   | 1.64  |         |   |
|                | 16125HR-6 | 6   | 125 | 100 | 38.1 (40)   | 22  | 32  | 52 | 15.9 (16.4) | 10 (9) | 36 (29) | 63      | 2.5   | 3.23  | SB2040  | 1 |
|                | 16125HR-7 | 7   | 125 | 100 | 38.1 (40)   | 22  | 32  | 52 | 15.9 (16.4) | 10 (9) | 36 (29) | 63      | 2.5   | 3.24  |         |   |
|                | 16160R-7  | 7   | 160 | 107 | 50.8 (40)   | -   | 90  | -  | 19 (16.4)   | 11 (9) | 38 (32) | 63      | 2.5   | 3.73  | MBA-M24 | 2 |
|                | 16160R-8  | 8   | 160 | 107 | 50.8 (40)   | -   | 90  | -  | 19 (16.4)   | 11 (9) | 38 (32) | 63      | 2.5   | 3.77  |         |   |
|                | 16200R-8  | 8   | 200 | 145 | 47.625 (60) | -   | 132 | -  | 25.4 (25.7) | 14     | 38      | 63      | 2.5   | 6.48  | -       | 3 |
|                | 16200R-10 | 10  | 200 | 145 | 47.625 (60) | -   | 132 | -  | 25.4 (25.7) | 14     | 38      | 63      | 2.5   | 6.61  |         |   |
|                | 16250R-10 | 10  | 250 | 190 | 47.625 (60) | -   | 190 | -  | 25.4 (25.7) | 14     | 38      | 63      | 2.5   | 11.01 | -       | 3 |
|                | 16250R-12 | 12  | 250 | 190 | 47.625 (60) | -   | 190 | -  | 25.4 (25.7) | 14     | 38      | 63      | 2.5   | 11.04 |         |   |
|                | 16315R-12 | 12  | 315 | 250 | 47.625 (60) | -   | 238 | -  | 25.4 (25.7) | 14     | 38      | 63      | 2.5   | 18.34 | -       | 4 |
|                | 16315R-14 | 14  | 315 | 250 | 47.625 (60) | -   | 238 | -  | 25.4 (25.7) | 14     | 38      | 63      | 2.5   | 18.35 |         |   |

## Insertos disponibles

( ) Tamaño métrico

WNNX-MF      WNNX-ML      WNNX-MM



| Codigo | Cermet       |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| WNNX   | 160720ZNN-MF |      |            |        |        |        |        |        | ●      |        |        |        |          | ●      |        |      |       |     | E28 |
|        | 160720ZNN-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      |        |      |       |     |     |
|        | 160720ZNN-MM |      |            |        |        |        |        |        | ●      | ●      |        |        |          | ●      | ●      |      |       |     |     |

## Adaptadores disponibles

| Codigo         | HRMDC     | HRMDCM            |               |
|----------------|-----------|-------------------|---------------|
| HRMDC (HRMDCM) | 16080HR-4 | BT□□-FMA25.4-□□   | BT□□-FMC27-□□ |
|                | 16080HR-5 |                   |               |
|                | 16100HR-5 | BT□□-FMA31.75-□□  | BT□□-FMC32-□□ |
|                | 16100HR-6 |                   |               |
|                | 16125HR-6 | BT□□-FMA38.1-□□   | BT□□-FMB40-□□ |
|                | 16125HR-7 |                   | BT□□-FMC40-□□ |
|                | 16160R-7  | BT□□-FMA50.8-□□   |               |
|                | 16160R-8  |                   |               |
|                | 16200R-8  |                   |               |
|                | 16200R-10 |                   |               |
|                | 16250R-10 | BT□□-FMA47.625-□□ | BT□□-FMB60-□□ |
|                | 16250R-12 |                   |               |
|                | 16315R-12 |                   |               |
|                | 16315R-14 |                   |               |

## Perno

Fig. 1

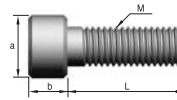
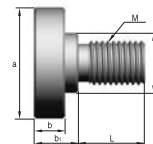


Fig. 2



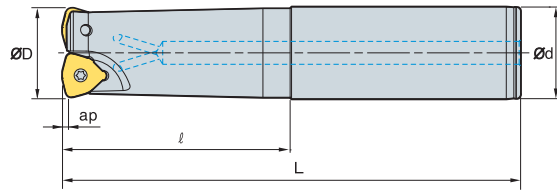
| Codigo  | Dimensiones (mm) |    |    |    |    |    |      | Fig. |
|---------|------------------|----|----|----|----|----|------|------|
|         | M                | a  | b  | b1 | C  | L  | Paso |      |
| SB1025  | M10              | 16 | 10 | -  | -  | 25 | 1.5  | 1    |
| SB1230  | M12              | 18 | 12 | -  | -  | 30 | 1.75 | 1    |
| SB1630  | M16              | 24 | 16 | -  | -  | 30 | 2.0  | 1    |
| SB2040  | M20              | 30 | 20 | -  | -  | 40 | 2.5  | 1    |
| MBA-M20 | M20              | 50 | 14 | 20 | 27 | 30 | 2.5  | 2    |
| MBA-M24 | M24              | 65 | 14 | 24 | 37 | 36 | 3.0  | 2    |

## Partes

| Especificaciones | Tornillo   | Llave    |
|------------------|------------|----------|
| Ø80~Ø315         | FTGA0513-P | TW20-100 |

Insertos disponibles E28      Detalles del cortador E400~E402

## HRMDS06 new



AA  
14°

• AR: -7°  
• RR: -17°~ -25°

(mm)

| Codigo            | 🌀 | ØD | Ød | l   | L   | ap  | 📊    |
|-------------------|---|----|----|-----|-----|-----|------|
| HRMDS 0616HR-2S16 | 2 | 16 | 16 | 30  | 110 | 1.0 | 0.15 |
| 0616HR-2M16       | 2 | 16 | 16 | 70  | 150 | 1.0 | 0.20 |
| 0616HR-2L16       | 2 | 16 | 16 | 100 | 200 | 1.0 | 0.26 |
| 0617HR-2S16       | 2 | 17 | 16 | 20  | 110 | 1.0 | 0.15 |
| 0617HR-2M16       | 2 | 17 | 16 | 20  | 150 | 1.0 | 0.21 |
| 0617HR-2L16       | 2 | 17 | 16 | 20  | 200 | 1.0 | 0.28 |
| 0618HR-2S16       | 2 | 18 | 16 | 20  | 110 | 1.0 | 0.15 |
| 0618HR-2M16       | 2 | 18 | 16 | 20  | 150 | 1.0 | 0.21 |
| 0618HR-2L16       | 2 | 18 | 16 | 20  | 200 | 1.0 | 0.28 |
| 0620HR-2S20       | 2 | 20 | 20 | 50  | 130 | 1.0 | 0.28 |
| 0620HR-2M20       | 2 | 20 | 20 | 100 | 180 | 1.0 | 0.38 |
| 0620HR-2L20       | 2 | 20 | 20 | 130 | 250 | 1.0 | 0.53 |
| 0621HR-2S20       | 2 | 21 | 20 | 20  | 130 | 1.0 | 0.29 |
| 0621HR-2M20       | 2 | 21 | 20 | 20  | 180 | 1.0 | 0.40 |
| 0621HR-2L20       | 2 | 21 | 20 | 20  | 250 | 1.0 | 0.57 |
| 0625HR-3S25       | 3 | 25 | 25 | 60  | 140 | 1.0 | 0.44 |
| 0625HR-3M25       | 3 | 25 | 25 | 80  | 180 | 1.0 | 0.57 |
| 0625HR-3L25       | 3 | 25 | 25 | 120 | 250 | 1.0 | 0.80 |
| 0626HR-3S25       | 3 | 26 | 25 | 30  | 140 | 1.0 | 0.46 |
| 0626HR-3M25       | 3 | 26 | 25 | 30  | 180 | 1.0 | 0.60 |
| 0626HR-3L25       | 3 | 26 | 25 | 30  | 250 | 1.0 | 0.84 |
| 0632HR-4S32       | 4 | 32 | 32 | 70  | 150 | 1.0 | 0.82 |
| 0632HR-4M32       | 4 | 32 | 32 | 100 | 200 | 1.0 | 1.10 |
| 0632HR-4L32       | 4 | 32 | 32 | 180 | 300 | 1.0 | 1.66 |
| 0633HR-4S32       | 4 | 33 | 32 | 40  | 200 | 1.0 | 1.14 |
| 0633HR-4M32       | 4 | 33 | 32 | 40  | 250 | 1.0 | 1.43 |
| 0633HR-4L32       | 4 | 33 | 32 | 40  | 300 | 1.0 | 1.73 |

### 🔗 Insertos disponibles



| Codigo            | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|-------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|                   | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| WNMX 060312ZNN-MF |        |      |            |        |        |        |        | ●      |        |        |        |        |        | ●        | ●      |       |      |     | E28 |
| 060312ZNN-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     |
| 060312ZNN-MM      |        |      |            |        |        |        | ●      | ●      | ●      | ●      |        |        |        | ●        | ●      |       |      |     |     |

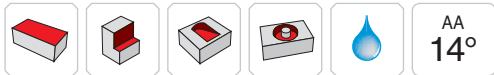
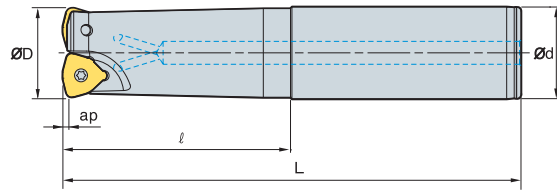
### 🔗 Partes

| Especificaciones | Tornillo  | Llave |
|------------------|-----------|-------|
| Ø16~Ø33          | ETNA02506 | TW07S |

🔗 Insertos disponibles E28



# HRMDS09



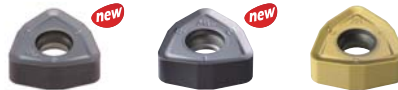
AA  
14°  
• AR: -7°  
• RR: -17° ~ -25°

(mm)

| Codigo      |             | ØD | Ød | ℓ  | L   | ap  |     |
|-------------|-------------|----|----|----|-----|-----|-----|
| HRMDS       | 0925HR-2S25 | 2  | 25 | 25 | 60  | 140 | 0.5 |
|             | 0925HR-2M25 | 2  | 25 | 25 | 120 | 200 | 0.6 |
|             | 0925HR-2L25 | 2  | 25 | 25 | 180 | 300 | 1   |
|             | 0926HR-2S25 | 2  | 26 | 25 | 60  | 140 | 0.5 |
|             | 0926HR-2M25 | 2  | 26 | 25 | 60  | 200 | 0.7 |
|             | 0926HR-2L25 | 2  | 26 | 25 | 60  | 300 | 1   |
|             | 0930HR-3S32 | 3  | 30 | 32 | 70  | 150 | 0.8 |
|             | 0930HR-3M32 | 3  | 30 | 32 | 120 | 200 | 1   |
|             | 0930HR-3L32 | 3  | 30 | 32 | 180 | 300 | 1.5 |
|             | 0932HR-3S32 | 3  | 32 | 32 | 70  | 150 | 0.8 |
|             | 0932HR-3M32 | 3  | 32 | 32 | 120 | 200 | 1.1 |
|             | 0932HR-3L32 | 3  | 32 | 32 | 180 | 300 | 1.7 |
|             | 0933HR-3S32 | 3  | 33 | 32 | 70  | 150 | 0.8 |
|             | 0933HR-3M32 | 3  | 33 | 32 | 70  | 200 | 1.1 |
|             | 0933HR-3L32 | 3  | 33 | 32 | 70  | 300 | 1.7 |
|             | 0935HR-4S32 | 4  | 35 | 32 | 50  | 150 | 0.9 |
|             | 0935HR-4M32 | 4  | 35 | 32 | 50  | 200 | 1.1 |
|             | 0935HR-4L32 | 4  | 35 | 32 | 50  | 300 | 1.7 |
|             | 0940HR-4S32 | 4  | 40 | 32 | 50  | 150 | 0.9 |
|             | 0940HR-4M32 | 4  | 40 | 32 | 50  | 250 | 1.5 |
| 0940HR-4L32 | 4           | 40 | 32 | 50 | 300 | 1.8 |     |
| 0940HR-4S40 | 4           | 40 | 40 | 60 | 150 | 1.3 |     |

## Insertos disponibles

WNMX-MF      WNMX-ML      WNMX-MM



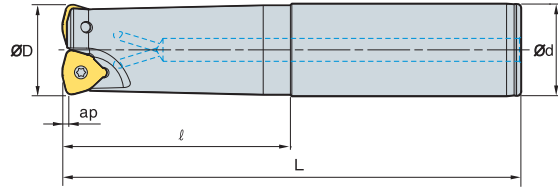
| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| WNMX   | 09T316ZNN-MF |      |            |        |        |        |        |        | ●      | ●      |        |        |          | ●      | ●      |      |       |     | E28 |
|        | 09T316ZNN-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |     |
|        | 09T316ZNN-MM |      |            |        |        |        | ●      |        | ●      | ●      |        | ●      |          | ●      | ●      |      |       |     |     |

## Partes

| Especificaciones |                      |                |
|------------------|----------------------|----------------|
| Ø25~Ø40          | Tornillo<br>FTKA0307 | Llave<br>TW09S |

Insertos disponibles E28

## HRMDS09

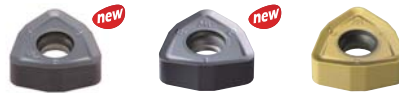


(mm)

| Codigo            |   | ØD | Ød | ℓ   | L   | ap  |     |
|-------------------|---|----|----|-----|-----|-----|-----|
| HRMDS 0940HR-4M40 | 4 | 40 | 40 | 130 | 250 | 1.5 | 2.2 |
| 0940HR-4L40       | 4 | 40 | 40 | 180 | 300 | 1.5 | 2.7 |
| 0940HR-4S42       | 4 | 40 | 42 | 60  | 150 | 1.5 | 1.4 |
| 0940HR-4M42       | 4 | 40 | 42 | 130 | 250 | 1.5 | 2.3 |
| 0940HR-4L42       | 4 | 40 | 42 | 180 | 300 | 1.5 | 2.8 |
| 0950HR-4S32       | 4 | 50 | 32 | 40  | 150 | 1.5 | 1.1 |
| 0950HR-4M32       | 4 | 50 | 32 | 40  | 250 | 1.5 | 1.6 |
| 0950HR-4L32       | 4 | 50 | 32 | 40  | 300 | 1.5 | 2   |
| 0950HR-4S40       | 4 | 50 | 40 | 40  | 150 | 1.5 | 1.4 |
| 0950HR-4M40       | 4 | 50 | 40 | 40  | 250 | 1.5 | 2.4 |
| 0950HR-4L40       | 4 | 50 | 40 | 40  | 300 | 1.5 | 2.9 |
| 0950HR-4S42       | 4 | 50 | 42 | 40  | 150 | 1.5 | 1.6 |
| 0950HR-4M42       | 4 | 50 | 42 | 40  | 250 | 1.5 | 2.6 |
| 0950HR-4L42       | 4 | 50 | 42 | 40  | 300 | 1.5 | 3.1 |
| 0950HR-5S32       | 5 | 50 | 32 | 40  | 150 | 1.5 | 1.1 |
| 0950HR-5M32       | 5 | 50 | 32 | 40  | 250 | 1.5 | 1.6 |
| 0950HR-5L32       | 5 | 50 | 32 | 40  | 300 | 1.5 | 2   |
| 0950HR-5S40       | 5 | 50 | 40 | 40  | 150 | 1.5 | 1.4 |
| 0950HR-5M40       | 5 | 50 | 40 | 40  | 250 | 1.5 | 2.4 |
| 0950HR-5L40       | 5 | 50 | 40 | 40  | 300 | 1.5 | 2.9 |
| 0950HR-5S42       | 5 | 50 | 42 | 40  | 150 | 1.5 | 1.6 |
| 0950HR-5M42       | 5 | 50 | 42 | 40  | 250 | 1.5 | 2.6 |
| 0950HR-5L42       | 5 | 50 | 42 | 40  | 300 | 1.5 | 3.1 |

### Insertos disponibles

WNMX-MF      WNMX-ML      WNMX-MM



| Codigo            | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|-------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|                   | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| WNMX 09T316ZNN-MF |        |      |            |        |        |        |        |        | ●      | ●      |        |        |          | ●      | ●      |      |       |     | E28 |
| 09T316ZNN-ML      |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |     |
| 09T316ZNN-MM      |        |      |            |        |        |        | ●      | ●      | ●      |        | ●      |        |          | ●      | ●      |      |       |     |     |

### Partes

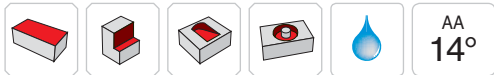
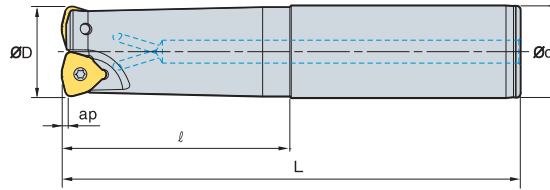
| Especificaciones |          |       |
|------------------|----------|-------|
| Ø40~Ø50          | FTKA0307 | TW09S |

Insertos disponibles E28





# HRMDS13



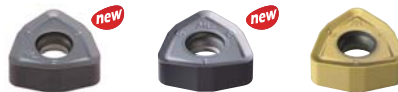
AA  
14°  
• AR: -7°  
• RR: -14° ~ -16°

(mm)

| Codigo            |   | ØD | Ød | l   | L   | ap |     |
|-------------------|---|----|----|-----|-----|----|-----|
| HRMDS 1332HR-2S32 | 2 | 32 | 32 | 70  | 150 | 2  | 0.8 |
| 1332HR-2M32       | 2 | 32 | 32 | 120 | 200 | 2  | 1   |
| 1332HR-2L32       | 2 | 32 | 32 | 180 | 300 | 2  | 1.6 |
| 1333HR-2S32       | 2 | 33 | 32 | 70  | 150 | 2  | 0.8 |
| 1333HR-2M32       | 2 | 33 | 32 | 70  | 200 | 2  | 1.1 |
| 1333HR-2L32       | 2 | 33 | 32 | 70  | 300 | 2  | 1.7 |
| 1335HR-2S32       | 2 | 35 | 32 | 50  | 150 | 2  | 0.8 |
| 1335HR-2M32       | 2 | 35 | 32 | 50  | 200 | 2  | 1.1 |
| 1335HR-2L32       | 2 | 35 | 32 | 50  | 300 | 2  | 1.7 |
| 1340HR-3S32       | 3 | 40 | 32 | 50  | 150 | 2  | 0.8 |
| 1340HR-3M32       | 3 | 40 | 32 | 50  | 250 | 2  | 1.4 |
| 1340HR-3L32       | 3 | 40 | 32 | 50  | 300 | 2  | 1.7 |
| 1340HR-3S40       | 3 | 40 | 40 | 60  | 150 | 2  | 1.2 |
| 1340HR-3M40       | 3 | 40 | 40 | 130 | 250 | 2  | 2.1 |
| 1340HR-3L40       | 3 | 40 | 40 | 180 | 300 | 2  | 2.6 |
| 1340HR-3S42       | 3 | 40 | 42 | 60  | 150 | 2  | 1.4 |
| 1340HR-3M42       | 3 | 40 | 42 | 130 | 250 | 2  | 2.3 |
| 1340HR-3L42       | 3 | 40 | 42 | 180 | 300 | 2  | 2.7 |
| 1350HR-3S32       | 3 | 50 | 32 | 50  | 150 | 2  | 1.1 |
| 1350HR-3M32       | 3 | 50 | 32 | 50  | 250 | 2  | 1.7 |
| 1350HR-3L32       | 3 | 50 | 32 | 50  | 300 | 2  | 2   |
| 1350HR-3S40       | 3 | 50 | 40 | 50  | 150 | 2  | 1.5 |
| 1350HR-3M40       | 3 | 50 | 40 | 50  | 250 | 2  | 2.4 |
| 1350HR-3L40       | 3 | 50 | 40 | 50  | 300 | 2  | 2.9 |
| 1350HR-3S42       | 3 | 50 | 42 | 50  | 150 | 2  | 1.6 |
| 1350HR-3M42       | 3 | 50 | 42 | 50  | 250 | 2  | 2.6 |
| 1350HR-3L42       | 3 | 50 | 42 | 50  | 300 | 2  | 3.1 |

## Insertos desmontables

WNMX-MF      WNMX-ML      WNMX-MM



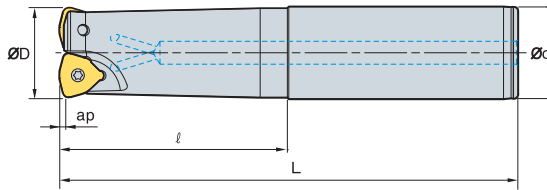
| Codigo            | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|-------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|                   | CN200  | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| WNMX 130520ZNN-MF |        |      |            |        |        |        |        |        | ●      |        |        |        |          | ●      | ●      |      |       |     | E28 |
| 130520ZNN-ML      |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |     |
| 130520ZNN-MM      |        |      |            |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      | ●      |      |       |     |     |

## Partes

| Especificaciones |                       |                |
|------------------|-----------------------|----------------|
| Ø32~Ø50          | Tornillo<br>FTKA0412B | Llave<br>TW15S |

Insertos disponibles E28

## HRMDS13



AA  
14°

• AR: -7°  
• RR: -14° ~ -16°

(mm)

| Codigo            |   | ØD | Ød | ℓ  | L   | ap |     |
|-------------------|---|----|----|----|-----|----|-----|
| HRMDS 1350HR-4S32 | 4 | 50 | 32 | 50 | 150 | 2  | 1.1 |
| 1350HR-4M32       | 4 | 50 | 32 | 50 | 250 | 2  | 1.7 |
| 1350HR-4L32       | 4 | 50 | 32 | 50 | 300 | 2  | 2   |
| 1350HR-4S40       | 4 | 50 | 40 | 50 | 150 | 2  | 1.5 |
| 1350HR-4M40       | 4 | 50 | 40 | 50 | 250 | 2  | 2.4 |
| 1350HR-4L40       | 4 | 50 | 40 | 50 | 300 | 2  | 2.9 |
| 1350HR-4S42       | 4 | 50 | 42 | 50 | 150 | 2  | 1.6 |
| 1350HR-4M42       | 4 | 50 | 42 | 50 | 250 | 2  | 2.6 |
| 1350HR-4L42       | 4 | 50 | 42 | 50 | 300 | 2  | 3.1 |
| 1363HR-4S32       | 4 | 63 | 32 | 50 | 150 | 2  | 1.4 |
| 1363HR-4M32       | 4 | 63 | 32 | 50 | 250 | 2  | 2.1 |
| 1363HR-4L32       | 4 | 63 | 32 | 50 | 300 | 2  | 2.4 |
| 1363HR-4S40       | 4 | 63 | 40 | 50 | 150 | 2  | 1.8 |
| 1363HR-4M40       | 4 | 63 | 40 | 50 | 250 | 2  | 2.8 |
| 1363HR-4L40       | 4 | 63 | 40 | 50 | 300 | 2  | 3.2 |
| 1363HR-4S42       | 4 | 63 | 42 | 50 | 150 | 2  | 1.9 |
| 1363HR-4M42       | 4 | 63 | 42 | 50 | 250 | 2  | 3   |
| 1363HR-4L42       | 4 | 63 | 42 | 50 | 300 | 2  | 3.5 |
| 1363HR-5S32       | 5 | 63 | 32 | 50 | 150 | 2  | 1.5 |
| 1363HR-5M32       | 5 | 63 | 32 | 50 | 250 | 2  | 2   |
| 1363HR-5L32       | 5 | 63 | 32 | 50 | 300 | 2  | 2.3 |
| 1363HR-5S40       | 5 | 63 | 40 | 50 | 150 | 2  | 1.8 |
| 1363HR-5M40       | 5 | 63 | 40 | 50 | 250 | 2  | 2.8 |
| 1363HR-5L40       | 5 | 63 | 40 | 50 | 300 | 2  | 3.2 |
| 1363HR-5S42       | 5 | 63 | 42 | 50 | 150 | 2  | 1.9 |
| 1363HR-5M42       | 5 | 63 | 42 | 50 | 250 | 2  | 3   |
| 1363HR-5L42       | 5 | 63 | 42 | 50 | 300 | 2  | 3.5 |

### Insertos disponibles

WNMX-MF      WNMX-ML      WNMX-MM



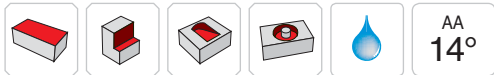
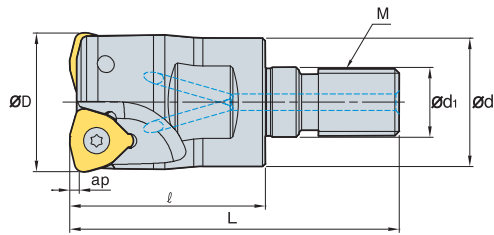
| Codigo            | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|-------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|                   | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| WNMX 130520ZNN-MF |        |      |            |        |        |        |        |        | ●      |        |        |        |          | ●      | ●      |      |       |     | E28 |
| 130520ZNN-ML      |        |      |            |        |        |        |        |        | ●      |        |        |        |          | ●      | ●      |      |       |     |     |
| 130520ZNN-MM      |        |      |            |        |        |        | ●      | ●      | ●      | ●      |        | ●      | ●        | ●      | ●      |      |       |     |     |

### Partes

| Especificaciones |                       |                |
|------------------|-----------------------|----------------|
| Ø50~Ø63          | Tornillo<br>FTKA0412B | Llave<br>TW15S |



# HRMDM06 new



AA  
14°  
• AR: -7°  
• RR: -18° ~ -25°

(mm)

| Codigo |            | ØD | Ød | Ød1  | l    | L  | M   | ap  |      |
|--------|------------|----|----|------|------|----|-----|-----|------|
| HRMDM  | 0616HR-M08 | 2  | 16 | 14.5 | 8.5  | 25 | M08 | 1.0 | 0.03 |
|        | 0617HR-M08 | 2  | 17 | 14.5 | 8.5  | 25 | M08 | 1.0 | 0.03 |
|        | 0618HR-M08 | 2  | 18 | 14.5 | 8.5  | 25 | M08 | 1.0 | 0.03 |
|        | 0620HR-M10 | 2  | 20 | 18   | 10.5 | 30 | M10 | 1.0 | 0.06 |
|        | 0621HR-M10 | 2  | 21 | 18   | 10.5 | 30 | M10 | 1.0 | 0.07 |
|        | 0625HR-M12 | 3  | 25 | 23   | 12.5 | 35 | M12 | 1.0 | 0.10 |
|        | 0626HR-M12 | 3  | 26 | 23   | 12.5 | 35 | M12 | 1.0 | 0.11 |
|        | 0632HR-M16 | 4  | 32 | 29   | 17   | 40 | M16 | 1.0 | 0.21 |
|        | 0633HR-M16 | 4  | 33 | 29   | 17   | 40 | M16 | 1.0 | 0.22 |

## Insertos disponibles

WNMX-MF      WNMX-ML      WNMX-MM



| Codigo | Cermet       |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| WNMX   | 060312ZNN-MF |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     | E28 |
|        | 060312ZNN-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 060312ZNN-MM |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |

## Adaptador modular disponible

| Codigo | Adaptador modular disponible | Codigo   | Adaptador modular disponible |            |          |
|--------|------------------------------|----------|------------------------------|------------|----------|
| HRMDM  | 0616HR-M08                   | MAT- M08 | HRMDM                        | 0625HR-M12 | MAT- M12 |
|        | 0617HR-M08                   | MAT- M08 |                              | 0626HR-M12 | MAT- M12 |
|        | 0618HR-M08                   | MAT- M08 |                              | 0632HR-M16 | MAT- M16 |
|        | 0620HR-M10                   | MAT- M10 |                              | 0633HR-M16 | MAT- M16 |
|        | 0621HR-M10                   | MAT- M10 |                              |            |          |

Codigo: HRMDM0625HR-M12  
Especificacion de la Cabeza Modulos (M12)

II

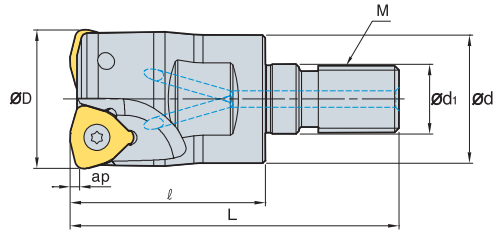
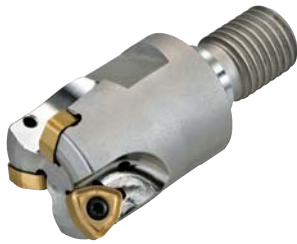
Codigo del Zanco: MAT-M12-030-S20S  
Especificacion del Zanco (M12)

## Partes

| Especificaciones |                       |                |
|------------------|-----------------------|----------------|
| Ø16~Ø33          | Tornillo<br>ETNA02506 | Llave<br>TW07S |

Insertos disponibles E28      Adaptador modular disponible E371~E372

## HRMDM09



(mm)

| Codigo |            | ØD | Ød | Ød1 | l    | L  | M  | ap  |      |
|--------|------------|----|----|-----|------|----|----|-----|------|
| HRMDM  | 0925HR-M12 | 2  | 25 | 23  | 12.5 | 35 | 59 | M12 | 0.10 |
|        | 0926HR-M12 | 2  | 26 | 23  | 12.5 | 35 | 59 | M12 | 0.11 |
|        | 0930HR-M16 | 3  | 30 | 29  | 17   | 40 | 67 | M16 | 0.19 |
|        | 0932HR-M16 | 3  | 32 | 29  | 17   | 40 | 67 | M16 | 0.20 |
|        | 0933HR-M16 | 3  | 33 | 29  | 17   | 40 | 67 | M16 | 0.21 |
|        | 0935HR-M16 | 4  | 35 | 29  | 17   | 40 | 67 | M16 | 0.22 |
|        | 0940HR-M16 | 4  | 40 | 29  | 17   | 40 | 67 | M16 | 0.25 |

### Insertos disponibles



| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|        | CN2000       | CN80 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| WNMX   | 09T316ZNN-MF |      |            |        |        |        |        |        | ●      | ●      |        |        |        | ●        | ●      |       |      |     | E28 |
|        | 09T316ZNN-ML |      |            |        |        |        |        |        |        |        |        |        |        | ●        | ●      |       |      |     |     |
|        | 09T316ZNN-MM |      |            |        |        |        | ●      |        | ●      | ●      |        | ●      |        | ●        | ●      |       |      |     |     |

### Adaptador modular disponible

| Codigo | Adaptador modular disponible |          |  |
|--------|------------------------------|----------|--|
| HRMDM  | 0925HR-M12                   | MAT- M12 | Codigo: HRMDM0932HR-M16<br>Especificacion de la Cabeza Modulos (M16)<br><br>II<br>Codigo del Zanco: MAT-M16-035-S32S<br>Especificacion del Zanco (M16) |
|        | 0926HR-M12                   |          |  |
|        | 0930HR-M16                   |          |  |
|        | 0932HR-M16                   | MAT- M16 |  |
|        | 0933HR-M16                   |          |  |
|        | 0935HR-M16                   |          |  |
|        | 0940HR-M16                   |          |  |

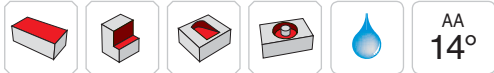
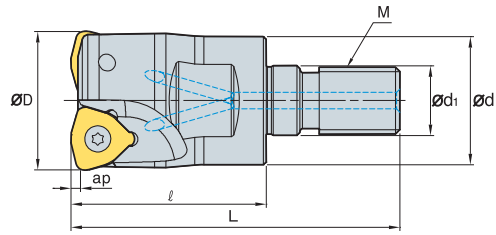
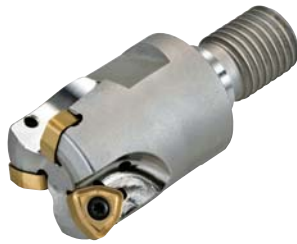
### Partes

| Especificaciones |          |       |
|------------------|----------|-------|
| Ø25~Ø40          | FTKA0307 | TW09S |

Insertos disponibles E28 Adaptador modular disponible E371~E372



# HRMDM13



AA  
14°  
• AR: -7°  
• RR: -18°~ -25°

(mm)

| Codigo | ØD         | Ød | ød1 | ℓ  | L  | M  | ap | kg  |   |      |
|--------|------------|----|-----|----|----|----|----|-----|---|------|
| HRMDM  | 1332HR-M16 | 2  | 32  | 29 | 17 | 40 | 67 | M16 | 2 | 0.20 |
|        | 1333HR-M16 | 2  | 33  | 29 | 17 | 40 | 67 | M16 | 2 | 0.20 |
|        | 1335HR-M16 | 2  | 35  | 29 | 17 | 40 | 67 | M16 | 2 | 0.22 |
|        | 1340HR-M16 | 3  | 40  | 29 | 17 | 45 | 72 | M16 | 2 | 0.26 |

## Insertos disponibles

WNMX-MF      WNMX-ML      WNMX-MM



| Codigo | Cermet       |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC6300 | PC5400 |      | ST30A | G10 | H01 |
| WNMX   | 130520ZNN-MF |      |            |        |        |        |        |        | ●      |        |        |        |          | ●      | ●      |      |       |     | E28 |
|        | 130520ZNN-ML |      |            |        |        |        |        |        |        |        |        |        |          | ●      | ●      |      |       |     |     |
|        | 130520ZNN-MM |      |            |        |        |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      | ●      |      |       |     |     |

## Adaptador modular disponible

| Codigo     | Adaptador modular disponible |
|------------|------------------------------|
| HRMDM      | MAT-M16                      |
| 1332HR-M16 |                              |
| 1333HR-M16 |                              |
| 1340HR-M16 |                              |

Codigo: HRMDM0932HR-M16  
Especificacion de la Cabeza Modulos (M16)

II

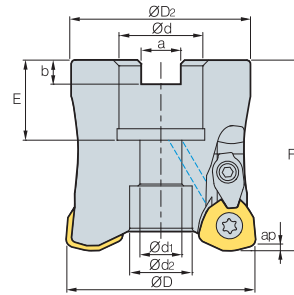
Codigo del Zanco: MAT-M16-120-S32T  
Especificacion del Zanco (M16)

## Partes

| Especificaciones | Tornillo  | Llave |
|------------------|-----------|-------|
| Ø32~Ø40          | FTKA0412B | TW15S |

Insertos disponibles E28      Adaptador modular disponible E371~E372

# HRMC(M)13



(mm)

| Codigo                 | ØD | ØD2 | Ød | Ød1         | Ød2     | a       | b           | E       | F       | ap | kg  | Perno |             |
|------------------------|----|-----|----|-------------|---------|---------|-------------|---------|---------|----|-----|-------|-------------|
| HRMC (HRMCM) 13050HR-3 | 3  | 50  | 47 | 22.225 (22) | 11      | 16.4    | 8.0 (10.4)  | 5 (6.3) | 20 (21) | 50 | 2.0 | 0.4   | SB1035      |
| 13050HR-4              | 4  | 50  | 47 | 22.225 (22) | 11      | 16.4    | 8.0 (10.4)  | 5 (6.3) | 20 (21) | 50 | 2.0 | 0.4   | SB1035      |
| 13063HR-4              | 4  | 63  | 60 | 22.225 (22) | 11      | 17      | 8.0 (10.4)  | 5 (6.3) | 20 (21) | 50 | 2.0 | 0.7   | SB1035      |
| 13080HR-5              | 5  | 80  | 76 | 31.75 (27)  | 18 (13) | 26 (20) | 12.7 (12.4) | 8 (7)   | 32 (23) | 70 | 2.0 | 1.6   | SB16 (12)45 |

( ) Tamaño métrico

## Insertos disponibles

WDKT-MH



| Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| WDKT 130520ZDSR-MH |        |      |            |        |        |        | ●      | ●      | ●      |        | ●      | ●      |          | ●      | ●      |      |       |     | E27 |

## Adaptadores disponibles

| Codigo                 | HRMDC             | HRMDCM        |
|------------------------|-------------------|---------------|
| HRMC (HRMCM) 13050HR-3 |                   |               |
| 13050HR-4              | BT□□-FMA22.225-□□ | BT□□-FMC22-□□ |
| 13063HR-4              |                   | SK□□-FMC22-□□ |
| 13080HR-5              | BT□□-FMA31.75-□□  | BT□□-FMC27-□□ |
|                        | SK□□-FMA31.75-□□  | SK□□-FMC27-□□ |

## Perno

Fig. 1

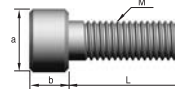
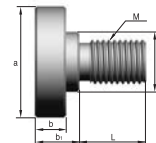


Fig. 2



| Codigo  | Dimensiones (mm) |    |    |    |    |    |      | Fig. |
|---------|------------------|----|----|----|----|----|------|------|
|         | M                | a  | b  | b1 | C  | L  | Paso |      |
| SB1035  | M10              | 16 | 10 | -  | -  | 35 | 1.5  | 1    |
| SB1245  | M12              | 18 | 12 | -  | -  | 45 | 1.75 | 1    |
| SB1645  | M16              | 24 | 16 | -  | -  | 45 | 2.0  | 1    |
| SB2040  | M20              | 30 | 20 | -  | -  | 40 | 2.5  | 1    |
| MBA-M20 | M20              | 50 | 14 | 20 | 27 | 30 | 2.5  | 2    |
| MBA-M24 | M24              | 65 | 14 | 24 | 37 | 36 | 3.0  | 2    |

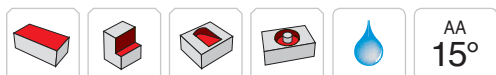
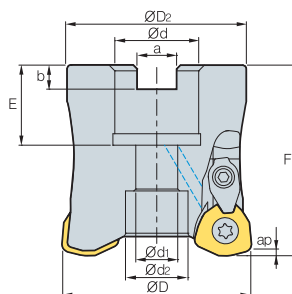
## Partes

| Especificaciones | Tornillo   | Brida    | Tornillo Brida | Candado C | Llave    |
|------------------|------------|----------|----------------|-----------|----------|
| Ø50-Ø80          | FTGA0513-P | CHH4.5R1 | CTX04513H      | CR03      | TW20-100 |

Insertos disponibles E27 Detalles del cortador E400-E402



# HRMC(M)15



AA  
15°  
• AR: 7°  
• RR: -15° ~ -5°

(mm)

| Codigo                 | ØD | ØD  | Ød  | Ød1         | Ød2     | a       | b           | E       | F       | ap | kg  | Perno |               |
|------------------------|----|-----|-----|-------------|---------|---------|-------------|---------|---------|----|-----|-------|---------------|
| HRMC (HRMCM) 15063HR-3 | 3  | 63  | 60  | 22.225 (22) | 11      | 17      | 8.0 (10.4)  | 5 (6.3) | 20 (21) | 50 | 2.5 | 0.7   | SB1035        |
| 15080HR-4              | 4  | 80  | 76  | 31.75 (27)  | 18 (13) | 26 (20) | 12.7 (12.4) | 8 (7)   | 32 (23) | 70 | 2.5 | 1.7   | SB16 (12)45   |
| 15100HR-5              | 5  | 100 | 96  | 31.75 (32)  | 18      | 26      | 12.7 (14.4) | 8 (8)   | 32 (26) | 70 | 2.5 | 2.8   | SB1645        |
| 15100HR-6              | 6  | 100 | 96  | 31.75 (32)  | 18      | 26      | 12.7 (14.4) | 8 (8)   | 32 (26) | 70 | 2.5 | 3.2   | SB1645        |
| 15125HR-6              | 6  | 125 | 98  | 38.1 (40)   | 22      | 32      | 15.9 (16.4) | 10 (9)  | 35 (29) | 63 | 2.5 | 3.3   | SB2040        |
| 15160R-7               | 7  | 160 | 100 | 50.8 (40)   | -       | 72      | 19.0 (16.4) | 11 (9)  | 38 (35) | 63 | 2.5 | 4.3   | MBA-M24 (M20) |

( ) Tamaño métrico

## Insertos disponibles

WDKT-MH



| Codigo             | Cermet |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| WDKT 150625ZDSR-MH |        |      |            |        |        |        |        |        | ●      | ●      | ●      | ●      |          | ●      | ●      |      |       |     | E27 |

## Adaptadores disponibles

| Codigo                 | HRMDC                                | HRMDCM                         |
|------------------------|--------------------------------------|--------------------------------|
| HRMC (HRMCM) 15063HR-3 | BT□□-FMA22.225-□□                    | BT□□-FMC22-□□<br>SK□□-FMC22-□□ |
| 15080HR-4              | BT□□-FMA31.75-□□<br>SK□□-FMA31.75-□□ | BT□□-FMC27-□□<br>SK□□-FMC27-□□ |
| 15100HR-5              |                                      | BT□□-FMC32-□□<br>SK□□-FMC32-□□ |
| 15100HR-6              |                                      |                                |
| 15125HR-6              | BT□□-FMA38.1-□□<br>SK□□-FMA38.1-□□   | BT□□-FMB40-□□<br>BT□□-FMC40-□□ |
| 15160R-7               | BT□□-FMA50.8-□□                      | SK□□-FMC40-□□                  |

## Perno

Fig. 1

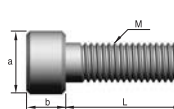
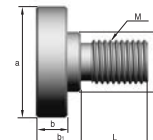


Fig. 2



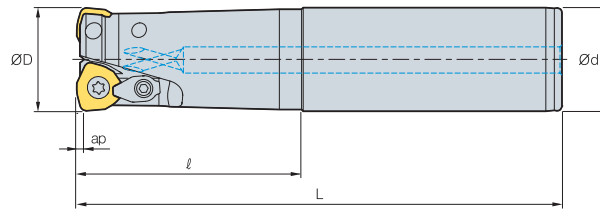
| Codigo  | Dimensiones (mm) |    |    |    |    |    | Fig. |      |
|---------|------------------|----|----|----|----|----|------|------|
|         | M                | a  | b  | b1 | C  | L  |      | Paso |
| SB1035  | M10              | 16 | 10 | -  | -  | 35 | 1.5  | 1    |
| SB1245  | M12              | 18 | 12 | -  | -  | 45 | 1.75 | 1    |
| SB1645  | M16              | 24 | 16 | -  | -  | 45 | 2.0  | 1    |
| SB2040  | M20              | 30 | 20 | -  | -  | 40 | 2.5  | 1    |
| MBA-M20 | M20              | 50 | 14 | 20 | 27 | 30 | 2.5  | 2    |
| MBA-M24 | M24              | 65 | 14 | 24 | 37 | 36 | 3.0  | 2    |

## Partes

| Especificaciones | Tornillo   | Brida    | Tornillo Brida | Candado C | Llave    |
|------------------|------------|----------|----------------|-----------|----------|
| Ø63-Ø160         | FTGA0513-P | CHH5.5R1 | CTX0515        | CR04      | TW20-100 |

Insertos disponibles E27    Detalles del cortador E400~E402

# HRMS08/10



AA **15°**
 • AR: 7°  
 • RR: -11° ~ -5°

(mm)

| Codigo      |             | ØD | Ød | l   | L   | ap  |     |
|-------------|-------------|----|----|-----|-----|-----|-----|
| HRMS        | 0820HR-2S20 | 2  | 20 | 20  | 50  | 130 | 0.3 |
|             | 0820HR-2M20 | 2  | 20 | 20  | 100 | 180 | 0.4 |
|             | 0820HR-2L20 | 2  | 20 | 20  | 130 | 250 | 0.5 |
|             | 0821HR-2S20 | 2  | 21 | 20  | 50  | 130 | 0.3 |
|             | 0821HR-2M20 | 2  | 21 | 20  | 50  | 180 | 0.4 |
|             | 0821HR-2L20 | 2  | 21 | 20  | 50  | 250 | 0.5 |
|             | 1025HR-2S25 | 2  | 25 | 25  | 60  | 140 | 0.4 |
|             | 1025HR-2M25 | 2  | 25 | 25  | 120 | 200 | 0.6 |
|             | 1025HR-2L25 | 2  | 25 | 25  | 180 | 300 | 0.9 |
|             | 1026HR-2S25 | 2  | 26 | 25  | 60  | 140 | 0.4 |
|             | 1026HR-2M25 | 2  | 26 | 25  | 60  | 200 | 0.6 |
|             | 1026HR-2L25 | 2  | 26 | 25  | 60  | 300 | 1.0 |
|             | 1030HR-2S32 | 2  | 30 | 32  | 70  | 150 | 0.8 |
|             | 1030HR-2M32 | 2  | 30 | 32  | 120 | 200 | 1.0 |
| 1030HR-2L32 | 2           | 30 | 32 | 180 | 300 | 1.5 |     |

## Insertos disponibles

WDKT-MH



| Tipo    | Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|---------|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|         |                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| 08 Tipo | WDKT 080316ZDSR-MH |        |      |            |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●      |      |       |     | E27 |
| 10 Tipo | WDKT 10T320ZDSR-MH |        |      |            |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●      |      |       |     |     |

## Partes

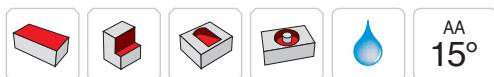
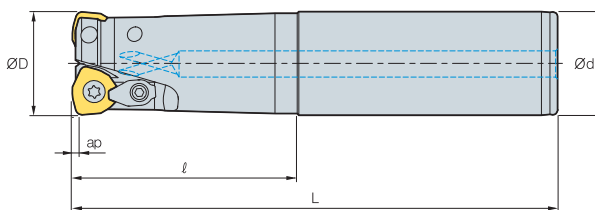
| Especificaciones  |          |          |                |           |       |
|-------------------|----------|----------|----------------|-----------|-------|
|                   | Tornillo | Brida    | Tornillo Brida | Candado C | Llave |
| Ø20~Ø21 (08 Tipo) | FTNA0306 | -        | -              | -         | TW09P |
| Ø25~Ø30 (10 Tipo) | FTKA0408 | CHH3.5R1 | CTX03510       | CR03      | TW15S |

Insertos disponibles E27





# HRMS13



• AR: 7°  
• RR: -11° ~ -5°

(mm)

| Codigo |             | ØD | Ød | l  | L   | ap  |     |
|--------|-------------|----|----|----|-----|-----|-----|
| HRMS   | 1332HR-2S32 | 2  | 32 | 32 | 70  | 150 | 0.8 |
|        | 1332HR-2M32 | 2  | 32 | 32 | 120 | 200 | 1.0 |
|        | 1332HR-2L32 | 2  | 32 | 32 | 180 | 300 | 1.6 |
|        | 1333HR-2S32 | 2  | 33 | 32 | 70  | 150 | 0.8 |
|        | 1333HR-2M32 | 2  | 33 | 32 | 70  | 200 | 1.1 |
|        | 1333HR-2L32 | 2  | 33 | 32 | 70  | 300 | 1.7 |
|        | 1335HR-2S32 | 2  | 35 | 32 | 50  | 150 | 0.8 |
|        | 1335HR-2M32 | 2  | 35 | 32 | 50  | 200 | 1.1 |
|        | 1335HR-2L32 | 2  | 35 | 32 | 50  | 300 | 1.7 |
|        | 1340HR-3S32 | 3  | 40 | 32 | 50  | 150 | 0.8 |
|        | 1340HR-3M32 | 3  | 40 | 32 | 50  | 250 | 1.4 |
|        | 1340HR-3L32 | 3  | 40 | 32 | 50  | 300 | 1.7 |
|        | 1340HR-3S40 | 3  | 40 | 40 | 60  | 150 | 1.2 |
|        | 1340HR-3M40 | 3  | 40 | 40 | 130 | 250 | 2.1 |
|        | 1340HR-3L40 | 3  | 40 | 40 | 180 | 300 | 2.6 |
|        | 1340HR-3S42 | 3  | 40 | 42 | 60  | 150 | 1.4 |
|        | 1340HR-3M42 | 3  | 40 | 42 | 130 | 250 | 2.3 |
|        | 1340HR-3L42 | 3  | 40 | 42 | 180 | 300 | 2.7 |

## Insertos disponibles

WDKT-MH



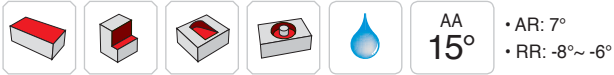
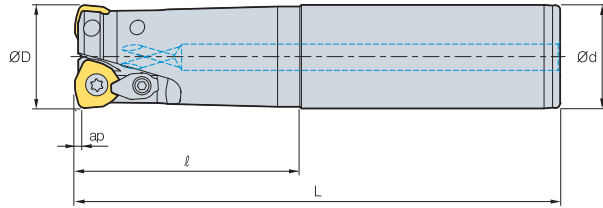
| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| WDKT   | 130520ZDSR-MH |      |            |        |        |        | ●      | ●      | ●      |        | ●      | ●      |          | ●      | ●      |      |       |     | E27 |

## Partes

| Especificaciones |            |          |                |           |       |
|------------------|------------|----------|----------------|-----------|-------|
|                  | Tornillo   | Brida    | Tornillo Brida | Candado C | Llave |
| Ø32,33,35        | FTGA0510-P | CHH4.5R1 | CTX04513H      | CR03      | TW20  |
| Ø40              | FTGA0512-P | CHH5.5R1 | CTX04513H      | CR03      | TW20  |

Insertos disponibles E27

# HRMS15



(mm)

| Codigo      |             | ØD | Ød | l  | L   | ap  |     |
|-------------|-------------|----|----|----|-----|-----|-----|
| HRMS        | 1550HR-3S32 | 3  | 50 | 32 | 50  | 150 | 1.0 |
|             | 1550HR-3M32 | 3  | 50 | 32 | 50  | 250 | 1.6 |
|             | 1550HR-3L32 | 3  | 50 | 32 | 50  | 300 | 1.9 |
|             | 1550HR-3S40 | 3  | 50 | 40 | 50  | 150 | 1.4 |
|             | 1550HR-3M40 | 3  | 50 | 40 | 50  | 250 | 2.3 |
|             | 1550HR-3L40 | 3  | 50 | 40 | 50  | 300 | 2.8 |
|             | 1550HR-3S42 | 3  | 50 | 42 | 50  | 150 | 1.5 |
|             | 1550HR-3M42 | 3  | 50 | 42 | 50  | 250 | 2.5 |
|             | 1550HR-3L42 | 3  | 50 | 42 | 50  | 300 | 3.0 |
|             | 1563HR-4S32 | 4  | 63 | 32 | 50  | 150 | 1.3 |
|             | 1563HR-4M32 | 4  | 63 | 32 | 50  | 250 | 1.9 |
|             | 1563HR-4L32 | 4  | 63 | 32 | 50  | 300 | 2.2 |
|             | 1563HR-4S40 | 4  | 63 | 40 | 50  | 150 | 1.7 |
|             | 1563HR-4M40 | 4  | 63 | 40 | 50  | 250 | 2.6 |
|             | 1563HR-4L40 | 4  | 63 | 40 | 50  | 300 | 3.1 |
|             | 1563HR-4S42 | 4  | 63 | 42 | 50  | 150 | 1.8 |
| 1563HR-4M42 | 4           | 63 | 42 | 50 | 250 | 2.8 |     |
| 1563HR-4L42 | 4           | 63 | 42 | 50 | 300 | 3.3 |     |

## Insertos disponibles

WDKT-MH



| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|        | CN2000        | CN30 | NCM825     | NC5330 | NCM635 | NCM645 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| WDKT   | 150625ZDSR-MH |      |            |        |        |        |        |        | ●      | ●      | ●      | ●      |        | ●        | ●      |       |      |     | E27 |

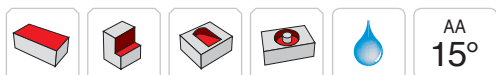
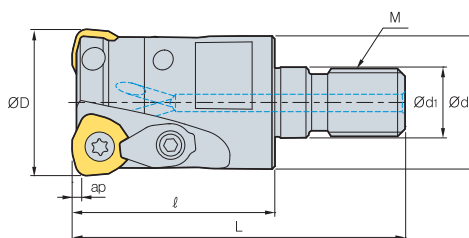
## Partes

| Especificaciones |            |          |                |           |       |
|------------------|------------|----------|----------------|-----------|-------|
|                  | Tornillo   | Brida    | Tornillo Brida | Candado C | Llave |
| Ø50-Ø63          | FTGA0513-P | CHH5.5R1 | CTX0515        | CR04      | TW20  |

Insertos disponibles E27



# HRMM08



AA  
15°  
• AR: 7°  
• RR: -11°~ -5°

(mm)

| Codigo          | ØD | Ød | ød1  | ℓ  | L  | M   | ap | kg   |
|-----------------|----|----|------|----|----|-----|----|------|
| HRMM 0820HR-M10 | 20 | 18 | 10.5 | 30 | 51 | M10 | 1  | 0.06 |
| 0821HR-M10      | 21 | 18 | 10.5 | 30 | 51 | M10 | 1  | 0.06 |
| 0825HR-M12      | 25 | 23 | 12.5 | 35 | 59 | M12 | 1  | 0.11 |
| 0826HR-M12      | 26 | 23 | 12.5 | 35 | 59 | M12 | 1  | 0.11 |
| 0828HR-M12      | 28 | 23 | 12.5 | 35 | 59 | M12 | 1  | 0.12 |
| 0832HR-M16      | 32 | 29 | 17   | 40 | 67 | M16 | 1  | 0.21 |
| 0833HR-M16      | 33 | 29 | 17   | 40 | 67 | M16 | 1  | 0.21 |
| 0835HR-M16      | 35 | 29 | 17   | 40 | 67 | M16 | 1  | 0.23 |
| 0840HR-M16      | 40 | 29 | 17   | 40 | 67 | M16 | 1  | 0.25 |

## Insertos disponibles

WDKT-MH



| Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |
|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|
|                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3800 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 |
| WDKT 080316ZDSR-MH |        |      |            |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●        |        |       |      | E27 |

## Adaptador modular disponible

| Codigo          | Adaptador modular disponible |
|-----------------|------------------------------|
| HRMM 0820HR-M10 | MAT-M10                      |
| 0821HR-M10      |                              |
| 0825HR-M12      | MAT-M12                      |
| 0826HR-M12      |                              |
| 0828HR-M12      |                              |
| 0832HR-M16      | MAT-M16                      |
| 0833HR-M16      |                              |
| 0835HR-M16      |                              |
| 0840HR-M16      |                              |

Codigo: HRMM0820HR-M10  
Especificacion de la Cabeza Modulos (M10)

II

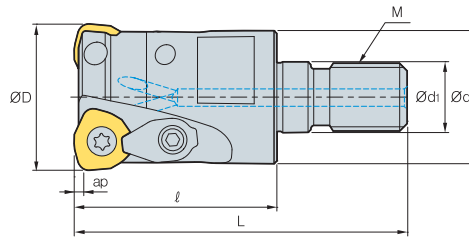
Codigo del Zanco: MAT-M10-030-S20S  
Especificacion del Zanco (M10)

## Partes

| Especificaciones | Tornillo | Brida | Tornillo Brida | Candado C | Llave | Llave |
|------------------|----------|-------|----------------|-----------|-------|-------|
| Ø20~Ø40          | FTNA0306 | -     | -              | -         | -     | -     |

Insertos disponibles E27 Adaptador modular disponible E371~E372

# HRMM10/13



(mm)

| Codigo |            | ØD | Ød | Ød1 | ℓ    | L  | M  | ap  |      |
|--------|------------|----|----|-----|------|----|----|-----|------|
| HRMM   | 1025HR-M12 | 2  | 25 | 23  | 12.5 | 35 | 59 | M12 | 0.1  |
|        | 1026HR-M12 | 2  | 26 | 23  | 12.5 | 35 | 59 | M12 | 0.1  |
|        | 1030HR-M16 | 2  | 30 | 29  | 17   | 40 | 67 | M16 | 0.2  |
|        | 1032HR-M16 | 3  | 32 | 29  | 17   | 45 | 72 | M16 | 0.26 |
|        | 1035HR-M16 | 3  | 35 | 29  | 17   | 45 | 72 | M16 | 0.23 |
|        | 1040HR-M16 | 4  | 40 | 29  | 17   | 45 | 72 | M16 | 0.27 |
| HRMM   | 1332HR-M16 | 2  | 32 | 29  | 17   | 40 | 67 | M16 | 0.17 |
|        | 1333HR-M16 | 2  | 33 | 29  | 17   | 40 | 67 | M16 | 0.17 |
|        | 1335HR-M16 | 2  | 35 | 29  | 17   | 40 | 67 | M16 | 0.19 |
|        | 1340HR-M16 | 3  | 40 | 29  | 17   | 45 | 72 | M16 | 0.24 |

## Insertos disponibles

WDKT-MH



| Tipo    | Codigo             | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|---------|--------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|         |                    | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| 10 Tipo | WDKT 10T320ZDSR-MH |        |      |            |        |        |        | ●      | ●      | ●      | ●      | ●      | ●      | ●        | ●      | ●      |      |       |     | E27 |
| 13 Tipo | WDKT 130520ZDSR-MH |        |      |            |        |        |        | ●      | ●      | ●      |        | ●      | ●      |          | ●      | ●      |      |       |     |     |

## Adaptador modular disponible

| Codigo          | Adaptador modular disponible |
|-----------------|------------------------------|
| HRMM 1025HR-M12 | MAT-M12                      |
| 1026HR-M12      |                              |
| 1030HR-M16      |                              |
| 1032HR-M16      | MAT-M16                      |
| 1035HR-M16      |                              |
| 1040HR-M16      |                              |
| 1332HR-M16      | MAT-M16                      |
| 1333HR-M16      |                              |
| 1335HR-M16      |                              |
| 1340HR-M16      |                              |

Codigo: HRMM0820HR-M10  
Especificacion de la Cabeza Modulos (M10)

II

Codigo del Zanco: MAT-M10-030-S20S  
Especificacion del Zanco (M10)

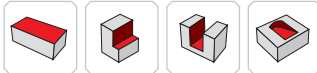
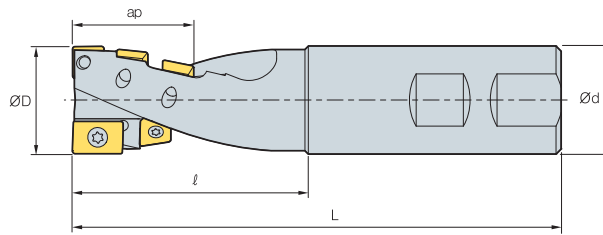
## Partes

| Especificaciones      |            |          |                |           |       |       |
|-----------------------|------------|----------|----------------|-----------|-------|-------|
|                       | Tornillo   | Brida    | Tornillo Brida | Candado C | Llave | Llave |
| Ø25~Ø40 (10 Tipo)     | FTKA0408   | CHH3.5R1 | CTX03510       | CR03      | TW15S | -     |
| Ø32, 33, 35 (13 Tipo) | FTGA0510-P | CHH4.5R1 | CTX04513H      | CR03      | -     | TW20  |
| Ø40 (13 Tipo)         | FTGA0512-P | CHH5.5R1 | CTX04513H      | CR03      | -     | TW20  |

Insertos disponibles E27 Adaptador modular disponible E371~E372



# THE

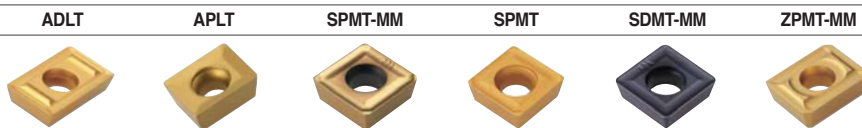


AA  
90°  
• AR: 5°, 10°  
• RR: -5°

(mm)

| Codigo | ØD  | Ød | ℓ  | L  | ap  | No. de Flautas | kg | Insertos disponibles   |                        |                   |
|--------|-----|----|----|----|-----|----------------|----|------------------------|------------------------|-------------------|
|        |     |    |    |    |     |                |    | Filo de corte inferior | Filo de corte exterior |                   |
| THE    | 25R | 25 | 25 | 55 | 120 | 25             | 2  | 0.4                    | APLT070304R 1z         | SPMT060304 4z     |
|        | 32R | 32 | 32 | 70 | 145 | 40             | 2  | 0.5                    | ADLT150308R 1z         | SDMT090308-MM 5z  |
|        | 40R | 40 | 42 | 88 | 175 | 54             | 2  | 1.3                    | ZPMT1504PPSR-MM 1z     | SPMT120408-MM 5z  |
|        | 50R | 50 | 42 | 85 | 175 | 54             | 4  | 1.4                    | ZPMT1504PPSR-MM 2z     | SPMT120408-MM 10z |

## Insertos disponibles



| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|                  | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| SPMT 060304      |        |      | ●          |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| SDMT 090308-MM   |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |       |      |     | E04 |
| SPMT 120408-MM   |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |       |      |     | E05 |
| APLT 070304R     |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |       |      |     | E18 |
| ADLT 150308R     |        |      | ●          |        |        |        |        |        |        |        |        |        |        | ●        |        |       |      |     | E25 |
| ZPMT 1504PPSR-MM |        |      |            |        |        |        |        |        |        |        |        |        |        | ●        |        |       |      |     | E31 |

## Condiciones de corte recomendadas

### • Ranurado

| Pieza Trabajo | Condicion Corte |                | Calidades |
|---------------|-----------------|----------------|-----------|
|               | vc (m/min)      | fz (mm/diente) |           |
| P             | 90~140          | 0.05~0.2       | PC5300    |
| M             | 50~90           | 0.05~0.2       | PC5300    |
| K             | 70~120          | 0.05~0.25      | PC5300    |

### • Corte Lateral

| Pieza Trabajo | Condicion Corte |                | Calidades |
|---------------|-----------------|----------------|-----------|
|               | vc (m/min)      | fz (mm/diente) |           |
| P             | 150~240         | 0.05~0.2       | PC5300    |
| M             | 90~150          | 0.05~0.2       | PC5300    |
| K             | 120~200         | 0.10~0.25      | PC5300    |

## Partes

| Especificaciones | Tornillo  | Llave | Llave |
|------------------|-----------|-------|-------|
| Ø25              | ETNA02506 | TW07P | -     |
| Ø32              | ETNA0408  | -     | TW15S |
| Ø40              | ETNA0511  | -     | TW20S |
| Ø50              | ETNA0511  | -     | TW20S |

Insertos disponibles E04, E05, E18, E25, E31

# E Información técnica TP2P

Esta familia de fresas debido a de su sistema tangencial de amarre incrementa la fiabilidad y la productividad a la vez que posibilita una perfecta perpendicularidad

## Tangen-Pro TP2P new

- Estabilidad en el amarre incrementada por la fijación tangencial y el diseño en cuña de los insertos
- Excelente acabado cercano a la perpendicularidad perfecta, mejor aspecto superficial
- Productividad mejorada gracias a un gran ángulo de incidencia y a la forma de las aristas de corte diseñadas para una baja resistencia  
→ Especialmente indicado para mecanizado de alta velocidad y gran avance

### ➤ Sistema de codificación

#### • Tipo inserto

|  |  |  |  |   |  |                            |  |  |  |  |
|--|--|--|--|---|--|----------------------------|--|--|--|--|
| N: 0°<br>Ángulo de incidencia arista principal   |  | T: Tipo T<br>Forma sección transversal |  | 07: 7 mm<br>Altura de la arista de corte  |  | P: 90°<br>A.A              |  | R: Mano derecha<br>Mano                                |  |  |
| <span style="font-size: 2em; font-weight: bold; letter-spacing: 0.5em;">L N K T 17 07 08 P N R - MM</span> |  |  |  |   |  |                            |  |  |  |  |
| <b>Forma placa</b><br>L: Tipo L  |  | <b>Tolerancia</b><br>K: Clase K        |  | <b>Longitud de la arista</b><br>17: 17 mm |  | <b>Radio R</b><br>08: R0.8 |  | <b>Ángulo de incidencia Arista secundaria</b><br>N: 0° |  | <b>Rompevirutas</b><br>MA: Aluminum cutting<br>MM: Uso general<br>ML: Corte ligero |

#### • Tipo mango

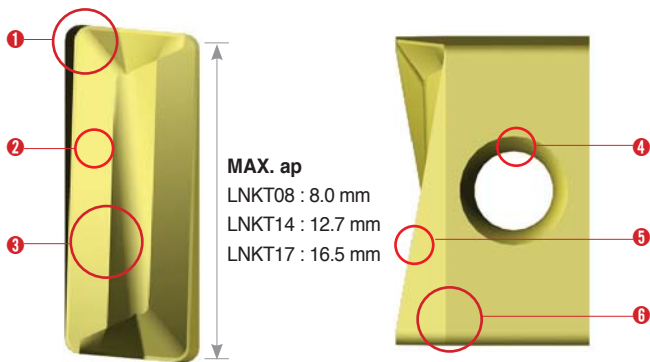
|   |  |                                     |  |  |  |  |  |                                       |  |   |
|---|--|-------------------------------------|--|--|--|--|--|---------------------------------------|--|---|
| 2: 2 cortes<br>No. de puntas  |  | S: Mango<br>Tipo                    |  | R: Con refrigeración<br>Interna mano derecha<br>NR: Sin refrigeración<br>Interna mano derecha<br><b>Refrigeración &amp; mano</b> |  | W: Weldon<br>C: Cilindrico<br><b>Tipo de mango</b> |  | 130: 130 mm<br><b>Longitud total</b>  |  |   |
| <span style="font-size: 2em; font-weight: bold; letter-spacing: 0.5em;">TP 2 P S 050 R-2 W 32-130-LN17</span> |  |                                     |  |  |  |  |  |                                       |  |   |
| <b>Tangen-Pro</b>   |  | <b>Ángulo de posición</b><br>P: 90° |  | <b>Diámetro de fresado</b><br>050: Ø50   |  | <b>No. de cortes</b><br>2: 2 cortes                |  | <b>Diámetro del mango</b><br>032: Ø32 |  | <b>Inserto aplicable</b><br>LN08 : LNKT08<br>LN14 : LNKT14<br>LN17 : LNKT17 |

#### • Tipo plato

|   |  |                                     |  |  |  |  |  |   |  |
|---|--|-------------------------------------|--|--|--|--|--|---|--|
| 2: 2 cortes<br>No. de cortes  |  | C: Plato<br>Tipo                    |  | 080: Ø80<br><b>Diámetro de fresado</b>                 |  | 22: 22 mm<br><b>Diámetro interior</b>  |  | LN08 : LNKT08<br>LN14 : LNKT14<br>LN17 : LNKT17<br><b>Inserto aplicable</b> |  |
| <span style="font-size: 2em; font-weight: bold; letter-spacing: 0.5em;">TP 2 P C M 080 R-22-7-LN17</span> |  |                                     |  |  |  |  |  |   |  |
| <b>Tangen-Pro</b>   |  | <b>Ángulo de posición</b><br>P: 90° |  | <b>Norma</b><br>M: Métrica<br>A: Pulgadas<br>Sin: Asia |  | <b>Refrigeración &amp; mano</b><br>R: Con refrigeración<br>mano derecha<br>NR: Sin refrigeración<br>mano derecha |  | <b>No. de cortes</b><br>7: 7 cortes   |  |



### Características del inserto



#### 1 Área de fijación por cuña

- Asiento para fijación en cuña  
→ Genera una mayor fuerza de amarre

#### 2 Rompevirutas con gran ángulo de corte

- Gran ángulo de corte
- Suave flujo de viruta  
→ Incremento en la vida de la placa

#### 3 Saliente convexo

- Mejora la salida de viruta
- Mejora la rigidez

#### 4 Agujero lateral (Tipo tangencial)

- Mayor estabilidad de amarre

#### 5 Mayor ángulo de corte

- Mejora el rendimiento a la vez que disminuye la carga de filo

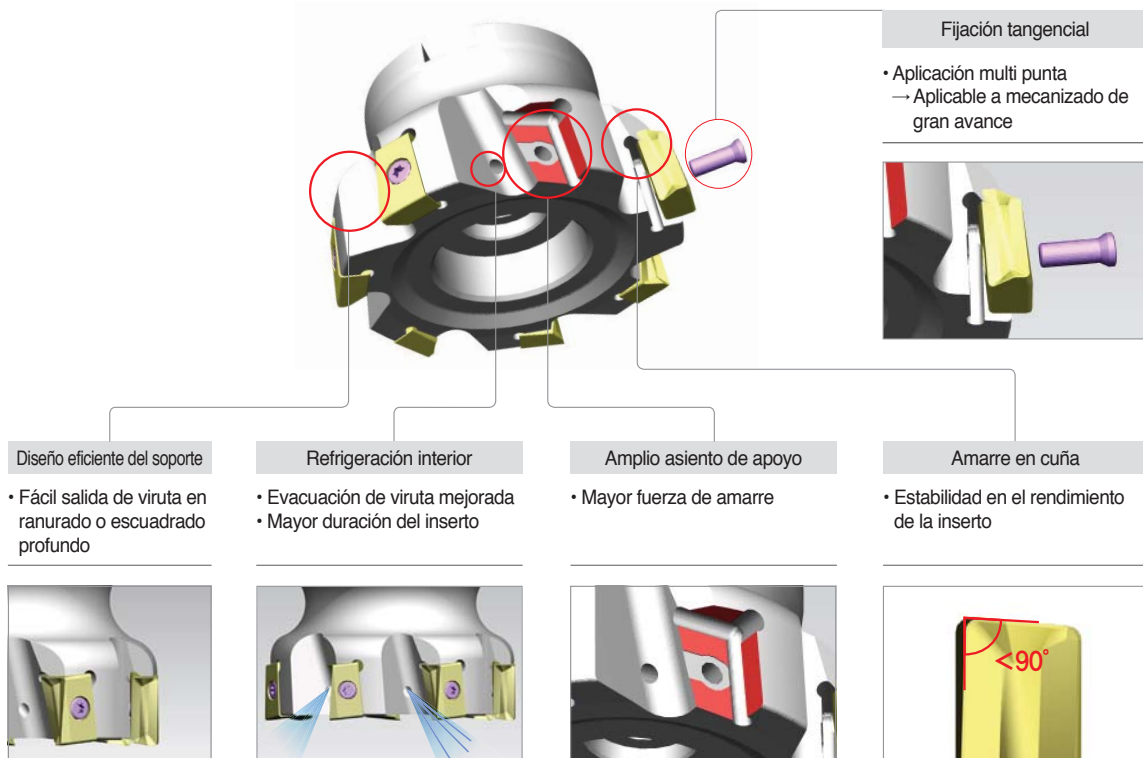
#### 6 2-niveles de inclinación lateral

- 1ª Positiva incrementa la rigidez
- 2ª negativa incrementa la estabilidad  
→ Resistencia al descantillado y mejora la superficie de acabado

### Características del soporte

- Sistema de fijación tangencial. Placas en forma de cuña y alojamientos espaciosos  
→ Mayor estabilidad de amarre  
→ Menos vibraciones y resistencia al corte durante el mecanizado

- Diseño H/D optimizado con forma curva para una suave salida de viruta  
→ Excelente evacuación en ranurado o escuadrado profundo

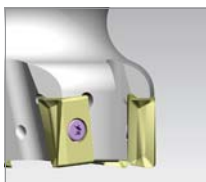


#### Fijación tangencial

- Aplicación multi punta  
→ Aplicable a mecanizado de gran avance

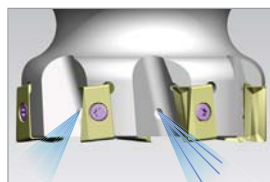
#### Diseño eficiente del soporte

- Fácil salida de viruta en ranurado o escuadrado profundo



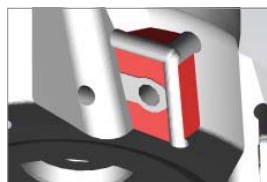
#### Refrigeración interior

- Evacuación de viruta mejorada
- Mayor duración del inserto



#### Amplio asiento de apoyo

- Mayor fuerza de amarre



#### Amarre en cuña

- Estabilidad en el rendimiento de la inserto



### Guía de aplicación por calidades

| Tipo de mecanizado |                           | P                |              | K         | N        |
|--------------------|---------------------------|------------------|--------------|-----------|----------|
|                    |                           | Acero al carbono | Acero aleado | Fundición | Aluminio |
| Calidades          | Mecanizado alta velocidad | PC5300           | PC5300       | PC6510    | H01      |
|                    | Mecanizado general        | PC5400           | PC5300       | PC6510    | H01      |
|                    | Corte interrumpido        | PC5400           | PC5400       | PC5300    | H01      |

## Características del rompevirutas

| Inserto |  | Filo de corte | Usos               | Características  |
|---------|--|---------------|--------------------|--|
| MA      |  |               | Aluminio           | Filo de corte positivo y afilado para uso exclusivo de materiales no ferrosos, garantizando excelente flujo de viruta y buena resistencia al filo de aportación gracias a la superficie pulida |
| ML      |  |               | Corte ligero       | El diseño del rompevirutas posibilita bajas fuerzas de corte que permiten una excelente vida de herramienta y buenos acabados en corte ligero y de materiales de difícil mecanizado            |
| MM      |  |               | Aplicación general | Diseño universal para operaciones de escuadrado, adecuado para la mayoría de aplicaciones  |

## Condiciones de corte recomendadas

### • LNKT08

| Material pieza | Calidades | vc (m/min) | fz (mm/diente) | Max. ap (mm) | Inserto recomendada |                  |
|----------------|-----------|------------|----------------|--------------|---------------------|------------------|
| P              | Acero     | PC5300     | 150~240        | 0.25~0.05    | 8.0                 | LNKT0804□□PNR-MM |
|                |           | PC5400     | 130~210        | 0.25~0.05    | 8.0                 |                  |
| K              | Fundición | PC6510     | 100~250        | 0.25~0.05    | 8.0                 | LNKT0804□□PNR-ML |
|                |           | PC5300     | 100~200        | 0.25~0.05    | 8.0                 |                  |
| N              | Aluminio  | H01        | 500~1000       | 0.25~0.05    | 8.0                 | LNKT0804□□PNR-MA |

\* La tabla superior hace referencia a condiciones de corte generales pueden ser modificadas hasta 300m/min y avances de 0.5mm/diente dependiendo de las condiciones de uso

### • LNKT14

| Material pieza | Calidades | vc (m/min) | fz (mm/diente) | Max. ap (mm) | Inserto recomendada |                  |
|----------------|-----------|------------|----------------|--------------|---------------------|------------------|
| P              | Acero     | PC5300     | 150~240        | 0.25~0.05    | 12.7                | LNKT1406□□PNR-MM |
|                |           | PC5400     | 130~210        | 0.25~0.05    | 12.7                |                  |
| K              | Fundición | PC6510     | 100~250        | 0.25~0.05    | 12.7                | LNKT1406□□PNR-ML |
|                |           | PC5300     | 100~200        | 0.25~0.05    | 12.7                |                  |
| N              | Aluminio  | H01        | 500~1000       | 0.25~0.05    | 12.7                | LNKT1406□□PNR-MA |

\* La tabla superior hace referencia a condiciones de corte generales pueden ser modificadas hasta 300m/min y avances de 0.5mm/diente dependiendo de las condiciones de uso

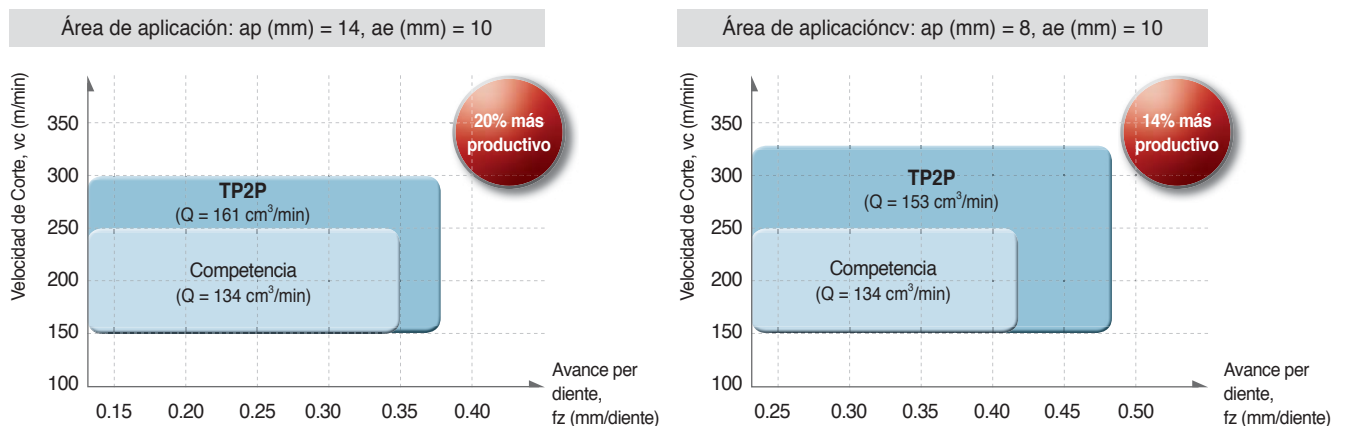
### • LNKT17

| Material pieza | Calidades | vc (m/min) | fz (mm/diente) | Max. ap (mm) | Inserto recomendada |                  |
|----------------|-----------|------------|----------------|--------------|---------------------|------------------|
| P              | Acero     | PC5300     | 150~240        | 0.25~0.05    | 16.5                | LNKT1707□□PNR-MM |
|                |           | PC5400     | 130~210        | 0.25~0.05    | 16.5                |                  |
| K              | Fundición | PC6510     | 100~250        | 0.25~0.05    | 16.5                | LNKT1707□□PNR-ML |
|                |           | PC5300     | 100~200        | 0.25~0.05    | 8.0                 |                  |
| N              | Aluminio  | H01        | 500~1000       | 0.25~0.05    | 16.5                | LNKT1707□□PNR-MA |

\* La tabla superior hace referencia a condiciones de corte generales pueden ser modificadas hasta 300m/min y avances de 0.5mm/diente dependiendo de las condiciones de uso

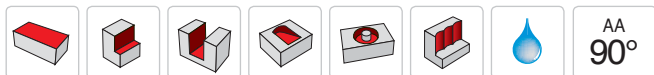
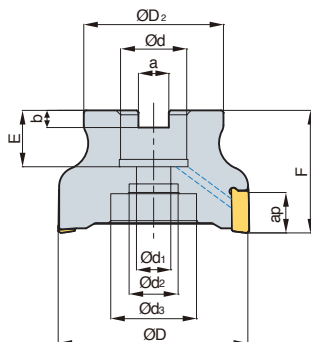
## Área de aplicación

► Mayor velocidad y avance que la competencia aumentando la maquinabilidad.





# TP2PCM-LN08 new



• AR: -6°  
• RR: -26°~ -22°

(mm)

| Codigo                | ØD | ØD2 | Ød | Ød1 | Ød2 | Ød3 | a | b    | E   | F  | ap | kg  |      |
|-----------------------|----|-----|----|-----|-----|-----|---|------|-----|----|----|-----|------|
| TP2PCM 040R-16-6-LN08 | 6  | 40  | 35 | 16  | 9   | 14  | - | 8.4  | 5.6 | 16 | 40 | 8.0 | 0.19 |
| 040R-16-7-LN08        | 7  | 40  | 35 | 16  | 9   | 14  | - | 8.4  | 5.6 | 16 | 40 | 8.0 | 0.19 |
| 050R-22-7-LN08        | 7  | 50  | 41 | 22  | 11  | 18  | - | 10.4 | 6.3 | 20 | 40 | 8.0 | 0.31 |
| 050R-22-10-LN08       | 10 | 50  | 41 | 22  | 11  | 18  | - | 10.4 | 6.3 | 20 | 40 | 8.0 | 0.31 |
| 063R-22-10-LN08       | 10 | 63  | 49 | 22  | 11  | 18  | - | 10.4 | 6.3 | 20 | 40 | 8.0 | 0.49 |
| 063R-22-11-LN08       | 11 | 63  | 49 | 22  | 11  | 18  | - | 10.4 | 6.3 | 20 | 40 | 8.0 | 0.49 |

## Insertos disponibles

LNKT-MA LNKT-ML LNKT-MM



| Codigo            | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|-------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|                   | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| LNKT 080404PNR-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | E10 |
| 080408PNR-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| 080404PNR-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| 080408PNR-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| 080404PNR-MM      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| 080408PNR-MM      |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |

## Adaptadores disponibles

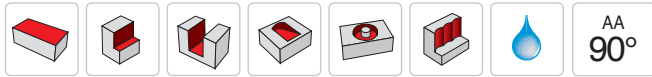
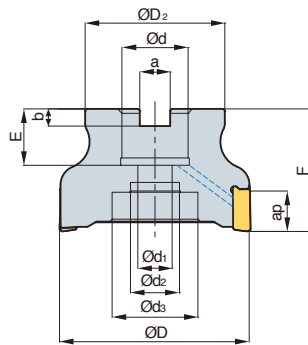
| Codigo                | Adaptadores NC |
|-----------------------|----------------|
| TP2PCM 040R-16-6-LN08 | BT□□-FMC16-□□  |
| 040R-16-7-LN08        |                |
| 050R-22-7-LN08        | BT□□-FMC22-□□  |
| 050R-22-10-LN08       |                |
| 063R-22-10-LN08       |                |
| 063R-22-11-LN08       |                |

## Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø40~Ø63          | FTKA02565S | TW07S |

Insertos disponibles E10 Detalles del cortador E400~E402

## TP2PC(M)-LN14 new



• AR: -6°  
• RR: -22° ~ -12°

(mm)

| Codigo |                    | ØD | ØD <sub>2</sub> | Ød | Ød <sub>1</sub> | Ød <sub>2</sub> | Ød <sub>3</sub> | a  | b    | E   | F  | ap |      |      |
|--------|--------------------|----|-----------------|----|-----------------|-----------------|-----------------|----|------|-----|----|----|------|------|
| TP2PCM | 040R-16-4-LN14     | 4  | 40              | 35 | 16              | 9               | 14              | -  | 8.4  | 5.6 | 19 | 40 | 12.7 | 0.19 |
|        | 040R-16-5-LN14     | 5  | 40              | 35 | 16              | 9               | 14              | -  | 8.4  | 5.6 | 19 | 40 | 12.7 | 0.19 |
|        | 050R-22-5-LN14     | 5  | 50              | 42 | 22              | 11              | 18              | -  | 10.4 | 6.3 | 20 | 40 | 12.7 | 0.29 |
|        | 050R-22-6-LN14     | 6  | 50              | 42 | 22              | 11              | 18              | -  | 10.4 | 6.3 | 20 | 40 | 12.7 | 0.29 |
|        | 063R-22-6-LN14     | 6  | 63              | 49 | 22              | 11              | 18              | -  | 10.4 | 6.3 | 20 | 40 | 12.7 | 0.49 |
|        | 063R-22-8-LN14     | 8  | 63              | 49 | 22              | 11              | 18              | -  | 10.4 | 6.3 | 20 | 40 | 12.7 | 0.49 |
|        | 080R-27-7-LN14     | 7  | 80              | 57 | 27              | 14              | 20              | 35 | 12.4 | 7   | 23 | 50 | 12.7 | 0.94 |
|        | 080R-27-10-LN14    | 10 | 80              | 57 | 27              | 14              | 20              | 35 | 12.4 | 7   | 23 | 50 | 12.7 | 0.94 |
|        | 100R-32-8-LN14     | 8  | 100             | 70 | 32              | 18              | 28              | 45 | 14.4 | 8   | 28 | 63 | 12.7 | 1.73 |
|        | 100R-32-13-LN14    | 13 | 100             | 70 | 32              | 18              | 28              | 45 | 14.4 | 8   | 28 | 63 | 12.7 | 1.73 |
|        | 125R-40-9-LN14     | 9  | 125             | 90 | 40              | 22              | 32              | 54 | 16.4 | 9   | 30 | 63 | 12.7 | 2.98 |
|        | 125R-40-17-LN14    | 17 | 125             | 90 | 40              | 22              | 32              | 54 | 16.4 | 9   | 30 | 63 | 12.7 | 3.04 |
| TP2PC  | 080R-25.4-7-LN14   | 7  | 80              | 57 | 25.4            | 14              | 25              | 38 | 9.5  | 6   | 25 | 50 | 12.7 | 0.95 |
|        | 080R-25.4-10-LN14  | 10 | 80              | 57 | 25.4            | 14              | 25              | 38 | 9.5  | 6   | 25 | 50 | 12.7 | 0.96 |
|        | 100R-31.75-8-LN14  | 8  | 100             | 70 | 31.75           | 18              | 28              | 45 | 12.7 | 8   | 32 | 63 | 12.7 | 1.76 |
|        | 100R-31.75-13-LN14 | 13 | 100             | 70 | 31.75           | 18              | 28              | 45 | 12.7 | 8   | 32 | 63 | 12.7 | 1.81 |
|        | 125R-38.1-9-LN14   | 9  | 125             | 90 | 38.1            | 22              | 32              | 54 | 15.9 | 10  | 35 | 63 | 12.7 | 2.99 |
|        | 125R-38.1-17-LN14  | 17 | 125             | 90 | 38.1            | 22              | 32              | 54 | 15.9 | 10  | 35 | 63 | 12.7 | 3.07 |

### Insertos disponibles



| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| LNKT   | 140608PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | E10 |
|        | 140608PNR-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|        | 140608PNR-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |

### Adaptadores disponibles

| Codigo          | Adaptadores NC | Codigo             | Adaptadores NC  |                   |
|-----------------|----------------|--------------------|-----------------|-------------------|
| TP2PCM          | 040R-16-4-LN14 | TP2PCM             | 100R-32-8-LN14  |                   |
|                 | 040R-16-5-LN14 |                    | 100R-32-13-LN14 |                   |
|                 | 050R-22-5-LN14 |                    | 125R-40-9-LN14  |                   |
|                 | 050R-22-6-LN14 |                    | 125R-40-17-LN14 |                   |
|                 | 063R-22-6-LN14 |                    | TP2PC           | 080R-25.4-7-LN14  |
|                 | 063R-22-8-LN14 |                    |                 | 080R-25.4-10-LN14 |
| 080R-27-7-LN14  | TP2PC          | 100R-31.75-8-LN14  |                 |                   |
| 080R-27-10-LN14 |                | 100R-31.75-13-LN14 |                 |                   |
|                 |                | 125R-38.1-9-LN14   |                 |                   |
|                 |                | 125R-38.1-17-LN14  |                 |                   |

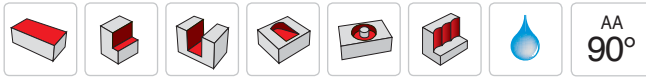
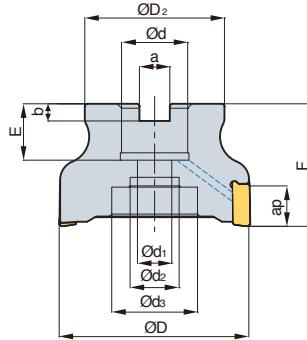
### Partes

| Especificaciones |                       |                |
|------------------|-----------------------|----------------|
| Ø40 ~ Ø125       | Tornillo<br>FTKA03510 | Llave<br>TW15S |

Insertos disponibles E10    Detalles del cortador E400-E402



# TP2PC(M)-LN17 new



• AR: -6°  
• RR: -21° ~ -15°

(mm)

| Codigo          | ØD                | ØD2 | Ød  | Ød1 | Ød2   | Ød3 | a  | b    | E    | F   | ap | $\frac{kg}{m^3}$ |      |      |
|-----------------|-------------------|-----|-----|-----|-------|-----|----|------|------|-----|----|------------------|------|------|
| TP2PCM          | 040R-16-3-LN17    | 3   | 40  | 35  | 16    | 9   | 14 | -    | 8.4  | 5.6 | 16 | 40               | 16.5 | 0.17 |
|                 | 040R-16-4-LN17    | 4   | 40  | 35  | 16    | 9   | 14 | -    | 8.4  | 5.6 | 16 | 40               | 16.5 | 0.17 |
|                 | 050R-22-4-LN17    | 4   | 50  | 41  | 22    | 11  | 18 | -    | 10.4 | 6.3 | 20 | 40               | 16.5 | 0.27 |
|                 | 050R-22-5-LN17    | 5   | 50  | 41  | 22    | 11  | 18 | -    | 10.4 | 6.3 | 20 | 40               | 16.5 | 0.26 |
|                 | 063R-22-6-LN17    | 6   | 63  | 49  | 22    | 11  | 18 | -    | 10.4 | 6.3 | 20 | 40               | 16.5 | 0.46 |
|                 | 063R-22-7-LN17    | 7   | 63  | 49  | 22    | 11  | 18 | -    | 10.4 | 6.3 | 20 | 40               | 16.5 | 0.47 |
|                 | 080R-27-7-LN17    | 7   | 80  | 57  | 27    | 14  | 20 | 35   | 12.4 | 7   | 23 | 50               | 16.5 | 0.89 |
|                 | 080R-27-8-LN17    | 8   | 80  | 57  | 27    | 14  | 20 | 35   | 12.4 | 7   | 23 | 50               | 16.5 | 0.91 |
|                 | 100R-32-8-LN17    | 8   | 100 | 67  | 32    | 18  | 28 | 45   | 14.4 | 8   | 25 | 63               | 16.5 | 1.68 |
|                 | 100R-32-9-LN17    | 9   | 100 | 67  | 32    | 18  | 28 | 45   | 14.4 | 8   | 25 | 63               | 16.5 | 1.75 |
|                 | 125R-40-10-LN17   | 10  | 125 | 90  | 40    | 22  | 32 | 52   | 16.4 | 10  | 30 | 63               | 16.5 | 2.88 |
| 125R-40-11-LN17 | 11                | 125 | 90  | 40  | 22    | 32  | 52 | 16.4 | 10   | 30  | 63 | 16.5             | 2.88 |      |
| TP2PC           | 080R-25.4-7-LN17  | 7   | 80  | 57  | 25.4  | 14  | 20 | 35   | 9.5  | 6   | 25 | 50               | 16.5 | 0.92 |
|                 | 080R-25.4-8-LN17  | 8   | 80  | 57  | 25.4  | 14  | 20 | 35   | 9.5  | 6   | 25 | 50               | 16.5 | 0.93 |
|                 | 100R-31.75-8-LN17 | 8   | 100 | 67  | 31.75 | 18  | 28 | 45   | 12.7 | 8   | 32 | 63               | 16.5 | 1.73 |
|                 | 100R-31.75-9-LN17 | 9   | 100 | 67  | 31.75 | 18  | 28 | 45   | 12.7 | 8   | 32 | 63               | 16.5 | 1.73 |
|                 | 125R-38.1-10-LN17 | 10  | 125 | 90  | 38.1  | 22  | 32 | 52   | 15.9 | 9   | 35 | 63               | 16.5 | 3.06 |
|                 | 125R-38.1-11-LN17 | 11  | 125 | 90  | 38.1  | 22  | 32 | 52   | 15.9 | 9   | 35 | 63               | 16.5 | 2.91 |

## Insertos disponibles



| Codigo | Cermet       |      |        |        |        |        |        | Sin Rec. | pag. | Codigo | Cermet       |        |        |        |        |        |        | Sin Rec. | pag. |
|--------|--------------|------|--------|--------|--------|--------|--------|----------|------|--------|--------------|--------|--------|--------|--------|--------|--------|----------|------|
|        | CN2000       | CN30 | NCM325 | NC5330 | NCM535 | NCM545 | PC2505 |          |      |        | PC2510       | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 |          |      |
| LNKT   | 170704PNR-MA |      |        |        |        |        |        |          | E10  | LNKT   | 170716PNR-ML |        |        |        |        |        |        |          | E10  |
|        | 170708PNR-MA |      |        |        |        |        |        |          |      |        | 170720PNR-ML |        |        |        |        |        |        |          |      |
|        | 170712PNR-MA |      |        |        |        |        |        |          |      |        | 170704PNR-MM |        |        |        |        |        |        |          |      |
|        | 170716PNR-MA |      |        |        |        |        |        |          |      |        | 170708PNR-MM |        |        |        |        |        |        |          |      |
|        | 170720PNR-MA |      |        |        |        |        |        |          |      |        | 170712PNR-MM |        |        |        |        |        |        |          |      |
|        | 170704PNR-ML |      |        |        |        |        |        |          |      |        | 170716PNR-MM |        |        |        |        |        |        |          |      |
|        | 170708PNR-ML |      |        |        |        |        |        |          |      |        | 170720PNR-MM |        |        |        |        |        |        |          |      |
|        | 170712PNR-ML |      |        |        |        |        |        |          |      |        |              |        |        |        |        |        |        |          |      |

## Adaptadores disponibles

| Codigo | Adaptadores NC | Codigo | Adaptadores NC    |
|--------|----------------|--------|-------------------|
| TP2PCM | 040R-16-3-LN17 | TP2PCM | 100R-32-8-LN17    |
|        | 040R-16-4-LN17 |        | 100R-32-9-LN17    |
|        | 050R-22-4-LN17 |        | 125R-40-10-LN17   |
|        | 050R-22-5-LN17 |        | 125R-40-11-LN17   |
|        | 063R-22-6-LN17 | TP2PC  | 080R-25.4-7-LN17  |
|        | 063R-22-7-LN17 |        | 080R-25.4-8-LN17  |
|        | 080R-27-7-LN17 |        | 100R-31.75-8-LN17 |
|        | 080R-27-8-LN17 |        | 100R-31.75-9-LN17 |
|        |                |        | 125R-38.1-10-LN17 |
|        |                |        | 125R-38.1-11-LN17 |

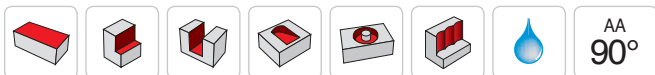
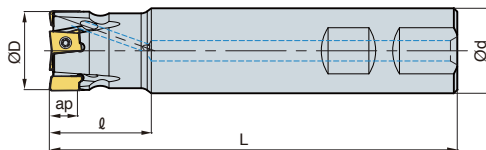
## Partes

| Especificaciones | Tornillo  | Llave |
|------------------|-----------|-------|
| Ø40~Ø125         | FTKA0412B | TW15S |

Insertos disponibles E10    Detalles del cortador E400~E402



# TP2PS-LN08 new



AA **90°**  
 • AR: -6°  
 • RR: -35°~ -26°

(mm)

| Codigo | Insertos           | ØD | Ød | l  | L  | ap  | kg   |
|--------|--------------------|----|----|----|----|-----|------|
| TP2PS  | 020R-2W20-120-LN08 | 2  | 20 | 20 | 30 | 120 | 0.25 |
|        | 020R-3W20-120-LN08 | 3  | 20 | 20 | 30 | 120 | 0.25 |
|        | 025R-3W25-120-LN08 | 3  | 25 | 25 | 30 | 120 | 0.39 |
|        | 025R-4W25-120-LN08 | 4  | 25 | 25 | 30 | 120 | 0.39 |

## Insertos disponibles



| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| LNKT   | 080404PNR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     | E10 |
|        | 080408PNR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 080404PNR-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 080408PNR-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 080404PNR-MM |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 080408PNR-MM |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |

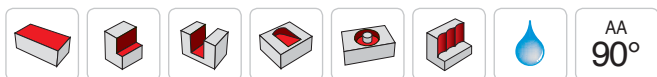
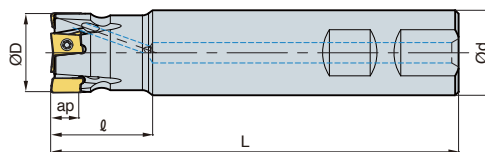
## Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø16-Ø25          | FTKA02565S | TW07S |

Insertos disponibles E10



# TP2PS-LN14 new



AA  
90°  
• AR: -6°  
• RR: -21° ~ -18°

(mm)

| Codigo |                    | ØD | Ød | l  | L  | ap  |      |
|--------|--------------------|----|----|----|----|-----|------|
| TP2PS  | 025R-2W25-130-LN14 | 2  | 25 | 25 | 40 | 130 | 0.41 |
|        | 032R-3W32-130-LN14 | 3  | 32 | 32 | 40 | 130 | 0.69 |
|        | 040R-3W32-130-LN14 | 3  | 40 | 32 | 40 | 130 | 0.75 |
|        | 040R-4W32-130-LN14 | 4  | 40 | 32 | 40 | 130 | 0.76 |
|        | 050R-4W32-130-LN14 | 4  | 50 | 32 | 40 | 130 | 0.85 |
|        | 050R-5W32-130-LN14 | 5  | 50 | 32 | 40 | 130 | 0.84 |

## Insertos disponibles

LNKT-MA LNKT-ML LNKT-MM



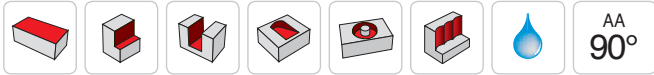
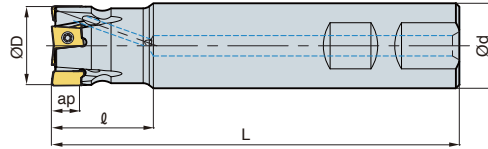
| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| LNKT   | 140608PNR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     | E10 |
|        | 140608PNR-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 140608PNR-MM |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |

## Partes

| Especificaciones |                       |                |
|------------------|-----------------------|----------------|
| Ø25 ~ Ø50        | Tornillo<br>FTKA03510 | Llave<br>TW15S |

Insertos disponibles E10

# TP2PS-LN17 new



AA 90°  
 • AR: -6°  
 • RR: -26° ~ -18°

(mm)

| Codigo |                    | ØD | Ød | l  | L  | ap  |      |
|--------|--------------------|----|----|----|----|-----|------|
| TP2PS  | 032R-2W32-130-LN17 | 2  | 32 | 32 | 40 | 130 | 0.68 |
|        | 032R-3W32-130-LN17 | 3  | 32 | 32 | 40 | 130 | 0.67 |
|        | 040R-3W32-130-LN17 | 3  | 40 | 32 | 40 | 130 | 0.73 |
|        | 040R-4W32-130-LN17 | 4  | 40 | 32 | 40 | 130 | 0.73 |
|        | 050R-4W32-130-LN17 | 4  | 50 | 32 | 40 | 130 | 0.83 |
|        | 050R-5W32-130-LN17 | 5  | 50 | 32 | 40 | 130 | 0.83 |

## Insertos disponibles



| Codigo       | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|              | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| LNKT         | 170704PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | E10 |
|              | 170708PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|              | 170712PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|              | 170716PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|              | 170720PNR-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|              | 170704PNR-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|              | 170708PNR-ML |      |            |        |        |        |        |        |        |        | •      |        |        | •        | •      |       |      |     |     |
|              | 170712PNR-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|              | 170716PNR-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|              | 170720PNR-ML |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|              | 170704PNR-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|              | 170708PNR-MM |      |            |        |        |        |        |        |        |        |        |        |        | •        | •      |       |      |     |     |
|              | 170712PNR-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
|              | 170716PNR-MM |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| 170720PNR-MM |              |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |

## Partes

|                  |                       |                |
|------------------|-----------------------|----------------|
| Especificaciones |                       |                |
| Ø32-Ø50          | Tornillo<br>FTKA0412B | Llave<br>TW15S |

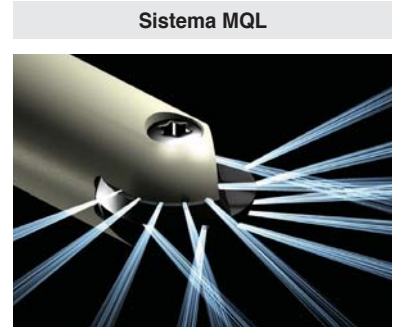
Insertos disponibles E10



Mayor durabilidad debido al excelente rendimiento de las nuevas calidades

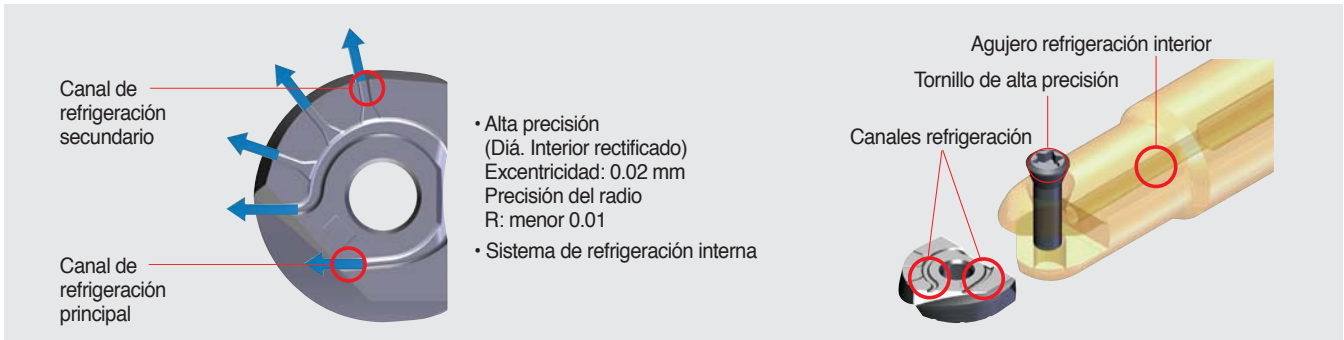
# Laser Mill

- Gran durabilidad debido al excelente rendimiento de las nuevas calidades
- El rendimiento óptimo de la placa se alcanza usando el sistema MQL de refrigeración
- Fácil montaje usando un único tornillo
- Varias líneas de soportes: mango de acero, metal duro y modular
- Fresas de placa intercambiable de alta precisión para acabado de moldes



- Sistema respetuoso con el medio ambiente
- Disminuye el coste de refrigerante
- Lubricación en el punto de corte
- Control de viruta mejorado
- Mayor durabilidad & mejor acabado superficial

## Sistema de fijación



## Características



- Seis placas distintas para un mismo soporte
- Un único tornillo para fijar la placa: sistema sencillo de amarre
- Diversas opciones de mango (Acero, Metal duro, Modular)
- MQL- Respetuoso con el medio ambiente, mayor rendimiento & superficie de acabado

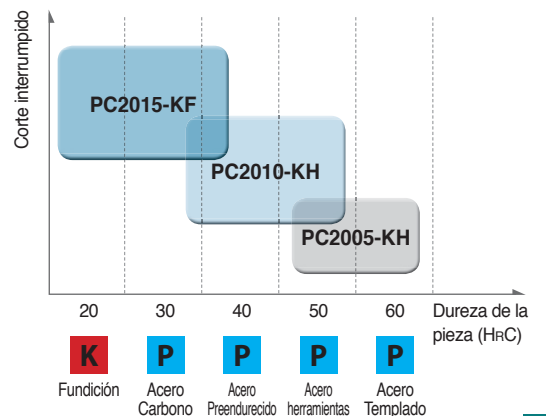
LBS, LR bajo demanda

| LBH-Bola   | LRH-Tórica  | LFH-Gran avance  | LCF-Chaflanar   | LBS-Bola   | LR-Tórica  |
|--|---|--|---|--|--|
|  |   |  |   |  |  |
| <ul style="list-style-type: none"> <li>• Filo de corte helicoidal</li> <li>• Aplicable a materiales duros y alto avance</li> </ul> | <ul style="list-style-type: none"> <li>• Filo de corte helicoidal</li> <li>• Varias opciones de -R</li> </ul> | <ul style="list-style-type: none"> <li>• Filo de corte helicoidal</li> <li>• Para mecanizado de gran avance</li> </ul> | <ul style="list-style-type: none"> <li>• Filo de corte recto</li> <li>• Para puntear   cantear</li> </ul> | <ul style="list-style-type: none"> <li>• Filo de corte recto</li> <li>• Para gran precisión</li> </ul> | <ul style="list-style-type: none"> <li>• Filo de corte recto</li> <li>• Varias opciones de -R</li> </ul> |

## Características de las calidades Laser Mill

|               |   |
|---------------|---|
| <b>PC2005</b> | <ul style="list-style-type: none"> <li>• Calidad extraordinariamente dura</li> <li>• Extraordinario equilibrio entre la calidad y la geometría de filo</li> <li>• Especialmente diseñada para mecanizado de materiales templados</li> </ul>   |
| <b>PC2010</b> | <ul style="list-style-type: none"> <li>• Alta Resistencia al desgaste y excelente tenacidad</li> <li>• Destaca el equilibrio entre la Resistencia al choque térmico y la fortaleza del filo de corte</li> <li>• Especialmente diseñada para el mecanizado de acero y acero pre tratado</li> </ul> |
| <b>PC2015</b> | <ul style="list-style-type: none"> <li>• Alta Resistencia al filo de aportación y excelente tenacidad</li> <li>• Destaca el equilibrio entre tenacidad y diseño del filo de corte</li> <li>• Especialmente diseñada para el mecanizado de acero al carbono</li> </ul>                             |

## Guía de uso según material



## Características de los rompevirutas KF y KH

- KF: rompevirutas exclusivo para el mecanizado estable de acero al carbono con sus características de alta resistencia al desgaste en la parte central y diseño mejorado de la cuchilla
- KH: inserto más fuerte con la combinación de ángulo de inclinación y ángulo de alivio que son ideales para el mecanizado de piezas de alta dureza

| Tipo                                    | Comparación del diseño  |  |  |  |
|---|---|--|--|--|
| <b>Estandar</b><br>(para corte general) |   |  |  |  |
|   | <ul style="list-style-type: none"> <li>• Adecuado para corte general</li> <li>• Inserte la forma para un rendimiento uniforme</li> </ul>  |  |  |  |
| <b>KH</b><br>(Para aceros templados)    |   |  |  |  |
|   | <ul style="list-style-type: none"> <li>• Moldeador central adecuado para el mecanizado de piezas de alta dureza y vida útil uniforme de la herramienta en la parte central</li> <li>• Diseño del filo de corte mejorado por el ángulo de ataque (<math>\alpha^\circ</math>)</li> <li>• Ángulo de inclinación (<math>\beta^\circ</math>) aumenta la resistencia a la carga mecánica del filo de corte</li> </ul> |  |  |  |
| <b>KF</b><br>(Para acero al carbono)    |   |  |  |  |
|   | <ul style="list-style-type: none"> <li>• El cinkel más pequeño mejora la resistencia al desgaste en el centro para el mecanizado de acero al carbono</li> <li>• Diseño del filo de corte mejorado por el ángulo de ataque (<math>\alpha^\circ</math>)</li> <li>• Mayor vida útil y mejor rendimiento con el diseño del filo de corte</li> </ul>   |  |  |  |

## Condiciones de corte recomendadas

|                                |                             | Pieza Trabajo |                  |                            | Calidades | Chip breaker               | Condiciones de corte recomendadas |                |         |         |
|--------------------------------|-----------------------------|---------------|------------------|----------------------------|-----------|----------------------------|-----------------------------------|----------------|---------|---------|
|                                |                             | ISO           | Material         | HB (HrC)                   |           |                            | vc (m/min)                        | fz (mm/diente) | ap (mm) | ae (mm) |
| <b>K</b>                       | Fundición gris              | GC250         | 180 (8)          | PC2015<br>PC2010<br>PC2005 | KF        | 130~210                    | 0.2~0.5                           | 0.07D          | 0.07D   |         |
|                                | Fundición dúctil            | GCD600        | 250 (24)         |                            |           | 170~250                    | 0.2~0.5                           | 0.07D          | 0.07D   |         |
| <b>P</b>                       | Acero al carbono            | S20C~S50C     | 150              |                            |           | PC2010<br>PC2015<br>PC210F | KH                                | 130~210        | 0.1~0.3 | 0.7D    |
|                                | Acero aleado                | SCM21~SCM5H   | 270 (28)         | 100~160                    | 0.1~0.3   |                            |                                   | 0.5D           | 0.5D    |         |
|                                | Acero pre-endurecido        | KP4M          | 300 (32)         |                            |           |                            |                                   |                |         |         |
|                                |                             | NIMAX         | 370 (40)         |                            |           |                            |                                   |                |         |         |
|                                |                             | CENA1         | 370 (40)         |                            |           |                            |                                   |                |         |         |
|                                |                             | NAK80         | 400 (43)         |                            |           |                            |                                   |                |         |         |
|                                | STAVAX                      | 510 (52)      |                  |                            |           |                            |                                   |                |         |         |
| Acero rápido para herramientas | SKH51~SKH59                 | 550 (55)      | PC2005<br>PC2010 | KH                         | 80~130    | 0.1~0.2                    | 0.3D                              | 0.3D           |         |         |
| Acero para herramientas        | STD61 (forjado en caliente) | 630 (60)      |                  |                            | 70~120    | 0.1~0.2                    | 0.3D                              | 0.3D           |         |         |
|                                | STD11 (forjado en frío)     |               |                  |                            |           |                            |                                   |                |         |         |

| Voladizo         | vc (m/min) | fz (mm/diente) |
|------------------|------------|----------------|
| Por debajo de 3D | 100%       | 100%           |
| 3D~5D            | 70%        | 70%            |
| 5D~8D            | 60%        | 60%            |
| 8D~10D           | 50%        | 50%            |





### Formulas para Condiciones de Corte para Fresado

| Practical Velocidad de Corte | RPM |
|------------------------------|-----|
|------------------------------|-----|

$$v_{ce} = \frac{\pi \times D_e \times n}{1000} \text{ (m/min)}$$

$$n = \frac{v_{ce} \times 1000}{\pi \times D_e} \text{ (min}^{-1}\text{)}$$

| Avance per diente | Avance per minute |
|-------------------|-------------------|
|-------------------|-------------------|

$$f_z = \frac{v_f}{z \times n} \text{ (mm/t)}$$

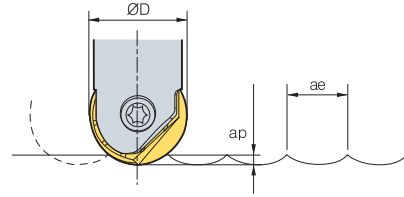
$$v_f = f_z \times z \times n \text{ (mm/min)}$$

| Cantidad de viruta removida | Poder requerido |
|-----------------------------|-----------------|
|-----------------------------|-----------------|

$$Q = \frac{a_p \times a_e \times v_f}{1000} \text{ (cm}^3\text{/min)}$$

$$P_{kw} = \frac{Q \times k_c}{60 \times 102 \times \eta} \text{ (kW)}$$

$$P_{hp} = \frac{P_c}{0.75} \text{ (hp)}$$



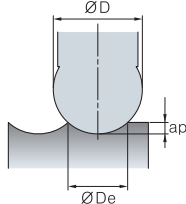
|   |  |
|---|--|
| <b>v<sub>ce</sub></b> = Velocidad de corte (m/min)          | <b>P<sub>kw</sub></b> = Poder requerido (kW)                                 |
| <b>v<sub>ce</sub></b> = Velocidad de corte practica (m/min) | <b>P<sub>hp</sub></b> = Caballas de fuerza requeridos (hp)                   |
| <b>n</b> = Revolución por Minuto (min <sup>-1</sup> )       | <b>Q</b> = Régimen de arranque de viruta (cm <sup>3</sup> /min)              |
| <b>D</b> = Diametro de corte (mm)                           | <b>a<sub>p</sub></b> = Profundidad de corte(mm)                              |
| <b>D<sub>e</sub></b> = Diámetro actual (mm)                 | <b>a<sub>e</sub></b> = Anchura del corte (mm)                                |
| <b>v<sub>f</sub></b> = Avance por Minuto (mm/min)           | <b>k<sub>c</sub></b> = Resistencia de corte Especifica (kg/mm <sup>2</sup> ) |
| <b>f<sub>z</sub></b> = Avance por diente (mm/t)             | <b>η</b> = Eficiencia del Maquinado (%)                                      |
| <b>z</b> = Numero de dientes                                |  |

### Practical Velocidad de Corte calculation formulas

1. Formula para el diametro actual

• Formula para el diametro actual

$$D_e = 2 \sqrt{a_p (D - a_p)}$$



2. θ°Uso: Cálculo de la velocidad de corte en el punto (Velocidad de corte según la profundidad de corte cuando rampa)

• Formula : Velocidad de corte parcial

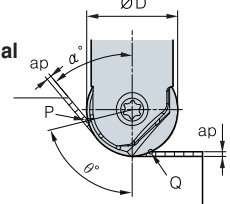
$$v_{ce} = \frac{\pi D \sin \theta \times n}{1000} \text{ (m/min)}$$

$$\theta = \cos^{-1} \left( \frac{D - 2a_p}{D} \right) + (90 - \alpha^\circ)$$

3. En caso de utilizar una p: Cálculo de la velocidad de corte en el punto Q

• Formula : Velocidad de corte parcial

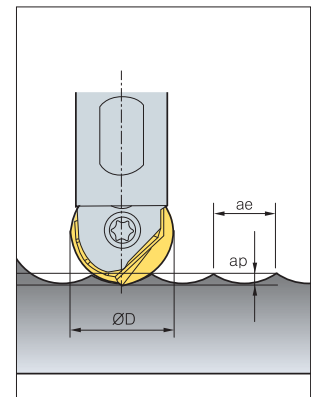
$$v_{ce} = \frac{2\pi n \sqrt{a_p (D - a_p)}}{1000}$$



### Formulas para calcular el corte parcial

|         |  | h (textura de la superficie) (µm) |     |     |     |     |     |      |      |      |      |
|---------|--|-----------------------------------|-----|-----|-----|-----|-----|------|------|------|------|
| ae (mm) |  | 0.1                               | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7  | 0.8  | 0.9  | 1.0  |
| R (mm)  |  |                                   |     |     |     |     |     |      |      |      |      |
| 5       |  | 0.3                               | 1.0 | 2.3 | 4.0 | 6.3 | 9.0 | 12.3 | 16.0 | 20.3 | 25.0 |
| 6       |  | 0.2                               | 0.8 | 1.9 | 3.3 | 5.2 | 7.5 | 10.2 | 13.3 | 16.9 | 20.8 |
| 8       |  | 0.2                               | 0.6 | 1.4 | 2.5 | 3.9 | 5.6 | 7.7  | 10.0 | 12.7 | 15.6 |
| 10      |  | 0.1                               | 0.5 | 1.1 | 2.0 | 3.1 | 4.5 | 6.1  | 8.0  | 10.1 | 12.5 |
| 12.5    |  | 0.1                               | 0.4 | 0.9 | 1.6 | 2.5 | 3.6 | 4.9  | 6.4  | 8.1  | 10.0 |
| 15      |  | 0.1                               | 0.3 | 0.8 | 1.3 | 2.1 | 3.0 | 4.1  | 5.3  | 6.8  | 8.3  |
| 16      |  | 0.1                               | 0.3 | 0.7 | 1.3 | 2.0 | 2.8 | 3.8  | 5.0  | 6.3  | 7.8  |

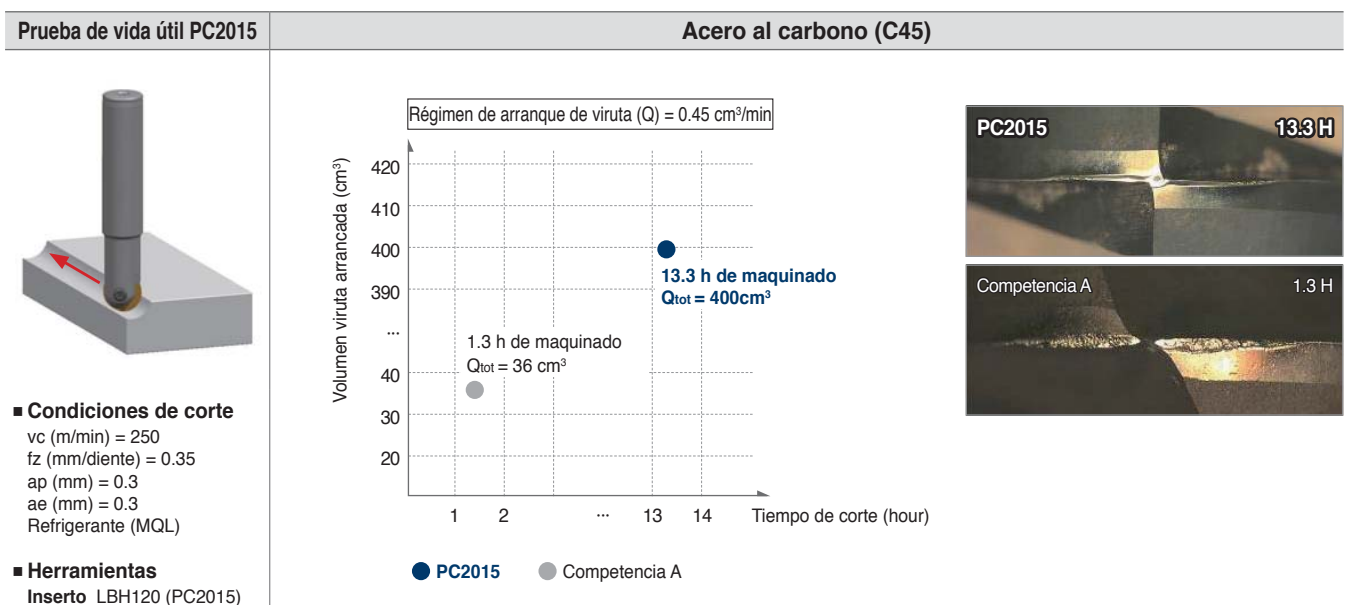
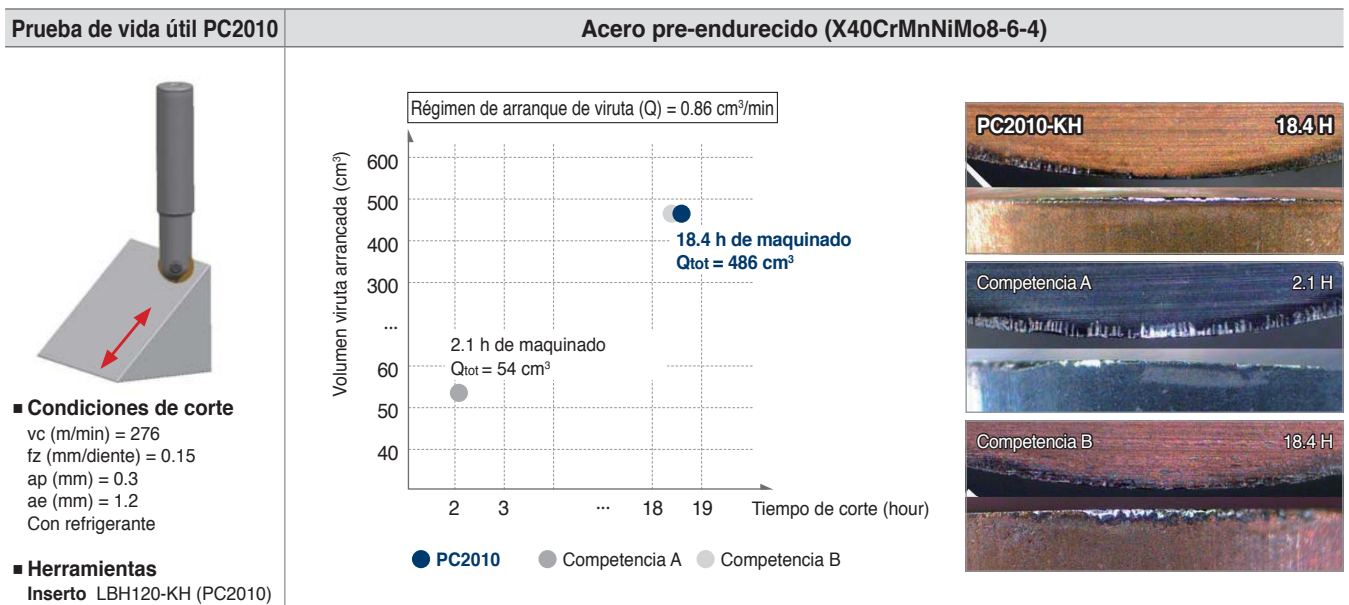
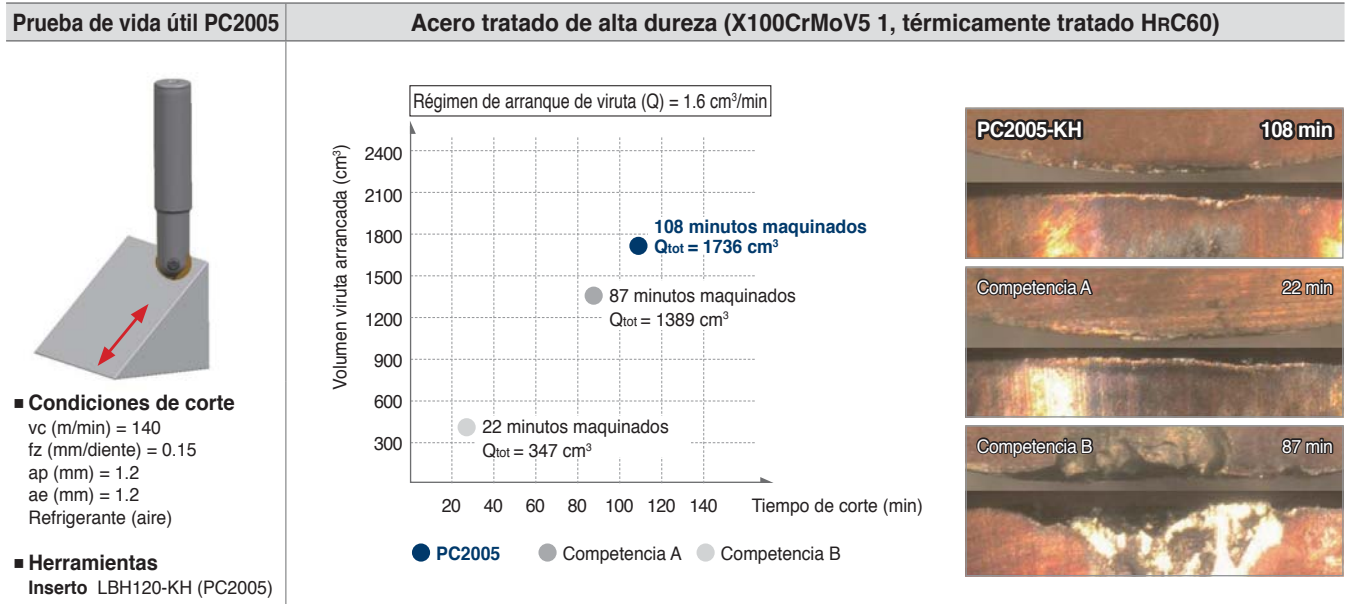
• Formula de aspereza superficial:  $h \text{ (acabado superdicial)} = \frac{(a_e)^2}{8R} \times 1000 \text{ (µm)}$



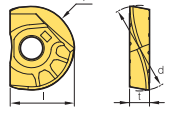
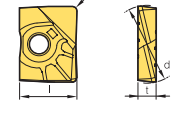
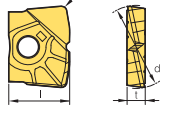
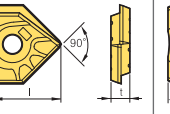
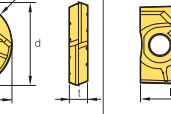
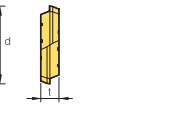
### Datos del Diametro actual

| ap   | ØD | Ø08 | Ø10 | Ø12  | Ø16  | Ø20  | Ø25  | Ø30  | Ø32  |
|------|----|-----|-----|------|------|------|------|------|------|
| 0.1  |    | 1.8 | 2.0 | 2.2  | 2.5  | 2.8  | 3.2  | 3.5  | 3.6  |
| 0.2  |    | 2.5 | 2.8 | 3.1  | 3.6  | 4.0  | 4.5  | 4.9  | 5.0  |
| 0.3  |    | 3.0 | 3.4 | 3.7  | 4.3  | 4.9  | 5.4  | 6.0  | 6.2  |
| 0.5  |    | 3.9 | 4.4 | 4.8  | 5.6  | 6.2  | 7.0  | 7.7  | 7.9  |
| 1.0  |    | 5.3 | 6.0 | 6.6  | 7.7  | 8.7  | 9.8  | 10.8 | 11.1 |
| 1.5  |    | 6.2 | 7.1 | 7.9  | 9.3  | 10.5 | 11.9 | 13.1 | 13.5 |
| 2.0  |    | 6.9 | 8.0 | 8.9  | 10.6 | 12.0 | 13.6 | 15.0 | 15.5 |
| 2.5  |    | 7.4 | 8.7 | 9.7  | 11.6 | 13.2 | 15.0 | 16.6 | 17.2 |
| 3.0  |    | 7.7 | 9.2 | 10.4 | 12.5 | 14.3 | 16.2 | 18.0 | 18.7 |
| 3.5  |    | 7.9 | 9.5 | 10.9 | 13.2 | 15.2 | 17.3 | 19.3 | 20.0 |
| 4.0  |    | 8.0 | 9.8 | 11.3 | 13.9 | 16.0 | 18.3 | 20.4 | 21.2 |
| 5.0  |    |     |     | 11.8 | 14.8 | 17.3 | 20.0 | 22.4 | 23.2 |
| 6.0  |    |     |     | 12.0 | 15.5 | 18.3 | 21.4 | 24.0 | 25.0 |
| 7.0  |    |     |     |      | 15.9 | 19.1 | 22.4 | 25.4 | 26.5 |
| 8.0  |    |     |     |      | 16.0 | 19.6 | 23.3 | 26.5 | 27.7 |
| 10.0 |    |     |     |      |      | 20.0 | 24.5 | 28.3 | 29.7 |

## Evaluación de desempeño



**➔ Insertos disponibles**

|                          | <b>LBH (Tipo redondo)</b>  | <b>LRH (Tipo radio punta)</b>  | <b>LFH (Tipo alto avance)</b>   | <b>LCF (Tipo chaflán)</b>  | <b>LBS (Tipo redondo)</b>  | <b>LR (Tipo radio punta)</b>   |
|--------------------------|--|--|---|--|--|--|
| <b>Porta</b>             | <br>R Precisión $\pm 0.005$ | <br>Esquina radio $\pm 0.015$ |  |  | <br>R Precisión $\pm 0.005$ | <br>Esquina radio $\pm 0.015$ |
| <b>LBE080</b>            | LBH080 LBH090<br>LBH080-KF LBH090-KF<br>LBH080-KH LBH090-KH  |  |   |  | LBS080<br>LBS090   |  |
| <b>LBE100<br/>LRE100</b> | LBH100 LBH110<br>LBH100-KF LBH110-KF<br>LBH100-KH LBH110-KH  | LRH100-R05<br>LRH100-R10 LRH110-R05<br>LRH100-R20  | LFH100  |  | LBS100<br>LBS110   | LR100-R05 LR100-R20<br>LR100-R10 LR110-R05   |
| <b>LBE120<br/>LRE120</b> | LBH120 LBH130<br>LBH120-KF LBH130-KF<br>LBH120-KH LBH130-KH  | LRH120-R05<br>LRH120-R10 LRH130-R05<br>LRH120-R20  | LFH120  |  | LBS120<br>LBS130   | LR120-R05 LR120-R20<br>LR120-R10 LR130-R05   |
| <b>LBE160<br/>LRE160</b> | LBH160 LBH170<br>LBH160-KF LBH170-KF<br>LBH160-KH LBH170-KH  | LRH160-R05<br>LRH160-R10 LRH170-R05<br>LRH160-R20<br>LRH160-R30  | LFH160  | LCF160-D90   | LBS160<br>LBS170   | LR160-R05 LR160-R30<br>LR160-R10 LR170-R05<br>LR160-R20  |
| <b>LBE200<br/>LRE200</b> | LBH200 LBH210<br>LBH200-KF LBH210-KF<br>LBH200-KH LBH210-KH  | LRH200-R05<br>LRH200-R10 LRH210-R05<br>LRH200-R20<br>LRH200-R30  | LFH200  | LCF200-D90   | LBS200<br>LBS210   | LR200-R05 LR200-R30<br>LR200-R10 LR210-R05<br>LR200-R20  |
| <b>LBE250<br/>LRE250</b> | LBH250 LBH260<br>LBH250-KF LBH260-KF<br>LBH250-KH LBH260-KH  | LRH250-R05<br>LRH250-R10 LRH260-R05<br>LRH250-R20<br>LRH250-R30  | LFH250  | LCF250-D90   | LBS250<br>LBS260   | LR250-R05 LR250-R30<br>LR250-R10 LR260-R05<br>LR250-R20  |
| <b>LBE300<br/>LRE300</b> | LBH300 LBH310<br>LBH300-KF LBH310-KF<br>LBH300-KH LBH310-KH  | LRH300-R10<br>LRH300-R20 LRH310-R05<br>LRH300-R30  | LFH300  |  | LBS300<br>LBS310   | LR300-R10 LR300-R30<br>LR300-R20 LR310-R05   |
| <b>LBE320<br/>LRE320</b> | LBH320 LBH330<br>LBH320-KF LBH330-KF<br>LBH320-KH LBH330-KH  | LRH320-R10 LRH330-R10<br>LRH320-R20 LRH330-R20<br>LRH320-R30 LRH330-R30  | LFH320  |  | LBS320   | LR320-R10 LR320-R30<br>LR320-R20   |

➔ Insertos disponibles **E08, E09**

\* LBH para corte general, LBH-KF para acero al carbono y LBH-KH para acero endurecido





Larga vida útil debido a la alta dureza


## GBE

- Endmill indexable de nariz esférica para aplicaciones de desbaste - corte medio en moldes
- Larga vida útil debido a la alta dureza
- Filo de corte helicoidal y alta precisión en el filo
- Proceso optimizado para el maquinado de moldes con nuestro sistema de refrigeración interna
- Capaces de ajustarse a mitad de procesos de medio y gran desbaste en moldes
- Varios tipos de herramientas: Normal y Larga

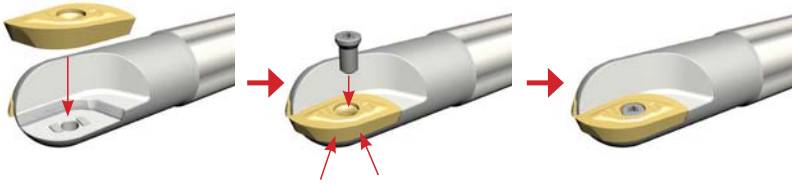
### Codificación porta herramientas

|                                |  |   |  |                    |
|--------------------------------|--|---|--|--------------------|
| GBE                            | 300  | - | S                                      | 32                 |
| <b>Nombre</b>                  | <b>Diametro del Maquinado</b>                            |   | <b>Tipo</b>                            | <b>Diam. Mango</b> |
| Endmill<br>Esférico<br>General | Ø16, Ø18, Ø20, Ø22, Ø25, Ø26,<br>Ø28, Ø30, Ø32, Ø40, Ø50 |   | S: Mango Estandar<br>L: Mango Alargado | 32: Ø32            |

| Interno   | Externo   |  |
|---|---|--|
|  |  | <ul style="list-style-type: none"> <li>• Capaz para manejar una gran precisión y gran profundidad en aplicaciones de corte.                             <ul style="list-style-type: none"> <li>- Run-out dentro de 0.05 mm</li> <li>- Exactitud de R dentro de 0.05 mm</li> </ul> </li> <li>• Varios diametros (Ø16, Ø18, Ø20, Ø22, Ø25, Ø26, Ø28, Ø30, Ø32, Ø40, Ø50)</li> <li>• La resistencia de corte es mínima debido al borde de corte helicoidal</li> <li>• Se evita la rotación del inserto debido a la configuración de fondo cóncavo y estable con el apoyo del flanco de la herramienta</li> <li>• Larga vida útil y un mejor procesamiento debido a los dos filos de corte del insertos</li> <li>• Mayor vida de la herramienta</li> </ul> |
|  |  |  |
| Soporte del Flanco  | Fondo concavo   |  |
|   |   |  |

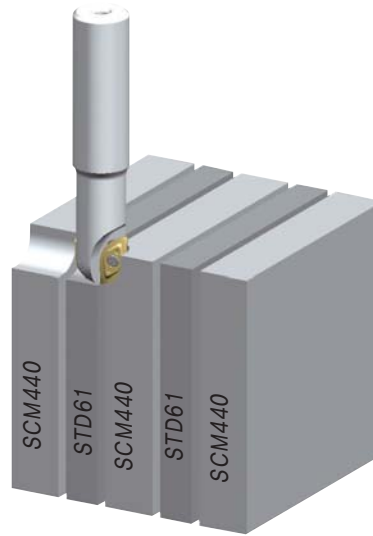
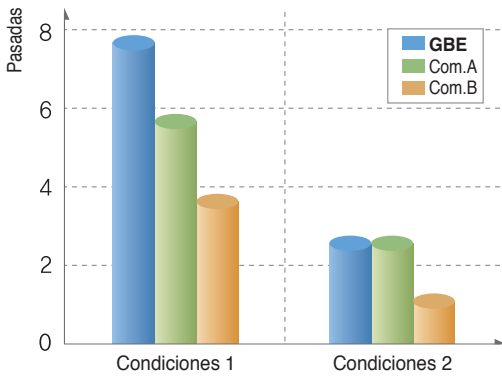
|   |   |   |   |  |
|---|---|---|---|--|
|  |  |  |  | <ul style="list-style-type: none"> <li>• Varios diametros (Ø16, Ø18, Ø20, Ø22, Ø25, Ø26, Ø28, Ø30, Ø32, Ø40, Ø50)</li> <li>• Mejora evacuacion de la viruta y aumento de la vida del filo de corte debido a la refrigeración interna</li> <li>• Larga vida útil y un mejor proceso</li> <li>• Fácil ajuste del inserto con la parte de proyección y evita la vibración durante el maquinado</li> </ul> |
| Múltiples filos   | Filo único  | Tipo modular  | Proyección  |  |

### Como colocar el Inserto



1. Ajuste el inserto en el asiento de proyección de la herramienta
2. Presione el inserto en la dirección de la flecha roja y apriete el tornillo con una llave

### Evaluación



### Condiciones de Corte

| Clase.      | Velocidad de corte (vc) | Avance (fz)    | Profundidad de corte (ap) | Profundidad de corte (ae) | Pieza de trabajo                     | Etc. |
|-------------|-------------------------|----------------|---------------------------|---------------------------|--------------------------------------|------|
| Condición 1 | 150 m/min               | 0.15 mm/diente | 5 mm                      | 8 mm                      | STD61 (HRC50)<br>+<br>SCM440 (HRC20) | Seco |
| Condición 2 | 100 m/min               | 0.1 mm/diente  | 8 mm                      | 8 mm                      |                                      |      |

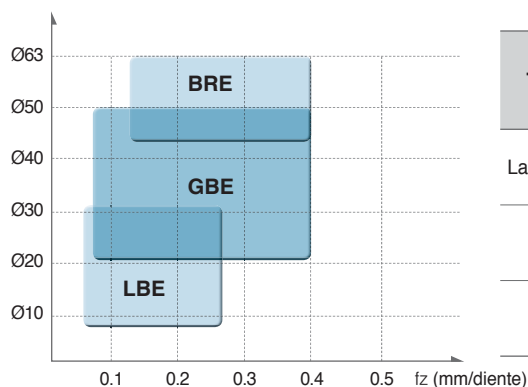
### Insertos / Partes

| Dia. | Insertos    |             |                  | Partes         |                |                |                |
|------|-------------|-------------|------------------|----------------|----------------|----------------|----------------|
|      | Interno I/S | Externo I/S | Externo main I/S | Tornillo       |                | Llave          |                |
|      |             |             |                  | Int./Ext. tipo | Ext. main tipo | Int./Ext. tipo | Ext. main tipo |
| Ø16  | ZPET080M-MM | ZPET080S-MM | -                | FTKA02555S     | -              | TW08S          | -              |
| Ø18  | ZPET090M-MM | ZPET090S-MM | -                | FTKA0307       | -              | TW09S          | -              |
| Ø20  | ZPET100M-MM | ZPET100S-MM | SPMT060304       | FTKA0307       | ETNA02506      | TW09S          | TW07P          |
| Ø22  | ZPET110M-MM | ZPET110S-MM | SPMT060304       | FTKA0408       | ETNA02506      | TW15S          | TW07P          |
| Ø25  | ZPET125M-MM | ZPET125S-MM | SPMT060304       | FTKA0409       | ETNA02506      | TW15S          | TW07P          |
| Ø26  | ZPET130M-MM | ZPET130S-MM | SDMT090308-MM    | FTKA0409       | ETNA0408       | TW15S          | TW15S          |
| Ø28  | ZPET140M-MM | ZPET140S-MM | SDMT090308-MM    | FTGA0511-P     | ETNA0408       | TW20           | TW15S          |
| Ø30  | ZPET150M-MM | ZPET150S-MM | SDMT090308-MM    | FTGA0511-P     | ETNA0408       | TW20-100       | TW15S          |
| Ø32  | ZPET160M-MM | ZPET160S-MM | SDMT090308-MM    | FTGA0511-P     | ETNA0408       | TW20-100       | TW15S          |
| Ø40  | ZPET200M-MM | ZPET200S-MM | SPMT120408-MM    | FTGA0614       | ETNA0511       | TW20-100       | TW20S          |
| Ø50  | ZPET250M-MM | ZPET250S-MM | SPMT120408-MM    | FTGA0818       | ETNA0511       | TW25S          | TW20S          |

## Condiciones de corte recomendadas

| Pieza Trabajo                        | Tipo Maquinado  | Dureza (HRC) | vc (m/min) | fz (mm/diente) | ap (mm)  | ae (mm)  |
|--------------------------------------|-----------------|--------------|------------|----------------|----------|----------|
| Aleación de Acero<br>Acero al Carbon | Flanco          | Debajo 25    | 160~250    | 0.1~0.5        | 0.3~0.5D | 0.2~0.3D |
|                                      | Ranura          |              | 120~200    | 0.1~0.5        | 0.3~0.5D | -        |
|                                      | Flanco profundo |              | 160~250    | 0.1~0.5        | 1.0~1.5D | 0.1~0.2D |
| Aleación de Acero<br>Acero al Carbon | Flanco          | Debajo 45    | 120~200    | 0.1~0.5        | 0.3~0.5D | 0.2~0.3D |
|                                      | Ranura          |              | 120~160    | 0.1~0.5        | 0.3~0.5D | -        |
|                                      | Flanco profundo |              | 120~200    | 0.1~0.5        | 1.0~1.5D | 0.1~0.2D |
| Molde de Aleacion<br>de Acero        | Flanco          | 30~40        | 120~200    | 0.1~0.3        | 0.3~0.5D | 0.2~0.3D |
|                                      | Ranura          |              | 120~160    | 0.1~0.3        | 0.3~0.5D | -        |
|                                      | Flanco profundo |              | 120~200    | 0.1~0.3        | 1.0~1.5D | 0.1~0.2D |
| Fundición (GC, GCD)                  | Flanco          | 20~30        | 150~300    | 0.2~0.7        | 0.3~0.5D | 0.2~0.3D |
|                                      | Ranura          |              | 150~300    | 0.2~0.7        | 0.3~0.5D | -        |
|                                      | Flanco profundo |              | 150~300    | 0.2~0.7        | 1.0~1.5D | 0.1~0.2D |
| Acero con<br>Tratamiento Termico     | Flanco          | 50~60        | 40~100     | 0.1~0.3        | 0.3~0.5D | 0.2~0.3D |
|                                      | Ranura          |              | 40~100     | 0.1~0.3        | 0.3~0.5D | -        |
|                                      | Flanco profundo |              | 40~100     | 0.1~0.3        | 1.0~1.5D | 0.1~0.2D |

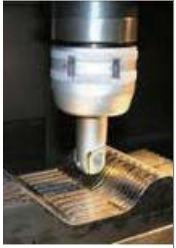

























## Line-up para Endmill Indexables Esféricos



| Tipo       | Aplicación                  |                          |                                     |          |                                     |
|------------|-----------------------------|--------------------------|-------------------------------------|----------|-------------------------------------|
|            | Confiabilidad del Maquinado | Eficiencia del Maquinado | Equivalencia del Diam. de maquinado | Economía | Maquinado del Flanco con filo largo |
| Laser Mill | ●                           | ○                        | ◐                                   | ○        | ○                                   |
| GBE        | ◐                           | ●                        | ◐                                   | ◐        | ●                                   |
| BRE        | ○                           | ●                        | ●                                   | ●        | ●                                   |

●: Muy Bueno ○: Bueno ◐: Normal

## Resultados de la Resistencia al Desgaste

| Condiciones de Corte   |                | Resistencia al desgaste (fotos) |   |   |   |
|--|----------------|---------------------------------|---|---|---|
|  |                |                                 | GBE   | Com.A   | Com.B   |
|  <p><b>Pieza Trabajo</b><br/>KP4M (HRC33), Seco</p> <p><b>Condiciones</b><br/>vc = 280 m/min<br/>fz = 0.25 mm/diente<br/>ap = 5~10 mm<br/>ae = 5~10 mm<br/>vf = 1,486 mm/min<br/>n = 2,971 rpm</p> <p><b>Herramienta</b><br/>Porta herramienta: GBE300-S32<br/>Inserto: ZPET150M-MM (PC3500)<br/>ZPET150S-MM (PC3500)</p> <p>Tiempo de corte:<br/>4 pasadas</p> | Parte Superior | Interno                         |  |  |  |
|  |                | Externo                         |  |  |  |
|  | Flank          | Interno                         |  |  |  |
|  |                | Externo                         |  |  |  |
|  <p><b>Pieza Trabajo</b><br/>STD11 (HRC20), Seco</p> <p><b>Condiciones</b><br/>vc = 250 m/min<br/>fz = 0.2 mm/diente<br/>ap = 5 mm<br/>ae = 5 mm<br/>vf = 1,062 mm/min<br/>n = 2,653 rpm</p> <p><b>Herramienta</b><br/>Porta herramienta: GBE300-S32<br/>Inserto: ZPET150M-MM (PC3500)<br/>ZPET150S-MM (PC3500)</p> <p>Tiempo de corte:<br/>4 pasadas</p>       | Parte Superior | Interno                         |  |  |  |
|  |                | Externo                         |  |  |  |
|  | Flank          | Interno                         |  |  |  |
|  |                | Externo                         |  |  |  |



**La larga vida de herramienta y anti-rotura con tratamiento especial de la superficie en el portainserto**

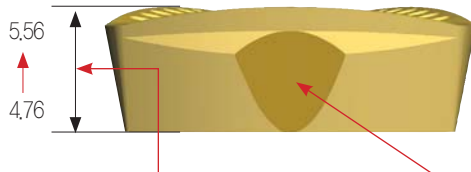
**BRE**

- Rendimiento de corte: Un buen control de viruta y rendimiento superior con un óptimo filo de corte
- Cuerpo de alta rigidez: Mejora la vida de la herramienta Fácil de instalar y atornillar con buena durabilidad del tornillo TORX. Un buen control de viruta con nuestro diseño 3D flauta y mejora de la calidad externa
- Inserto: Capaz de aplicarlo en herramientas de alta velocidad y aplicaciones de alimentación debido a la calidad especial que tiene a la resistencia al desgaste y la rotura Funcionamiento estable del filo de corte con alta tenacidad y alto ángulo de inclinación de la rompeviruta

Vista del portaherramienta



- Buen control de viruta
- Buena emisión de calor



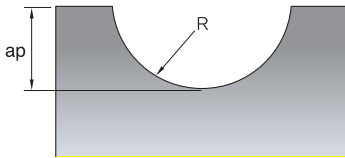
- Inserto más amplio asegura un filo de corte fuerte

- Mejor ajuste de la fuerza por la hendidura



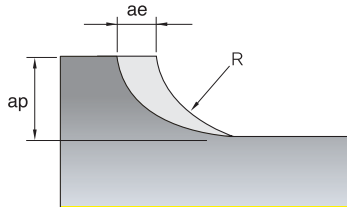
**BRE machining tipo for roughing & Condiciones de corte recomendadas**

Tipo de maquinado 1



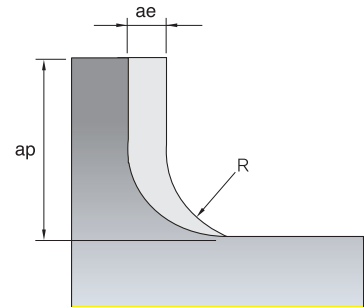
$ap = 0.3D-0.5D$

Tipo de maquinado 2



$ae = 0.2D-0.3D$      $ap = 0.3D-0.5D$

Tipo de maquinado 3



$ae = 0.1D-0.5D$      $ap = 1.2D-1.5D$

| Pieza Trabajo                          | Tipo de Maquinado | Velocidad (m/min) | Avance (mm/diente) | Calidad |
|--|-------------------|-------------------|--------------------|---------|
| Acero al Carbon<br>Aleación de Acero   | 1                 | 120~220           | 0.1~0.4            | NCM325  |
|  | 2                 | 120~220           | 0.2~0.4            | NCM325  |
|  | 3                 | 100~180           | 0.1~0.3            | NCM325  |
| Aleación de Acero                      | 1                 | 100~200           | 0.1~0.4            | NCM325  |
|  | 2                 | 100~200           | 0.2~0.4            | NCM325  |
|  | 3                 | 80~160            | 0.1~0.3            | NCM325  |
| Herramienta de Acero                   | 1                 | 80~150            | 0.1~0.3            | NCM325  |
|  | 2                 | 80~150            | 0.15~0.35          | NCM325  |
|  | 3                 | 60~120            | 0.1~0.3            | NCM325  |
| Material con Alta Dureza<br>(HRC35~45) | 1                 | 60~120            | 0.1~0.3            | NCM325  |
|  | 2                 | 60~120            | 0.1~0.3            | NCM325  |
|  | 3                 | 50~80             | 0.1~0.2            | NCM325  |
| Fundición                              | 1                 | 100~180           | 0.2~0.5            | NCM325  |
|  | 2                 | 100~180           | 0.2~0.5            | NCM325  |
|  | 3                 | 80~160            | 0.15~0.4           | NCM325  |

# LBE08/10/12/16/20/25/30/32

## Cuerpo de carburo (punta esférica)

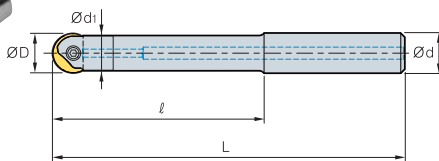


Fig. 1

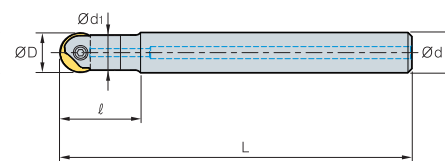


Fig. 2



(mm)

| Codigo           | Dimensiones      |      |      |     |     | Partes         |            | Insertos Disponibles (Ø) | Fig. |   |
|------------------|------------------|------|------|-----|-----|----------------|------------|--------------------------|------|---|
|                  | ØD               | Ød   | Ød1  | ℓ   | L   | Tornillo Brida | Llave      |                          |      |   |
| LBE              | 080080S-S08C     | 8, 9 | 8    | 7.5 | 80  | 136            | ETND02506F | TWP07S                   | 8, 9 | 1 |
|                  | 080100S-S08C     | 8, 9 | 8    | 7.5 | 100 | 156            |            |                          |      |   |
|                  | 080020S-S08C-130 | 8, 9 | 8    | 7.5 | 20  | 130            |            |                          |      |   |
| 080020S-S08C-150 | 8, 9             | 8    | 7.5  | 20  | 150 | ETND02506F     | TWP07S     | 8, 9                     | 2    |   |
| 100080S-S10C     | 10, 11           | 10   | 9.5  | 80  | 136 | ETND0307F      | TWP08S     | 10, 11                   | 1    |   |
| 100120S-S10C     | 10, 11           | 10   | 9.5  | 120 | 176 |                |            |                          |      |   |
| 100023S-S10C-130 | 10, 11           | 10   | 9.5  | 23  | 130 | ETND0307F      | TWP08S     | 10, 11                   | 2    |   |
| 100023S-S10C-170 | 10, 11           | 10   | 9.5  | 23  | 170 |                |            |                          |      |   |
| 120100S-S12C     | 12, 13           | 12   | 11.5 | 100 | 156 | ETND03509      | TWP10S     | 12, 13                   | 1    |   |
| 120150S-S12C     | 12, 13           | 12   | 11.5 | 150 | 206 |                |            |                          |      |   |
| 120025S-S12C-150 | 12, 13           | 12   | 11.5 | 25  | 150 |                |            |                          |      |   |
| 120025S-S12C-200 | 12, 13           | 12   | 11.5 | 25  | 200 | ETND03509      | TWP10S     | 12, 13                   | 2    |   |
| 160100S-S16C     | 16, 17           | 16   | 15.5 | 100 | 160 | ETND0413       | TWP15S     | 16, 17                   | 1    |   |
| 160150S-S16C     | 16, 17           | 16   | 15.5 | 150 | 210 |                |            |                          |      |   |
| 160030S-S16C-160 | 16, 17           | 16   | 15.5 | 30  | 160 |                |            |                          |      |   |
| 160030S-S16C-210 | 16, 17           | 16   | 15.5 | 30  | 210 | ETND0413       | TWP15S     | 16, 17                   | 2    |   |
| 200120S-S20C     | 20, 21           | 20   | 19.5 | 120 | 190 | ETKD0516       | TWP20      | 20, 21                   | 1    |   |
| 200170S-S20C     | 20, 21           | 20   | 19.5 | 170 | 240 |                |            |                          |      |   |
| 200035S-S20C-190 | 20, 21           | 20   | 19.5 | 35  | 190 |                |            |                          |      |   |
| 200035S-S20C-240 | 20, 21           | 20   | 19.5 | 35  | 240 | ETKD0516       | TWP20      | 20, 21                   | 2    |   |
| 250140S-S25C     | 25, 26           | 25   | 24.5 | 140 | 220 | ETKD0620       | TWP25      | 25, 26                   | 1    |   |
| 250170S-S25C     | 25, 26           | 25   | 24.5 | 170 | 250 |                |            |                          |      |   |
| 250040S-S25C-220 | 25, 26           | 25   | 24.5 | 40  | 220 |                |            |                          |      |   |
| 250040S-S25C-250 | 25, 26           | 25   | 24.5 | 40  | 250 | ETKD0620       | TWP25      | 25, 26                   | 2    |   |
| 300140S-S32C     | 30, 31           | 32   | 29.5 | 140 | 230 | ETGD0825       | TWP40      | 30, 31                   | 1    |   |
| 300170S-S32C     | 30, 31           | 32   | 29.5 | 170 | 260 |                |            |                          |      |   |
| 300050S-S32C-230 | 30, 31           | 32   | 29.5 | 50  | 230 |                |            |                          |      |   |
| 300050S-S32C-260 | 30, 31           | 32   | 29.5 | 50  | 260 | ETGD0825       | TWP40      | 30, 31                   | 2    |   |
| 320140S-S32C     | 32               | 32   | 31.5 | 140 | 230 | ETGD0825       | TWP40      | 32, 33                   | 1    |   |
| 320170S-S32C     | 32               | 32   | 31.5 | 170 | 260 |                |            |                          |      |   |
| 320050S-S32C-230 | 32               | 32   | 31.5 | 50  | 230 |                |            |                          |      |   |
| 320050S-S32C-260 | 32               | 32   | 31.5 | 50  | 260 | ETGD0825       | TWP40      | 32, 33                   | 2    |   |

➔ Insertos disponibles E08, E09

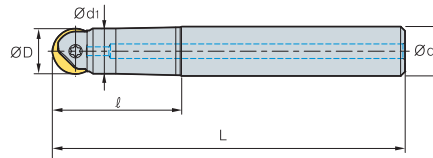




# LBE08/10/12/16/20/25/30/32

## Cuerpo de acero (punta esférica)

Tipo Conico



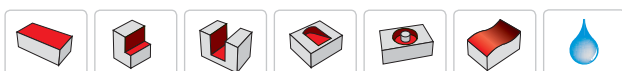
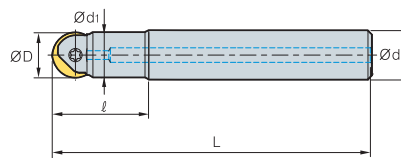
| Codigo          | Dimensiones |    |      |     |     | Partes         |        | Insertos Disponibles (Ø) |
|-----------------|-------------|----|------|-----|-----|----------------|--------|--------------------------|
|                 | ØD          | Ød | Ød1  | ℓ   | L   | Tornillo Brida | Llave  |                          |
| LBE 080035T-S12 | 8, 9        | 12 | 7.5  | 35  | 91  | ETND02506F     | TWP07S | 8, 9                     |
| 080055T-S12     | 8, 9        | 12 | 7.5  | 55  | 111 |                |        |                          |
| 080075T-S12     | 8, 9        | 12 | 7.5  | 75  | 131 |                |        |                          |
| 100035T-S12     | 10, 11      | 12 | 9.5  | 35  | 91  | ETND0307F      | TWP08S | 10, 11                   |
| 100055T-S12     | 10, 11      | 12 | 9.5  | 55  | 111 |                |        |                          |
| 100075T-S12     | 10, 11      | 12 | 9.5  | 75  | 131 |                |        |                          |
| 120055T-S12     | 12, 13      | 12 | 10.4 | 55  | 111 | ETND03509      | TWP10S | 12, 13                   |
| 120085T-S16     | 12, 13      | 16 | 11.5 | 85  | 145 |                |        |                          |
| 160065T-S16     | 16, 17      | 16 | 14   | 65  | 125 |                |        |                          |
| 160100T-S20     | 16, 17      | 20 | 15.5 | 100 | 170 | ETND0413       | TWP15S | 16, 17                   |
| 200075T-S20     | 20, 21      | 20 | 17.5 | 75  | 145 |                |        |                          |
| 200115T-S25     | 20, 21      | 25 | 19.5 | 115 | 195 |                |        |                          |
| 250090T-S25     | 25, 26      | 25 | 22   | 90  | 170 | ETKD0620       | TWP25  | 25, 26                   |
| 250135T-S32     | 25, 26      | 32 | 24.5 | 135 | 225 |                |        |                          |
| 300105T-S32     | 30, 31      | 32 | 29.5 | 105 | 195 |                |        |                          |
| 300160T-S32     | 30, 31      | 32 | 29.5 | 160 | 250 | ETGD0825       | TWP40  | 30, 31                   |
| 320105T-S32     | 32          | 32 | 29   | 105 | 195 |                |        |                          |
| 320160T-S32     | 32          | 32 | 29   | 160 | 250 |                |        |                          |

➔ Insertos disponibles E08, E09

# LBE12/16/20/25/30/32

## Cuerpo de acero (punta esférica)

Tipo Recto



| Codigo          | Dimensiones |    |      |    |     | Partes         |        | Insertos Disponibles (Ø) |
|-----------------|-------------|----|------|----|-----|----------------|--------|--------------------------|
|                 | ØD          | Ød | Ød1  | ℓ  | L   | Tornillo Brida | Llave  |                          |
| LBE 120035S-S12 | 12, 13      | 12 | 11.5 | 35 | 91  | ETND03509      | TWP10S | 12, 13                   |
| 160035S-S16     | 16, 17      | 16 | 15.5 | 35 | 95  | ETND0413       | TWP15S | 16, 17                   |
| 200040S-S20     | 20, 21      | 20 | 19.5 | 40 | 110 | ETKD0516       | TWP20  | 20, 21                   |
| 250045S-S25     | 25, 26      | 25 | 24.5 | 40 | 125 | ETKD0620       | TWP25  | 25, 26                   |
| 300055S-S32     | 30, 31      | 32 | 29.5 | 55 | 145 | ETGD0825       | TWP40  | 30, 31                   |
| 320055S-S32     | 32          | 32 | 31.5 | 55 | 145 | ETGD0825       | TWP40  | 32, 33                   |

➔ Insertos disponibles E08, E09

# LRE10/12/16/20/25/30/32

## Cuerpo de carburo (punta radial)

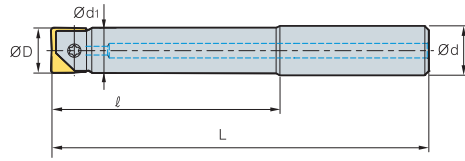


Fig. 1

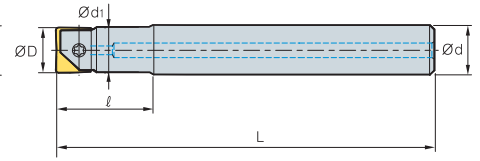


Fig. 2



(mm)

| Codigo           | Dimensiones      |        |                 |     |     | Partes         |           | Insertos Disponibles (Ø) | Fig.   |   |
|------------------|------------------|--------|-----------------|-----|-----|----------------|-----------|--------------------------|--------|---|
|                  | ØD               | Ød     | Ød <sub>1</sub> | ℓ   | L   | Tornillo Brida | Llave     |                          |        |   |
| LRE              | 100080S-S10C     | 10, 11 | 10              | 9.5 | 80  | 136            | ETND0307F | TWP08S                   | 10, 11 | 1 |
|                  | 100120S-S10C     | 10, 11 | 10              | 9.5 | 120 | 176            |           |                          |        |   |
|                  | 100023S-S10C-130 | 10, 11 | 10              | 9.5 | 23  | 130            |           |                          |        |   |
| 100023S-S10C-170 | 10, 11           | 10     | 9.5             | 23  | 170 | ETND0307F      | TWP08S    | 10, 11                   | 2      |   |
| 120100S-S12C     | 12, 13           | 12     | 11.5            | 100 | 156 | ETND03509      | TWP10S    | 12, 13                   | 1      |   |
| 120150S-S12C     | 12, 13           | 12     | 11.5            | 150 | 206 |                |           |                          |        |   |
| 120025S-S12C-150 | 12, 13           | 12     | 11.5            | 25  | 150 |                |           |                          |        |   |
| 120025S-S12C-200 | 12, 13           | 12     | 11.5            | 25  | 200 | ETND03509      | TWP10S    | 12, 13                   | 2      |   |
| 160100S-S16C     | 16, 17           | 16     | 15.5            | 100 | 160 | ETND0413       | TWP15S    | 16, 17                   | 1      |   |
| 160150S-S16C     | 16, 17           | 16     | 15.5            | 150 | 210 |                |           |                          |        |   |
| 160030S-S16C-160 | 16, 17           | 16     | 15.5            | 30  | 160 |                |           |                          |        |   |
| 160030S-S16C-210 | 16, 17           | 16     | 15.5            | 30  | 210 | ETND0413       | TWP15S    | 16, 17                   | 2      |   |
| 200120S-S20C     | 20, 21           | 20     | 19.5            | 120 | 190 | ETKD0516       | TWP20     | 20, 21                   | 1      |   |
| 200170S-S20C     | 20, 21           | 20     | 19.5            | 170 | 240 |                |           |                          |        |   |
| 200035S-S20C-190 | 20, 21           | 20     | 19.5            | 35  | 190 |                |           |                          |        |   |
| 200035S-S20C-240 | 20, 21           | 20     | 19.5            | 35  | 240 | ETKD0516       | TWP20     | 20, 21                   | 2      |   |
| 250140S-S25C     | 25, 26           | 25     | 24.5            | 140 | 220 | ETKD0620       | TWP25     | 25, 26                   | 1      |   |
| 250170S-S25C     | 25, 26           | 25     | 24.5            | 170 | 250 |                |           |                          |        |   |
| 250040S-S25C-220 | 25, 26           | 25     | 24.5            | 40  | 220 |                |           |                          |        |   |
| 250040S-S25C-250 | 25, 26           | 25     | 24.5            | 40  | 250 | ETKD0620       | TWP25     | 25, 26                   | 2      |   |
| 300140S-S32C     | 30, 31           | 32     | 29.5            | 140 | 230 | ETGD0825       | TWP40     | 30, 31                   | 1      |   |
| 300170S-S32C     | 30, 31           | 32     | 29.5            | 170 | 260 |                |           |                          |        |   |
| 300050S-S32C-230 | 30, 31           | 32     | 29.5            | 50  | 230 |                |           |                          |        |   |
| 300050S-S32C-260 | 30, 31           | 32     | 29.5            | 50  | 260 | ETGD0825       | TWP40     | 30, 31                   | 2      |   |
| 320140S-S32C     | 32               | 32     | 31.5            | 140 | 230 | ETGD0825       | TWP40     | 32, 33                   | 1      |   |
| 320170S-S32C     | 32               | 32     | 31.5            | 170 | 260 |                |           |                          |        |   |
| 320050S-S32C-230 | 32               | 32     | 31.5            | 50  | 230 |                |           |                          |        |   |
| 320050S-S32C-260 | 32               | 32     | 31.5            | 50  | 260 | ETGD0825       | TWP40     | 32, 33                   | 2      |   |

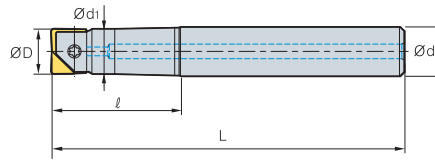
➔ Insertos disponibles E08, E09



# LRE10/12

Tipo Conico

## Cuerpo de acero (punta radial)



(mm)

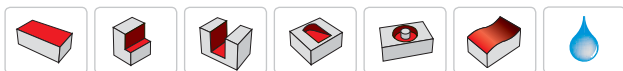
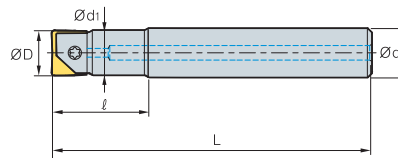
| Codigo | Dimensiones |        |                 |      |    | Partes         |           | Insertos Disponibles (Ø) |       |
|--------|-------------|--------|-----------------|------|----|----------------|-----------|--------------------------|-------|
|        | ØD          | Ød     | Ød <sub>1</sub> | ℓ    | L  | Tornillo Brida | Llave     |                          |       |
| LRE    | 100025T-S12 | 10, 11 | 12              | 9.5  | 25 | 111            | ETND0307F | TWP08S                   | 10,11 |
|        | 100050T-S12 | 10, 11 | 12              | 9.5  | 50 | 150            |           |                          |       |
|        | 120060T-S16 | 12, 13 | 16              | 11.5 | 60 | 160            | ETND03509 | TWP10S                   |       |

↻ Insertos disponibles E08, E09

# LRE12/16/25/30/32

Tipo Recto

## Cuerpo de acero (punta radial)



(mm)

| Codigo | Dimensiones |        |                 |      |     | Partes         |           | Insertos Disponibles (Ø) |        |
|--------|-------------|--------|-----------------|------|-----|----------------|-----------|--------------------------|--------|
|        | ØD          | Ød     | Ød <sub>1</sub> | ℓ    | L   | Tornillo Brida | Llave     |                          |        |
| LRE    | 120030S-S12 | 12, 13 | 12              | 11.5 | 30  | 111            | ETND03509 | TWP10S                   | 12, 13 |
|        | 160050S-S16 | 16, 17 | 16              | 15.5 | 50  | 131            |           |                          |        |
|        | 160060S-S16 | 16, 17 | 16              | 15.5 | 60  | 160            | ETKD0516  | TWP20                    | 20, 21 |
|        | 200060S-S20 | 20, 21 | 20              | 19.5 | 60  | 145            |           |                          |        |
|        | 200080S-S20 | 20, 21 | 20              | 19.5 | 80  | 180            | ETKD0620  | TWP25                    | 25, 26 |
|        | 250070S-S25 | 25, 26 | 25              | 24.5 | 70  | 145            |           |                          |        |
|        | 250100S-S25 | 25, 26 | 25              | 24.5 | 100 | 225            | ETGD0825  | TWP40                    | 30, 31 |
|        | 300070S-S32 | 30, 31 | 32              | 29.5 | 70  | 160            |           |                          |        |
|        | 300100S-S32 | 30, 31 | 32              | 29.5 | 100 | 225            | ETGD0825  | TWP40                    | 32, 33 |
|        | 320080S-S32 | 32     | 32              | 31.5 | 80  | 160            |           |                          |        |
|        | 320100S-S32 | 32     | 32              | 31.5 | 100 | 225            |           |                          |        |

↻ Insertos disponibles E08, E09

## LBE-MHD

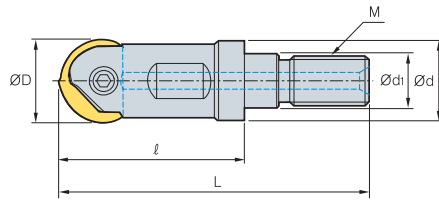


Fig. 1

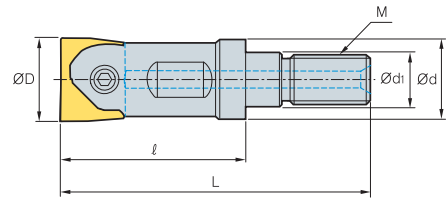


Fig. 2



(mm)

| Codigo                 | Dimensiones |        |    |    |      |      |                | Partes |        | Insertos Disponibles (Ø) |
|------------------------|-------------|--------|----|----|------|------|----------------|--------|--------|--------------------------|
|                        | M           | ØD     | L  | ℓ  | Ød   | Ød1  | Tornillo Brida | Llave  |        |                          |
| <b>LBE</b> 100-MHD-M06 | M06         | 10, 11 | 40 | 25 | 9.5  | 6.5  | ETND0307F      | TWP08S | 10, 11 |                          |
| 120-MHD-M06            | M06         | 12, 13 | 40 | 25 | 11   | 6.5  | ETND03509      | TWP10S | 12, 13 |                          |
| 160-MHD-M08            | M08         | 16, 17 | 47 | 30 | 14.5 | 8.5  | ETND0413       | TWP15S | 16, 17 |                          |
| 200-MHD-M10            | M10         | 20, 21 | 56 | 35 | 18   | 10.5 | ETKD0516       | TWP20  | 20, 21 |                          |
| 250-MHD-M12            | M12         | 25, 26 | 69 | 45 | 22.5 | 12.5 | ETKD0620       | TWP25  | 25, 26 |                          |
| 300-MHD-M16            | M16         | 30, 31 | 77 | 50 | 28   | 17   | ETGD0825       | TWP40  | 30, 31 |                          |
| 320-MHD-M16            | M16         | 32     | 77 | 50 | 29   | 17   | ETGD0825       | TWP40  | 32, 33 |                          |

↻ Insertos disponibles E08, E09 ↻ Adaptador disponibles E371~E372

Codigo: LBE320-MHD-M16  
Cabeza de acoplaje modular, acoplaje tamaño (M16)

=

Codigo del Mango: MAT-M16-035-S32S  
Especificacion del Mango (M16)

# BFE

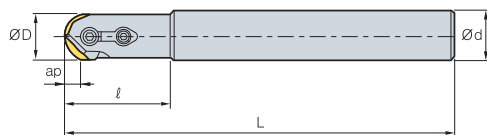


Fig. 1

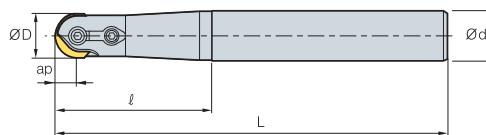


Fig. 2



| Codigo | ØD   | Ød | ℓ   | L   | ap   |      | Fig. | Insertos Disponibles |
|--------|------|----|-----|-----|------|------|------|----------------------|
| BFE    | 16-S | 16 | 36  | 140 | 8.0  | 0.2  | 1    | RC16                 |
|        | 16-M | 16 | 65  | 170 | 8.0  | 0.3  | 2    |                      |
|        | 16-L | 16 | 25  | 65  | 200  | 8.0  | 0.5  |                      |
|        | 20-S | 20 | 45  | 160 | 10.0 | 0.4  | 1    | RC20                 |
|        | 20-M | 20 | 80  | 200 | 10.0 | 0.6  | 2    |                      |
|        | 20-L | 20 | 25  | 80  | 250  | 10.0 | 0.8  |                      |
|        | 25-S | 25 | 45  | 160 | 12.5 | 0.7  | 1    | RC25                 |
|        | 25-M | 25 | 90  | 210 | 12.5 | 1.1  | 2    |                      |
|        | 25-L | 25 | 32  | 90  | 300  | 12.5 | 1.7  |                      |
|        | 30-S | 30 | 65  | 175 | 15.0 | 0.9  | 2    | RC30                 |
|        | 30-M | 30 | 100 | 250 | 15.0 | 1.4  | 2    |                      |
|        | 30-L | 30 | 32  | 100 | 350  | 15.0 | 2.0  |                      |
|        | 32-S | 32 | 56  | 175 | 16.0 | 0.9  | 1    | RC32                 |
|        | 32-M | 32 | 100 | 250 | 16.0 | 1.4  | 1    |                      |
|        | 32-L | 32 | 32  | 100 | 350  | 16.0 | 2.0  |                      |

(mm)

## ➤ Insertos disponibles

| RC     |            |      |
|--------|------------|------|
| Codigo | Recubierto | pag. |
|        | PC210F     |      |
| RC 16  | ●          | E15  |
| 20     | ●          |      |
| 25     | ●          |      |
| 30     | ●          |      |
| 32     | ●          |      |



## ➤ Condiciones de corte recomendadas

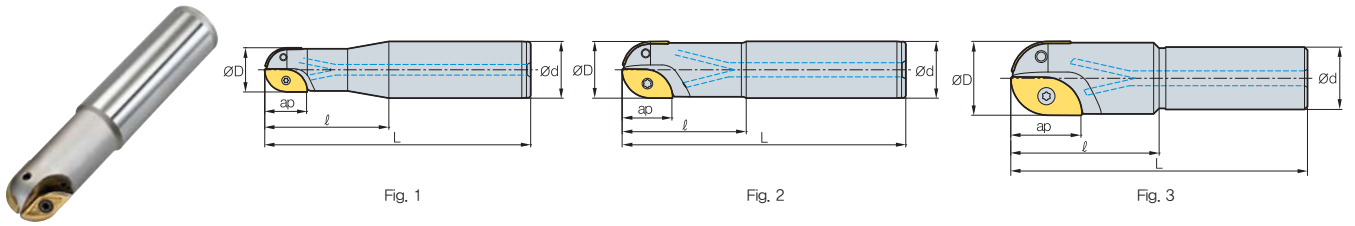
| Pieza Trabajo                                       | Condicion de Corte |                |
|---|--------------------|----------------|
|   | vc (m/min)         | fz (mm/diente) |
| <b>P</b> Acero General (SS41, SM25C)<br>Mayor HB180 | 150 ~ 250          | 0.10 ~ 0.30    |
| Aleacion Acero (SM55C, SCM)<br>Debajo HB300         | 100 ~ 200          | 0.10 ~ 0.20    |
| <b>K</b> Fundición<br>Debajo HB300                  | 100 ~ 200          | 0.10 ~ 0.30    |

## ➤ Partes

| Especificaciones |          |          |                |           |       |
|------------------|----------|----------|----------------|-----------|-------|
|                  | Tornillo | Brida    | Tornillo Brida | Candado C | Llave |
| Ø16              | FTGA0513 | CBH4.5R1 | CTX04513       | ER03      | TW20  |
| Ø20              | FTGA0517 | CBH4.5R2 | CTX04513       | ER03      | TW20  |
| Ø25              | FTGA0621 | CBH5R1   | CTX0517        | ER04      | TW20  |
| Ø30, 32          | FTGA0826 | CBH6R1   | CTX0621        | ER05      | TW25  |

➤ Insertos disponibles E15

## GBE (Filo único)



(mm)

| Codigo  | Dimensiones |    |     |     |      | Insertos disponibles |             | Partes                     |                         | Fig.  |   |
|---------|-------------|----|-----|-----|------|----------------------|-------------|----------------------------|-------------------------|-------|---|
|         | ØD          | Ød | l   | L   | ap   | Interno              | Externo     | Tornillo<br>Int./Ext. tipo | Llave<br>Ext. main tipo |       |   |
| GBE     | 160-S20     | 16 | 20  | 50  | 130  | 15                   | ZPET080M-MM | ZPET080S-MM                | FTKA02555S              | TW08S | 1 |
|         | 160-L20     | 16 | 20  | 90  | 200  | 15                   | ZPET080M-MM | ZPET080S-MM                | FTKA02555S              | TW08S |   |
| 180-S20 | 18          | 20 | 60  | 130 | 17   | ZPET090M-MM          | ZPET090S-MM | FTKA0307                   | TW09S                   |       |   |
| 180-L20 | 18          | 20 | 80  | 200 | 17   | ZPET090M-MM          | ZPET090S-MM | FTKA0307                   | TW09S                   |       |   |
| 200-S25 | 20          | 25 | 60  | 140 | 18   | ZPET100M-MM          | ZPET100S-MM | FTKA0307                   | TW09S                   |       |   |
| 200-L25 | 20          | 25 | 80  | 250 | 18   | ZPET100M-MM          | ZPET100S-MM | FTKA0307                   | TW09S                   |       |   |
| 220-S25 | 22          | 25 | 70  | 140 | 21   | ZPET110M-MM          | ZPET110S-MM | FTKA0408                   | TW15S                   |       |   |
| 220-L25 | 22          | 25 | 100 | 250 | 21   | ZPET110M-MM          | ZPET110S-MM | FTKA0408                   | TW15S                   |       |   |
| 250-S32 | 25          | 32 | 70  | 150 | 23   | ZPET125M-MM          | ZPET125S-MM | FTKA0409                   | TW15S                   |       |   |
| 250-L32 | 25          | 32 | 100 | 300 | 23   | ZPET125M-MM          | ZPET125S-MM | FTKA0409                   | TW15S                   |       |   |
| 260-S32 | 26          | 32 | 70  | 150 | 24.5 | ZPET130M-MM          | ZPET130S-MM | FTKA0409                   | TW15S                   |       |   |
| 260-L32 | 26          | 32 | 100 | 300 | 24.5 | ZPET130M-MM          | ZPET130S-MM | FTKA0409                   | TW15S                   |       |   |
| 280-S32 | 28          | 32 | 70  | 150 | 26   | ZPET140M-MM          | ZPET140S-MM | FTGA0511-P                 | TW20                    |       |   |
| 280-L32 | 28          | 32 | 120 | 300 | 26   | ZPET140M-MM          | ZPET140S-MM | FTGA0511-P                 | TW20                    |       |   |
| 300-S32 | 30          | 32 | 70  | 160 | 27   | ZPET150M-MM          | ZPET150S-MM | FTGA0511-P                 | TW20-100                | 2     |   |
| 300-L32 | 30          | 32 | 120 | 350 | 27   | ZPET150M-MM          | ZPET150S-MM | FTGA0511-P                 | TW20-100                |       |   |
| 320-S32 | 32          | 32 | 70  | 160 | 28   | ZPET160M-MM          | ZPET160S-MM | FTGA0511-P                 | TW20-100                |       |   |
| 320-L32 | 32          | 32 | 120 | 350 | 28   | ZPET160M-MM          | ZPET160S-MM | FTGA0511-P                 | TW20-100                |       |   |
| 400-S42 | 40          | 42 | 100 | 200 | 37   | ZPET200M-MM          | ZPET200S-MM | FTGA0614                   | TW20-100                | 3     |   |
| 400-L42 | 40          | 42 | 150 | 350 | 37   | ZPET200M-MM          | ZPET200S-MM | FTGA0614                   | TW20-100                |       |   |
| 500-S42 | 50          | 42 | 100 | 200 | 47   | ZPET250M-MM          | ZPET250S-MM | FTGA0818                   | TW25-100                | 3     |   |
| 500-L42 | 50          | 42 | 100 | 350 | 47   | ZPET250M-MM          | ZPET250S-MM | FTGA0818                   | TW25-100                |       |   |

Insertos disponibles E31

# GBE-M (Múltiples Filos)

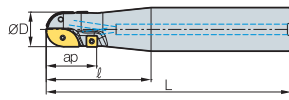


Fig. 1

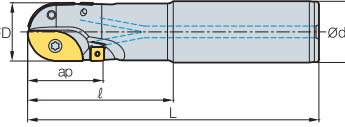


Fig. 2

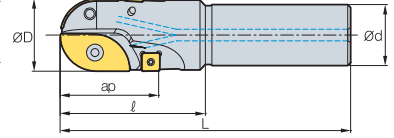


Fig. 3

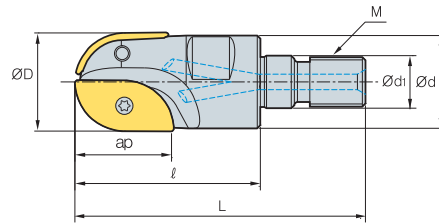


(mm)

| Codigo   | Dimensiones |    |     |     |     | Insertos disponibles |             |               | Partes         |                |                |                | Fig.  |   |
|----------|-------------|----|-----|-----|-----|----------------------|-------------|---------------|----------------|----------------|----------------|----------------|-------|---|
|          | ØD          | Ød | ℓ   | L   | ap  | Interno              | Externo     | Ext. main     | Tornillo       |                | Llave          |                |       |   |
|          |             |    |     |     |     |                      |             |               | Int./Ext. tipo | Ext. main tipo | Int./Ext. tipo | Ext. main tipo |       |   |
| GBE      | 200M-S25    | 20 | 25  | 70  | 150 | 28                   | ZPET100M-MM | ZPET100S-MM   | SPMT060304     | FTKA0307       | ETNA02506      | TW09S          | TW07P | 1 |
|          |             | 20 | 25  | 70  | 250 | 28                   | ZPET100M-MM | ZPET100S-MM   | SPMT060304     | FTKA0307       | ETNA02506      | TW09S          | TW07P |   |
|          | 220M-S25    | 22 | 25  | 80  | 150 | 31                   | ZPET110M-MM | ZPET110S-MM   | SPMT060304     | FTKA0408       | ETNA02506      | TW15S          | TW07P |   |
|          |             | 22 | 25  | 80  | 250 | 31                   | ZPET110M-MM | ZPET110S-MM   | SPMT060304     | FTKA0408       | ETNA02506      | TW15S          | TW07P |   |
|          | 250M-S32    | 25 | 32  | 80  | 180 | 33                   | ZPET125M-MM | ZPET125S-MM   | SPMT060304     | FTKA0409       | ETNA02506      | TW15S          | TW07P |   |
|          |             | 25 | 32  | 80  | 300 | 33                   | ZPET125M-MM | ZPET125S-MM   | SPMT060304     | FTKA0409       | ETNA02506      | TW15S          | TW07P |   |
|          | 260M-S32    | 26 | 32  | 80  | 180 | 39                   | ZPET130M-MM | ZPET130S-MM   | SDMT090308-MM  | FTKA0409       | ETNA0408       | TW15S          | TW15S |   |
|          |             | 26 | 32  | 80  | 300 | 39                   | ZPET130M-MM | ZPET130S-MM   | SDMT090308-MM  | FTKA0409       | ETNA0408       | TW15S          | TW15S |   |
|          | 280M-S32    | 28 | 32  | 80  | 180 | 41                   | ZPET140M-MM | ZPET140S-MM   | SDMT090308-MM  | FTGA0511-P     | ETNA0408       | TW20           | TW15S |   |
|          |             | 28 | 32  | 80  | 300 | 41                   | ZPET140M-MM | ZPET140S-MM   | SDMT090308-MM  | FTGA0511-P     | ETNA0408       | TW20           | TW15S |   |
|          | 300M-S32    | 30 | 32  | 100 | 200 | 41                   | ZPET150M-MM | ZPET150S-MM   | SDMT090308-MM  | FTGA0511-P     | ETNA0408       | TW20-100       | TW15S |   |
|          |             | 30 | 32  | 100 | 350 | 41                   | ZPET150M-MM | ZPET150S-MM   | SDMT090308-MM  | FTGA0511-P     | ETNA0408       | TW20-100       | TW15S |   |
|          | 320M-S32    | 32 | 32  | 100 | 200 | 42                   | ZPET160M-MM | ZPET160S-MM   | SDMT090308-MM  | FTGA0511-P     | ETNA0408       | TW20-100       | TW15S |   |
|          |             | 32 | 32  | 100 | 350 | 42                   | ZPET160M-MM | ZPET160S-MM   | SDMT090308-MM  | FTGA0511-P     | ETNA0408       | TW20-100       | TW15S |   |
|          | 400M-S42    | 40 | 42  | 100 | 200 | 56                   | ZPET200M-MM | ZPET200S-MM   | SPMT120408-MM  | FTGA0614       | ETNA0511       | TW20-100       | TW20S |   |
|          |             | 40 | 42  | 100 | 350 | 56                   | ZPET200M-MM | ZPET200S-MM   | SPMT120408-MM  | FTGA0614       | ETNA0511       | TW20-100       | TW20S |   |
| 500M-S42 | 50          | 42 | 100 | 200 | 67  | ZPET250M-MM          | ZPET250S-MM | SPMT120408-MM | FTGA0818       | ETNA0511       | TW25-100       | TW20S          |       |   |
|          | 50          | 42 | 100 | 350 | 67  | ZPET250M-MM          | ZPET250S-MM | SPMT120408-MM | FTGA0818       | ETNA0511       | TW25-100       | TW20S          |       |   |

➔ Insertos disponibles E25, E31

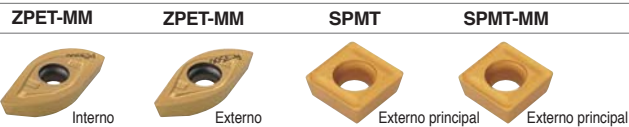
## GBEM



(mm)



| Codigo | Dimensiones |    |                 |      |    |    |     | Insertos disponibles |             |             |
|--------|-------------|----|-----------------|------|----|----|-----|----------------------|-------------|-------------|
|        | ØD          | Ød | Ød <sub>1</sub> | l    | L  | M  | ap  | Interno              | Externo     |             |
| GBEM   | 160-M08     | 16 | 15              | 8.5  | 30 | 47 | M08 | 15                   | ZPET080M-MM | ZPET080S-MM |
|        | 200-M10     | 20 | 18.6            | 10.5 | 35 | 56 | M10 | 18                   | ZPET100M-MM | ZPET100S-MM |
|        | 250-M12     | 25 | 23.2            | 12.5 | 45 | 69 | M12 | 23                   | ZPET125M-MM | ZPET125S-MM |
|        | 300-M16     | 30 | 27.8            | 17   | 50 | 77 | M16 | 27                   | ZPET150M-MM | ZPET150S-MM |
|        | 320-M16     | 32 | 29.8            | 17   | 50 | 77 | M16 | 28                   | ZPET160M-MM | ZPET160S-MM |

### Insertos disponibles



| Codigo | Recubierto |        |        |        | pag. | Codigo  | Recubierto |        |        |        | pag. |
|--------|------------|--------|--------|--------|------|---------|------------|--------|--------|--------|------|
|        | NCM325     | PC2510 | PC3700 | PC5300 |      |         | NCM325     | PC2510 | PC3700 | PC5300 |      |
| SPMT   | 060304     | ●      |        |        | E25  | ZPET    | 080S-MM    |        |        |        | E31  |
|        | 120408-MM  |        | ●      | ●      | E25  | 090S-MM |            |        |        |        |      |
| SDMT   | 090308-MM  |        | ●      | ●      | E18  | 100S-MM |            | ●      | ●      | ●      |      |
| ZPET   | 080M-MM    |        |        |        | E31  | 110S-MM |            |        |        |        |      |
|        | 090M-MM    |        |        |        |      | 125S-MM |            | ●      | ●      | ●      |      |
|        | 100M-MM    | ●      | ●      | ●      |      | 130S-MM |            |        |        |        |      |
|        | 110M-MM    |        |        |        |      | 140S-MM |            |        |        |        |      |
|        | 125M-MM    | ●      |        | ●      |      | 150S-MM |            |        | ●      | ●      |      |
|        | 130M-MM    |        |        |        |      | 160S-MM |            | ●      |        | ●      |      |
|        | 140M-MM    |        |        |        |      | 200S-MM |            |        | ●      |        |      |
|        | 150M-MM    |        | ●      | ●      |      | 250S-MM |            |        |        |        |      |
|        | 160M-MM    | ●      |        | ●      |      |         |            |        |        |        |      |
|        | 200M-MM    |        | ●      |        |      |         |            |        |        |        |      |
|        | 250M-MM    |        |        |        |      |         |            |        |        |        |      |

### Partes

| Especificaciones | <br>Tornillo |                        | <br>Llave |                        |
|------------------|---|------------------------|--|------------------------|
|                  | Int./Ext. tipo  | Externo principal tipo | Int./Ext. tipo   | Externo principal tipo |
| Ø16              | FTKA02555   | -                      | TW08S  | -                      |
| Ø20              | FTKA0307  | ETNA02506              | TW09S  | TW07P                  |
| Ø25              | FTKA0409  | ETNA02506              | TW15S  | TW07P                  |
| Ø30              | FTGA0511-P  | ETNA0408               | TW20-100   | TW15S                  |
| Ø32              | FTGA0511-P  | ETNA0408               | TW20-100   | TW15S                  |

Codigo: GBEM320-M16  
Tamaño de medida de roscado de cabeza modular (M16)

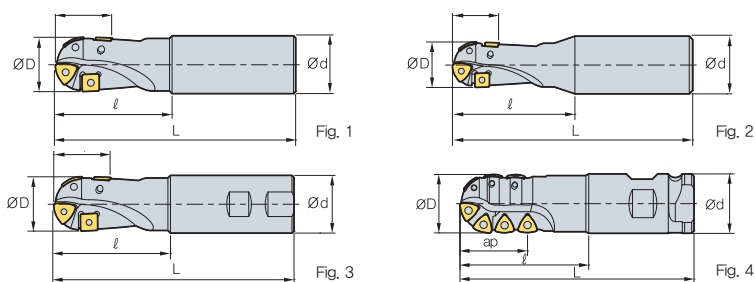
Codigo del Mango: MAT-M16-035-S32S  
Especificacion del Mango (M16)

Insertos disponibles E18, E25, E31 Adaptador disponibles E371-E372





BRE



• AR: 0°~10°  
• RR: -3°~0°

| Codigo | Dimensiones |    |     |     |     | Insertos disponibles |                  | Partes        |           | Fig.  |      |
|--------|-------------|----|-----|-----|-----|----------------------|------------------|---------------|-----------|-------|------|
|        | ØD          | Ød | ℓ   | L   | ap  | Interno              | Externo          | Tornillo      | Llave     |       |      |
| BRE    | 20R-S       | 20 | 20  | 50  | 125 | 20                   | ZDMT080310R-MM   | SPMT060304    | ETNA02506 | TW07P | 0.25 |
|        | 20R-M       | 20 | 20  | 75  | 150 | 20                   |                  |               |           |       | 0.31 |
|        | 20R-L       | 20 | 25  | 100 | 200 | 20                   |                  |               |           |       | 0.57 |
|        | 20R-SL      | 20 | 25  | 65  | 125 | 20                   |                  |               |           |       | 0.33 |
|        | 25R-S       | 25 | 25  | 70  | 150 | 23                   | ZDMT110312.5R-MM | SPMT060304    | ETNA02506 | TW07P | 0.47 |
|        | 25R-M       | 25 | 25  | 95  | 175 | 23                   |                  |               |           |       | 0.56 |
|        | 25R-L       | 25 | 32  | 100 | 200 | 23                   |                  |               |           |       | 0.92 |
|        | 25R-SL      | 25 | 25  | 75  | 135 | 23                   |                  |               |           |       | 0.41 |
|        | 32R-S       | 32 | 32  | 85  | 175 | 31                   | ZDMT130416R-MM   | SDMT090308-MM | ETNA0408  | TW15S | 0.87 |
|        | 32R-M       | 32 | 32  | 100 | 200 | 31                   |                  |               |           |       | 1.02 |
| 32R-L  | 32          | 32 | 150 | 250 | 31  | 1.3                  |                  |               |           |       |      |
| 32R-SL | 32          | 32 | 75  | 150 | 31  | 0.71                 |                  |               |           |       |      |

➤ Insertos disponibles

SPMT ZDMT-R-MM



| Codigo          | Recubierto |        |        |        |        | pag. |
|-----------------|------------|--------|--------|--------|--------|------|
|                 | NCM325     | PC3700 | PC5300 | PC3525 | PC6510 |      |
| SPMT 060304     | ●          |        |        |        |        | E25  |
| ZDMT 080310R-MM |            | ●      | ●      |        |        | E30  |
| 110312.5R-MM    |            |        | ●      |        |        |      |
| 130416R-MM      |            | ●      | ●      |        |        |      |

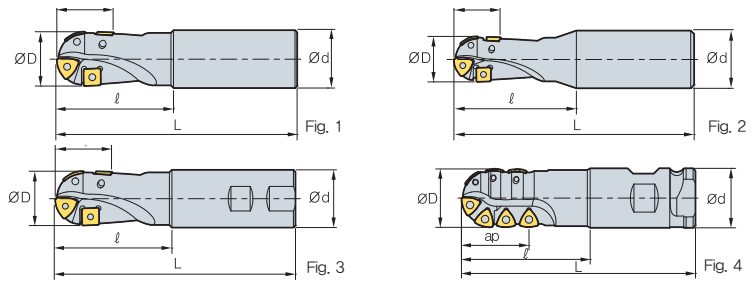
➤ Partes

| Especificaciones | Tornillo  | Llave | Llave |
|------------------|-----------|-------|-------|
| Ø20~Ø25          | ETNA02506 | -     | TW07P |
| Ø32              | ETNA0408  | TW15S | -     |

➤ Insertos disponibles E18, E25, E30



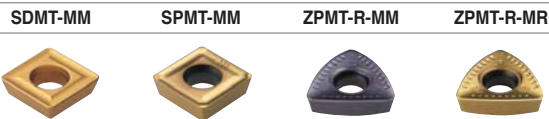
## BRE



(mm)

| Codigo      | Dimensiones |          |     |     |                                  | Insertos disponibles |                                 | Partes   |          | kg   | Fig. |                  |                                 |          |          |      |   |
|-------------|-------------|----------|-----|-----|----------------------------------|----------------------|---------------------------------|----------|----------|------|------|------------------|---------------------------------|----------|----------|------|---|
|             | ØD          | Ød       | l   | L   | ap                               | Interno              | Externo                         | Tornillo | Llave    |      |      |                  |                                 |          |          |      |   |
| BRE         | 40R-S       | 40       | 42  | 85  | 175                              | ZPMT160520R-MM       | SPMT120408-MM<br>SPMT120508-MMN | ETNA0511 | TW20-100 | 1.37 | 1    |                  |                                 |          |          |      |   |
|             | 40R-S-40    | 40       | 40  | 85  | 175                              |                      |                                 |          |          | 1.35 |      |                  |                                 |          |          |      |   |
|             | 40R-M       | 40       | 42  | 100 | 200                              |                      |                                 |          |          | 1.62 |      |                  |                                 |          |          |      |   |
|             | 40R-M-40    | 40       | 40  | 100 | 200                              |                      |                                 |          |          | 1.6  |      |                  |                                 |          |          |      |   |
|             | 40R-L       | 40       | 42  | 150 | 250                              |                      |                                 |          |          | 2.1  |      |                  |                                 |          |          |      |   |
|             | 40R-L-40    | 40       | 40  | 150 | 250                              |                      |                                 |          |          | 2    |      |                  |                                 |          |          |      |   |
|             | 40R-SL      | 40       | 42  | 80  | 160                              |                      |                                 |          |          | 1.21 |      | 3                |                                 |          |          |      |   |
|             | 40R-SL-40   | 40       | 40  | 80  | 160                              |                      |                                 |          |          | 1.2  |      |                  |                                 |          |          |      |   |
| BRE         | 50R-S       | 50       | 42  | 100 | 200                              | ZPMT160525R-MM       | SPMT120408-MM<br>SPMT120508-MMN | ETNA0511 | TW20-100 | 2.02 | 1    |                  |                                 |          |          |      |   |
|             | 50R-S-40    | 50       | 40  | 100 | 200                              |                      |                                 |          |          | 1.93 |      |                  |                                 |          |          |      |   |
|             | 50R-L       | 50       | 42  | 100 | 300                              |                      |                                 |          |          | 3.1  |      |                  |                                 |          |          |      |   |
|             | 50R-L-40    | 50       | 40  | 100 | 300                              |                      |                                 |          |          | 2.92 |      |                  |                                 |          |          |      |   |
|             | 50R-SL      | 50       | 42  | 100 | 250                              |                      |                                 |          |          | 2.56 |      | 3                |                                 |          |          |      |   |
|             | 50R-SL-40   | 50       | 40  | 100 | 250                              |                      |                                 |          |          | 2.5  |      |                  |                                 |          |          |      |   |
|             | BRE         | 63R-S    | 63  | 42  | 100                              |                      |                                 |          |          | 200  |      | ZPMT160531.5R-MM | SPMT120408-MM<br>SPMT120508-MMN | ETNA0511 | TW20-100 | 2.41 | 1 |
|             |             | 63R-S-40 | 63  | 40  | 100                              |                      |                                 |          |          | 200  |      |                  |                                 |          |          | 2.4  |   |
| 63R-L       |             | 63       | 42  | 100 | 300                              | 3.5                  |                                 |          |          |      |      |                  |                                 |          |          |      |   |
| 63R-L-40    |             | 63       | 40  | 100 | 300                              | 3.3                  |                                 |          |          |      |      |                  |                                 |          |          |      |   |
| 63R-SL      |             | 63       | 42  | 100 | 250                              | 2.95                 | 3                               |          |          |      |      |                  |                                 |          |          |      |   |
| 63R-SL-40   |             | 63       | 40  | 100 | 250                              | 2.9                  |                                 |          |          |      |      |                  |                                 |          |          |      |   |
| 40XR-SC40   |             | 40       | 40  | 110 | 200                              | ZPMT160520R-MM       | ETNA0511                        | TW20-100 | 1.43     | 4    |      |                  |                                 |          |          |      |   |
| 40XR-LC40   |             | 40       | 40  | 150 | 250                              | ZPMT160520R-MM       | ETNA0511                        | TW20-100 | 1.89     |      |      |                  |                                 |          |          |      |   |
| 50XR-SC50.8 | 50          | 50.8     | 110 | 200 | ZPMT160525R-MM                   | ETNA0511             | TW20-100                        | 2.34     | 4        |      |      |                  |                                 |          |          |      |   |
| 50XR-LC50.8 | 50          | 50.8     | 150 | 250 | ZPMT160525R-MM<br>ZPMT160525R-MR | ETNA0511             | TW20-100                        | 3.06     |          |      |      |                  |                                 |          |          |      |   |

### Insertos disponibles



| Codigo            | Recubierta |        |        |        |        | pag. |
|-------------------|------------|--------|--------|--------|--------|------|
|                   | NCM325     | PC3700 | PC5300 | PC3525 | PC6510 |      |
| SDMT 090308-MM    |            | ●      | ●      |        |        | E18  |
| SPMT 120408-MM    |            | ●      | ●      |        |        | E25  |
| SPMT 120508-MMN   |            |        |        |        |        |      |
| ZPMT 160520R-MM   |            | ●      | ●      |        |        | E31  |
| ZPMT 160525R-MM   |            | ●      | ●      |        |        |      |
| ZPMT 160525R-MR   |            |        |        |        |        |      |
| ZPMT 160531.5R-MM |            |        | ●      |        |        |      |

### Partes

| Especificaciones | Tornillo | Llave    |
|------------------|----------|----------|
| Ø40~Ø63          | ETNA0511 | TW20-100 |

Insertos disponibles E25, E31



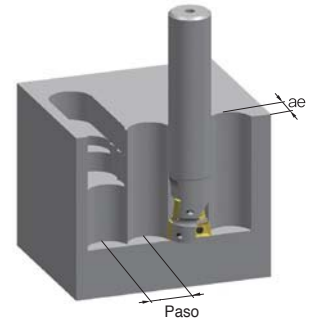
Fresa multifuncional para la fabricación de moldes

# HAVE

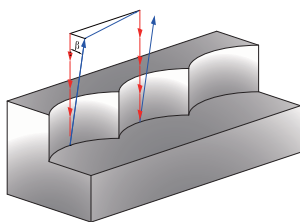
- Herramientas para avance en eje-Z para una mayor rapidez y eficiencia en el mecanizado vertical
- Mecanizado con la totalidad del diámetro

### ➤ Paso máximo en mecanizado vertical

| ae | Diámetro         |      |      |      |      |      |      |      |      |      |      |
|----|------------------|------|------|------|------|------|------|------|------|------|------|
|    | 16               | 17   | 20   | 21   | 25   | 26   | 32   | 33   | 35   | 40   | 50   |
|    | Paso máximo (mm) |      |      |      |      |      |      |      |      |      |      |
| 1  | 7.7              | 8    | 8.7  | 8.9  | 9.7  | 10   | 11.1 | 11.3 | 11.6 | 12.4 | 14   |
| 2  | 10.5             | 10.9 | 12   | 12.3 | 13.5 | 13.8 | 15.4 | 15.7 | 16.2 | 17.4 | 19.5 |
| 3  | 12.4             | 12.9 | 14.2 | 14.6 | 16.2 | 16.6 | 18.6 | 18.9 | 19.5 | 21   | 23.7 |
| 4  | 13.8             | 14.4 | 16   | 16.4 | 18.3 | 18.7 | 21.1 | 21.5 | 22.2 | 24   | 27.1 |
| 5  | 14.8             | 15.4 | 17.3 | 17.8 | 20   | 20.4 | 23.2 | 23.6 | 24.4 | 26.4 | 30   |
| 6  | 15.4             | 16.2 | 18.3 | 18.9 | 21.3 | 21.9 | 24.9 | 25.4 | 26.3 | 28.5 | 32.4 |
| 7  | 15.8             | 16.7 | 19   | 19.7 | 22.4 | 23   | 26.4 | 26.9 | 28   | 30.3 | 34.6 |
| 8  | 16               | 16.9 | 19.5 | 20.3 | 23.3 | 24   | 27.7 | 28.2 | 29.3 | 32   | 36.6 |
| 9  | 15.8             | 16.9 | 19.9 | 20.7 | 24   | 24.7 | 28.7 | 29.3 | 30.5 | 33.4 | 38.4 |
| 10 | 15.4             | 16.7 | 20   | 20.9 | 24.4 | 25.2 | 29.6 | 30.3 | 31.6 | 34.6 | 40   |
| 11 | 14.8             | 16.2 | 19.9 | 20.9 | 24.8 | 25.6 | 30.3 | 31.1 | 32.4 | 35.7 | 41.4 |
| 12 | 13.8             | 15.4 | 19.5 | 20.7 | 24.9 | 25.9 | 30.9 | 31.7 | 33.2 | 36.6 | 42.7 |
| 13 | 12.4             | 14.4 | 19   | 20.3 | 24.9 | 26   | 31.4 | 32.2 | 33.8 | 37.4 | 43.8 |
| 14 | 10.5             | 12.9 | 18.3 | 19.7 | 24.8 | 25.9 | 31.7 | 32.6 | 34.2 | 38.1 | 44.9 |
| 15 | 7.7              | 10.9 | 17.3 | 18.9 | 24.4 | 25.6 | 31.9 | 32.8 | 34.6 | 38.7 | 45.8 |
| 16 | -                | 8    | 16   | 17.8 | 24   | 25.2 | 32   | 32.9 | 34.8 | 39.1 | 46.6 |
| 17 | -                | -    | 14.2 | 16.4 | 23.3 | 24.7 | 31.9 | 32.9 | 34.9 | 39.5 | 47.3 |
| 18 | -                | -    | 12   | 14.6 | 22.4 | 24   | 31.7 | 32.8 | 34.9 | 39.7 | 48   |
| 19 | -                | -    | 8.7  | 12.3 | 21.3 | 23   | 31.4 | 32.6 | 34.8 | 39.9 | 48.5 |
| 20 | -                | -    | -    | 8.9  | 20   | 21.9 | 30.9 | 32.2 | 34.6 | 40   | 48.9 |
| 21 | -                | -    | -    | -    | 18.3 | 20.4 | 30.3 | 31.7 | 34.2 | 39.9 | 49.3 |
| 22 | -                | -    | -    | -    | 16.2 | 18.7 | 29.6 | 31.1 | 33.8 | 39.7 | 49.6 |
| 23 | -                | -    | -    | -    | 13.5 | 16.6 | 28.7 | 30.3 | 33.2 | 39.5 | 49.8 |
| 24 | -                | -    | -    | -    | 9.7  | 13.8 | 27.7 | 29.3 | 32.4 | 39.1 | 49.9 |
| 25 | -                | -    | -    | -    | -    | 10   | 26.4 | 28.2 | 31.6 | 38.7 | 50   |



### ➤ Programación en mecanizado vertical



- Trayectoria de mecanizado
- Avance rápido
- $\beta$  Ángulo entre la herramienta y la pieza ( $\beta \geq 1^\circ$ )

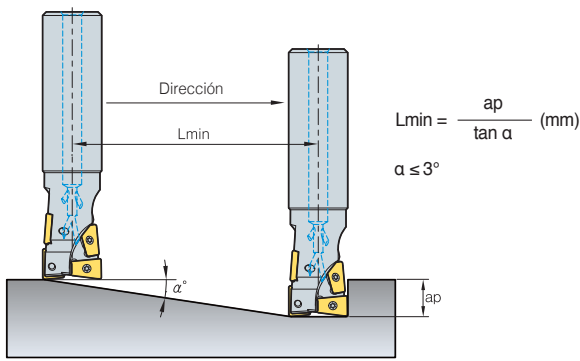
- Reducir un 30% el avance hasta que se hayan mecanizado 3 mm
- Mantenga la herramienta alejada de la pieza más de  $1^\circ$  (b) al acabar el mecanizado o al mover la herramienta al paso siguiente

### ➤ Condiciones de corte recomendadas

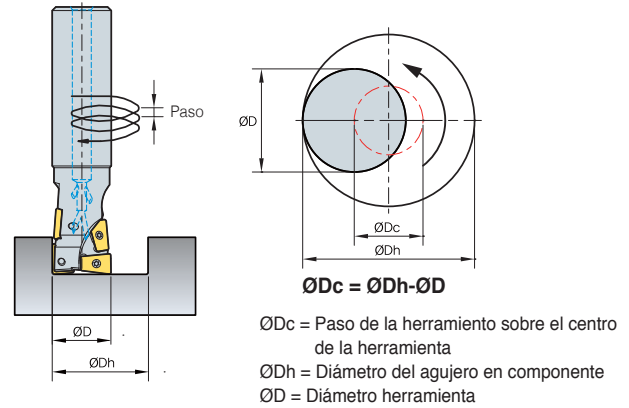
| Codigo   | Dureza   | Calidades            | Condición de Corte | Ø16, 17         |           | Ø20, 21         |           | Ø25, 26         |           | Ø32, 33         |           | Ø35             |           | Ø40             |           | Ø50             |           |      |
|----------|--|----------------------|--------------------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|------|
|          |  |                      | vc (m/min)         | Avance (mm/rev) | Step (mm) | Avance (mm/rev) | Step (mm) | Avance (mm/rev) | Step (mm) | Avance (mm/rev) | Step (mm) | Avance (mm/rev) | Step (mm) | Avance (mm/rev) | Step (mm) | Avance (mm/rev) | Step (mm) |      |
| <b>P</b> | Acero con bajo contenido de carbono (SS400)    | Debajo 200HB         | PC3500             | 200 (150~250)   | 0.03      | 0.20            | 0.04      | 0.30            | 0.05      | 0.30            | 0.05      | 0.30            | 0.06      | 0.30            | 0.06      | 0.30            | 0.07      | 0.30 |
|          | Acero al carbono, Acero aleado (SM50C, SCM440) | Debajo 100HRC        | PC3500             | 180 (120~220)   | 0.03      | 0.20            | 0.04      | 0.30            | 0.05      | 0.30            | 0.05      | 0.30            | 0.05      | 0.30            | 0.06      | 0.30            | 0.06      | 0.30 |
| <b>M</b> | Acero Inoxidable (STS)                         | Debajo 270HB         | PC5300             | 160 (120~200)   | 0.03      | 0.15            | 0.04      | 0.25            | 0.05      | 0.25            | 0.05      | 0.25            | 0.05      | 0.25            | 0.06      | 0.25            | 0.06      | 0.25 |
| <b>K</b> | Fundición (GC, GCD)                            | 350N/mm <sup>2</sup> | PC5300             | 200 (150~250)   | 0.04      | 0.40            | 0.05      | 0.50            | 0.06      | 0.50            | 0.06      | 0.50            | 0.06      | 0.50            | 0.07      | 0.50            | 0.07      | 0.50 |
| <b>H</b> | Acero Endurecido                               | 40~55HrC             | PC5300             | 80 (50~120)     | 0.03      | 0.15            | 0.03      | 0.25            | 0.04      | 0.25            | 0.04      | 0.25            | 0.04      | 0.25            | 0.04      | 0.25            | 0.05      | 0.25 |

\* Nota : el avance interrumpido por debajo de 0,5D es necesario durante el taladrado inicial

## 1. Maquinado en rampa



## 2. Core en rampa helicoidal/circular



## Condiciones de corte recomendadas para maquinados en rampa lineal y helicoidal

| Codigo | Dureza     | Calidades | Velocidad de Corte<br>vc<br>(m/min) | Ø16, 17     |                   |                   |                        | Ø20, 21     |                   |                   |                        | Ø25, 26     |                   |                   |                        | Ø32, 33     |                   |                   |                        | Ø35         |                   |                   |                        | Ø40         |                   |                   |                        | Ø50         |                   |                   |                        |
|--------|------------|-----------|-------------------------------------|-------------|-------------------|-------------------|------------------------|-------------|-------------------|-------------------|------------------------|-------------|-------------------|-------------------|------------------------|-------------|-------------------|-------------------|------------------------|-------------|-------------------|-------------------|------------------------|-------------|-------------------|-------------------|------------------------|-------------|-------------------|-------------------|------------------------|
|        |            |           |                                     | ØDh<br>(mm) | ap<br>(mm/diente) | fz<br>(mm/diente) | Paso<br>máximo<br>(mm) | ØDh<br>(mm) | ap<br>(mm/diente) | fz<br>(mm/diente) | Paso<br>máximo<br>(mm) | ØDh<br>(mm) | ap<br>(mm/diente) | fz<br>(mm/diente) | Paso<br>máximo<br>(mm) | ØDh<br>(mm) | ap<br>(mm/diente) | fz<br>(mm/diente) | Paso<br>máximo<br>(mm) | ØDh<br>(mm) | ap<br>(mm/diente) | fz<br>(mm/diente) | Paso<br>máximo<br>(mm) | ØDh<br>(mm) | ap<br>(mm/diente) | fz<br>(mm/diente) | Paso<br>máximo<br>(mm) | ØDh<br>(mm) | ap<br>(mm/diente) | fz<br>(mm/diente) | Paso<br>máximo<br>(mm) |
| P      | ≤ 200HB    | PC3500    | 200<br>(150-250)                    | 19<br>~30   | 0.5D<br>~1D       | 0.15<br>~0.12     | 0.35<br>~1.61          | 23<br>~28   | 0.5D<br>~1D       | 0.18<br>~0.12     | 0.35<br>~2.07          | 29<br>~47   | 0.5D<br>~1D       | 0.2<br>~0.15      | 0.46<br>~2.53          | 37<br>~60   | 0.5D<br>~1D       | 0.25<br>~0.2      | 0.58<br>~3.23          | 41<br>~65   | 0.5D<br>~1D       | 0.28<br>~0.2      | 0.69<br>~3.46          | 47<br>~75   | 0.5D<br>~1D       | 0.3<br>~0.2       | 0.81<br>~4.03          | 58<br>~95   | 0.5D<br>~1D       | 0.35<br>~0.25     | 0.92<br>~5.18          |
|        |            |           | 180<br>(120-220)                    | 19<br>~30   | 0.5D<br>~1D       | 0.15<br>~0.1      | 0.26<br>~1.23          | 23<br>~28   | 0.5D<br>~1D       | 0.16<br>~0.12     | 0.26<br>~1.58          | 29<br>~47   | 0.5D<br>~1D       | 0.18<br>~0.12     | 0.35<br>~1.93          | 37<br>~60   | 0.5D<br>~1D       | 0.2<br>~0.15      | 0.44<br>~2.46          | 41<br>~65   | 0.5D<br>~1D       | 0.22<br>~0.17     | 0.53<br>~2.63          | 47<br>~75   | 0.5D<br>~1D       | 0.25<br>~0.2      | 0.61<br>~3.07          | 58<br>~95   | 0.5D<br>~1D       | 0.28<br>~0.25     | 0.70<br>~3.95          |
| M      | ≤ 270HB    | PC5300    | 160<br>(120-200)                    | 19<br>~30   | 0.2D<br>~0.5D     | 0.13<br>~0.1      | 0.18<br>~0.84          | 23<br>~28   | 0.2D<br>~0.5D     | 0.15<br>~0.12     | 0.18<br>~1.09          | 29<br>~47   | 0.2D<br>~0.5D     | 0.18<br>~0.12     | 0.24<br>~1.33          | 37<br>~60   | 0.2D<br>~0.5D     | 0.2<br>~0.15      | 0.24<br>~1.33          | 41<br>~65   | 0.2D<br>~0.5D     | 0.22<br>~0.17     | 0.36<br>~1.81          | 47<br>~75   | 0.2D<br>~0.5D     | 0.25<br>~0.2      | 0.42<br>~2.11          | 58<br>~95   | 0.2D<br>~0.5D     | 0.48<br>~2.71     |                        |
| K      | ≤ 350N/mm² | PC5300    | 200<br>(150-250)                    | 19<br>~30   | 0.7D<br>~1D       | 0.17<br>~0.12     | 0.43<br>~2.0           | 23<br>~28   | 0.7D<br>~1D       | 0.2<br>~0.12      | 0.42<br>~2.57          | 29<br>~47   | 0.7D<br>~1D       | 0.2<br>~0.15      | 0.57<br>~3.14          | 37<br>~60   | 0.7D<br>~1D       | 0.25<br>~0.2      | 0.71<br>~3.99          | 41<br>~65   | 0.7D<br>~1D       | 0.28<br>~0.2      | 0.86<br>~4.28          | 47<br>~75   | 0.7D<br>~1D       | 0.3<br>~0.2       | 1.0<br>~4.99           | 58<br>~95   | 0.7D<br>~1D       | 0.35<br>~0.25     | 1.14<br>~6.42          |
| H      | 40-55HRC   | PC5300    | 80<br>(50-120)                      | 19<br>~30   | 0.2D<br>~0.5D     | 0.1<br>~0.05      | 0.18<br>~0.84          | 23<br>~28   | 0.2D<br>~0.5D     | 0.12<br>~0.07     | 0.18<br>~1.09          | 29<br>~47   | 0.2D<br>~0.5D     | 0.13<br>~0.1      | 0.24<br>~1.33          | 37<br>~60   | 0.2D<br>~0.5D     | 0.15<br>~0.12     | 0.30<br>~1.69          | 41<br>~65   | 0.2D<br>~0.5D     | 0.17<br>~0.13     | 0.36<br>~1.81          | 47<br>~75   | 0.2D<br>~0.5D     | 0.18<br>~0.15     | 0.42<br>~2.11          | 58<br>~95   | 0.2D<br>~0.5D     | 0.2<br>~0.15      | 0.48<br>~2.71          |

## Condiciones de corte recomendadas in shouldering

| Codigo | Dureza     | Calidades | Velocidad de Corte<br>vc<br>(m/min) | Ø16,17         |                |                       | Ø20,21         |                |                       | Ø25,26         |                |                       | Ø32,33         |                |                       | Ø35            |                |                       | Ø40            |                |                       | Ø50            |                |                       |
|--------|------------|-----------|-------------------------------------|----------------|----------------|-----------------------|----------------|----------------|-----------------------|----------------|----------------|-----------------------|----------------|----------------|-----------------------|----------------|----------------|-----------------------|----------------|----------------|-----------------------|----------------|----------------|-----------------------|
|        |            |           |                                     | max ap<br>(mm) | max ae<br>(mm) | max fz<br>(mm/diente) | max ap<br>(mm) | max ae<br>(mm) | max fz<br>(mm/diente) | max ap<br>(mm) | max ae<br>(mm) | max fz<br>(mm/diente) | max ap<br>(mm) | max ae<br>(mm) | max fz<br>(mm/diente) | max ap<br>(mm) | max ae<br>(mm) | max fz<br>(mm/diente) | max ap<br>(mm) | max ae<br>(mm) | max fz<br>(mm/diente) | max ap<br>(mm) | max ae<br>(mm) | max fz<br>(mm/diente) |
| P      | ≤ 200HB    | PC3500    | 200<br>(150-250)                    | 17             | 8              | 0.25                  | 22             | 10             | 0.3                   | 27             | 13             | 0.35                  | 35             | 16             | 0.4                   | 40             | 18             | 0.45                  | 44             | 20             | 0.5                   | 55             | 25             | 0.6                   |
|        |            |           | 180<br>(120-220)                    | 17             | 8              | 0.2                   | 22             | 10             | 0.25                  | 27             | 13             | 0.3                   | 35             | 16             | 0.35                  | 40             | 18             | 0.4                   | 44             | 20             | 0.4                   | 55             | 25             | 0.5                   |
| M      | ≤ 270HB    | PC5300    | 160<br>(120-200)                    | 17             | 8              | 0.2                   | 22             | 10             | 0.25                  | 27             | 13             | 0.3                   | 35             | 16             | 0.35                  | 40             | 18             | 0.4                   | 44             | 20             | 0.4                   | 55             | 25             | 0.5                   |
| K      | ≤ 350N/mm² | PC5300    | 200<br>(150-250)                    | 17             | 8              | 0.25                  | 22             | 10             | 0.3                   | 27             | 13             | 0.35                  | 35             | 16             | 0.4                   | 40             | 18             | 0.45                  | 44             | 20             | 0.5                   | 55             | 25             | 0.6                   |
| H      | 40-55HRC   | PC5300    | 80<br>(50-120)                      | 17             | 5              | 0.15                  | 22             | 6              | 0.2                   | 27             | 7              | 0.22                  | 35             | 8              | 0.25                  | 40             | 9              | 0.3                   | 44             | 10             | 0.3                   | 55             | 14             | 0.35                  |

## Condiciones de corte recomendadas in grooving

| Codigo | Dureza     | Calidades | Velocidad de Corte<br>vc<br>(m/min) | Ø16,17         |                       | Ø20,21         |                       | Ø25,26         |                       | Ø32,33         |                       | Ø35            |                       | Ø40            |                       | Ø50            |                       |
|--------|------------|-----------|-------------------------------------|----------------|-----------------------|----------------|-----------------------|----------------|-----------------------|----------------|-----------------------|----------------|-----------------------|----------------|-----------------------|----------------|-----------------------|
|        |            |           |                                     | max ap<br>(mm) | max fz<br>(mm/diente) | max ap<br>(mm) | max fz<br>(mm/diente) | max ap<br>(mm) | max fz<br>(mm/diente) | max ap<br>(mm) | max fz<br>(mm/diente) | max ap<br>(mm) | max fz<br>(mm/diente) | max ap<br>(mm) | max fz<br>(mm/diente) | max ap<br>(mm) | max fz<br>(mm/diente) |
| P      | ≤ 200HB    | PC3500    | 200<br>(150-250)                    | 17             | 0.15                  | 22             | 0.18                  | 27             | 0.2                   | 35             | 0.25                  | 40             | 0.27                  | 44             | 0.3                   | 55             | 0.35                  |
|        |            |           | 180<br>(120-220)                    | 17             | 0.15                  | 22             | 0.15                  | 27             | 0.18                  | 35             | 0.2                   | 40             | 0.22                  | 44             | 0.25                  | 55             | 0.3                   |
| M      | ≤ 270HB    | PC5300    | 160<br>(120-200)                    | 17             | 0.15                  | 22             | 0.15                  | 27             | 0.18                  | 35             | 0.2                   | 40             | 0.22                  | 44             | 0.25                  | 55             | 0.3                   |
| K      | ≤ 350N/mm² | PC5300    | 200<br>(150-250)                    | 17             | 0.15                  | 22             | 0.18                  | 27             | 0.2                   | 35             | 0.25                  | 40             | 0.27                  | 44             | 0.3                   | 55             | 0.35                  |
| H      | 40-55HRC   | PC5300    | 80<br>(50-120)                      | 12             | 0.1                   | 14             | 0.12                  | 17             | 0.15                  | 22             | 0.15                  | 25             | 0.18                  | 28             | 0.18                  | 35             | 0.22                  |



# HAVE (Múltiples Filos)

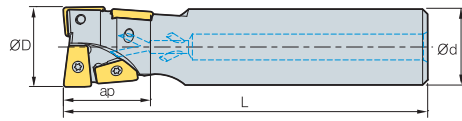


Fig. 1

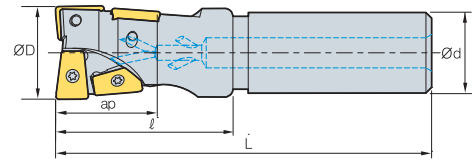


Fig. 2



AA  
90°  
• AR: 7°~12°  
• RR: -12°~ -4°

(mm)

| Codigo      |   | ØD | Ød | ℓ  | L   | ap   | Insertos disponibles |      | Fig. |
|-------------|---|----|----|----|-----|------|----------------------|------|------|
| <b>HAVE</b> |   |    |    |    |     |      |                      |      |      |
| 0816HR-S16M | 4 | 16 | 16 | 30 | 120 | 17.6 | XPMT0802ER-MM        | 0.15 | 1    |
| 0816HR-L16M | 4 | 16 | 16 | 30 | 200 | 17.6 |                      | 0.26 |      |
| 0817HR-S16M | 4 | 17 | 16 | 30 | 120 | 17.6 |                      | 0.18 | 2    |
| 0817HR-L16M | 4 | 17 | 16 | 30 | 200 | 17.6 |                      | 0.27 |      |
| 1020HR-S20M | 4 | 20 | 20 | 35 | 130 | 22   | XPMT1003ER-MM        | 0.26 | 1    |
| 1020HR-L20M | 4 | 20 | 20 | 35 | 210 | 22   |                      | 0.44 |      |
| 1021HR-S20M | 4 | 21 | 20 | 35 | 130 | 22   |                      | 0.26 | 2    |
| 1021HR-L20M | 4 | 21 | 20 | 35 | 210 | 22   |                      | 0.45 |      |
| 1325HR-S25M | 4 | 25 | 25 | 45 | 140 | 27   | XPMT13T3ER-MM        | 0.41 | 1    |
| 1325HR-L25M | 4 | 25 | 25 | 45 | 220 | 27   |                      | 0.71 |      |
| 1326HR-S25M | 4 | 26 | 25 | 45 | 140 | 27   |                      | 0.45 | 2    |
| 1326HR-L25M | 4 | 26 | 25 | 45 | 220 | 27   |                      | 0.68 |      |
| 1632HR-S32M | 4 | 32 | 32 | 50 | 150 | 35.2 | XPMT1604ER-MM        | 0.72 | 1    |
| 1632HR-L32M | 4 | 32 | 32 | 50 | 250 | 35.2 |                      | 1.32 |      |
| 1633HR-S32M | 4 | 33 | 32 | 50 | 150 | 35.2 |                      | 0.76 | 2    |
| 1633HR-L32M | 4 | 33 | 32 | 50 | 250 | 35.2 |                      | 1.27 |      |
| 1835HR-S32M | 4 | 35 | 32 | 50 | 150 | 40   | XPMT1805ER-MM        | 0.75 | 1    |
| 1835HR-L32M | 4 | 35 | 32 | 50 | 230 | 40   |                      | 1.23 |      |
| 2040HR-S32M | 4 | 40 | 32 | 55 | 160 | 44   | XPMT2006ER-MM        | 0.74 | 2    |
| 2040HR-L32M | 4 | 40 | 32 | 55 | 240 | 44   |                      | 1.35 |      |
| 2550HR-S42M | 4 | 50 | 42 | 70 | 170 | 55   | XPMT2507ER-MM        | 1.53 | 2    |
| 2550HR-L42M | 4 | 50 | 42 | 70 | 250 | 55   |                      | 2.60 |      |

## Insertos disponibles

XPMT-MM



| Codigo    | Cermet |      | Recubierta |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|-----------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|           | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| XPMT      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     | E30 |
| 0802ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
| 1003ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
| 13T3ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
| 1604ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
| 1805ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
| 2006ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
| 2507ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |

## Partes

| Especificaciones |            |       |
|------------------|------------|-------|
|                  | Tornillo   | Llave |
| Ø16~Ø17          | FTNA0204   | TW06S |
| Ø20~Ø21          | FTNA02205  | TW09S |
| Ø25~Ø26          | FTKA0307   | TW15S |
| Ø32~Ø33          | FTKA0408   | TW20S |
| Ø35              |            |       |
| Ø40              | FTGA0511-P |       |
| Ø50              | FTNA0615   |       |

Insertos disponibles E30

## HAVE (Filo único)

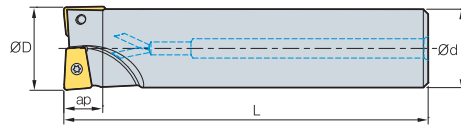


Fig. 1

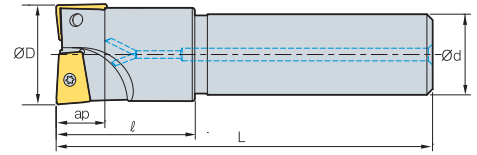


Fig. 2



AA  
90°

• AR: 7°~12°  
• RR: -12°~-4°

(mm)

| Codigo     | ØD         | Ød | ℓ  | L   | ap   | Insertos disponibles | kg            | Fig. |      |
|------------|------------|----|----|-----|------|----------------------|---------------|------|------|
| HAVE       | 0816HR-S16 | 16 | 16 | 30  | 120  | 7.5                  | XPMT0802ER-MM | 0.16 | 1    |
|            | 0816HR-L16 | 16 | 16 | 30  | 200  | 7.5                  |               | 0.27 |      |
| 0817HR-S16 | 17         | 16 | 30 | 120 | 7.5  | 0.16                 |               | 2    |      |
| 0817HR-L16 | 17         | 16 | 30 | 200 | 7.5  |                      |               |      | 0.27 |
|            | 1020HR-S20 | 20 | 20 | 35  | 130  | 9.5                  | XPMT1003ER-MM | 0.28 | 1    |
|            | 1020HR-L20 | 20 | 20 | 35  | 210  | 9.5                  |               | 0.46 |      |
| 1021HR-S20 | 21         | 20 | 35 | 130 | 9.5  | 0.28                 |               | 2    |      |
| 1021HR-L20 | 21         | 20 | 35 | 210 | 9.5  |                      |               |      | 0.46 |
|            | 1325HR-S25 | 25 | 25 | 45  | 140  | 12                   | XPMT13T3ER-MM | 0.44 | 1    |
|            | 1325HR-L25 | 25 | 25 | 45  | 220  | 12                   |               | 0.76 |      |
| 1326HR-S25 | 26         | 25 | 45 | 140 | 12   | 0.47                 |               | 2    |      |
| 1326HR-L25 | 26         | 25 | 45 | 220 | 12   |                      |               |      | 0.76 |
|            | 1632HR-S32 | 32 | 32 | 50  | 150  | 15.4                 | XPMT1604ER-MM | 0.77 | 1    |
|            | 1632HR-L32 | 32 | 32 | 50  | 250  | 15.4                 |               | 1.36 |      |
| 1633HR-S32 | 33         | 32 | 50 | 150 | 15.4 | 0.81                 |               | 2    |      |
| 1633HR-L32 | 33         | 32 | 50 | 250 | 15.4 |                      |               |      | 1.41 |
|            | 1835HR-S32 | 35 | 32 | 50  | 150  | 16.7                 | XPMT1805ER-MM | 0.81 | 1    |
|            | 1835HR-L32 | 35 | 32 | 50  | 230  | 16.7                 |               | 1.28 |      |
|            | 2040HR-S32 | 40 | 32 | 55  | 160  | 19.3                 | XPMT2006ER-MM | 0.95 | 2    |
|            | 2040HR-L32 | 40 | 32 | 55  | 240  | 19.3                 |               | 1.45 |      |
|            | 2550HR-S42 | 50 | 42 | 70  | 170  | 24                   | XPMT2507ER-MM | 1.68 | 2    |
|            | 2550HR-L42 | 50 | 42 | 70  | 250  | 24                   |               | 2.54 |      |

### Insertos disponibles

XPMT-MM



| Codigo    | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|-----------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|           | CN2000 | CN30 | NCM325     | NC6330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| XPMT      |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      |        |      |       |     | E30 |
| 0802ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      |        |      |       |     |     |
| 1003ER-MM |        |      |            |        |        |        |        |        | ●      |        |        |        |          | ●      |        |      |       |     |     |
| 13T3ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      |        |      |       |     |     |
| 1604ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      |        |      |       |     |     |
| 1805ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      |        |      |       |     |     |
| 2006ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      |        |      |       |     |     |
| 2507ER-MM |        |      |            |        |        |        |        |        |        |        |        |        |          | ●      |        |      |       |     |     |

### Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø16~Ø17          | FTNA0204   | TW06S |
| Ø20~Ø21          | FTNA02205  | TW09S |
| Ø25~Ø26          | FTKA0307   | TW15S |
| Ø32~Ø33          | FTKA0408   | TW15S |
| Ø35              |            |       |
| Ø40              | FTGA0511-P | TW20S |
| Ø50              | FTNA0615   |       |

Insertos disponibles E30



Productividad alta con grado optimizado para maquinado de alta velocidad

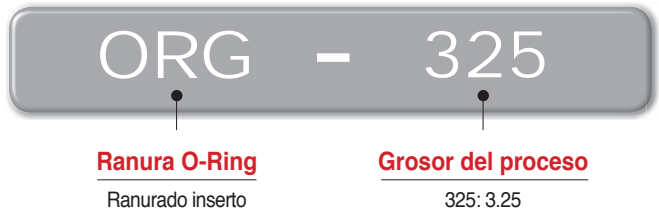
# O-ring Cutter

- Optimizado para el ranurado de la asiento del o-ring en un molde de plástico.
- Garantiza una rugosidad de la superficie superior comparada a HSS y herramienta de soldado
- Productividad alta con grado optimizado para maquinado de velocidad
- Reduce tiempo para rectificación y alineación de la herramienta
- Los tipos están disponibles para las ofertas

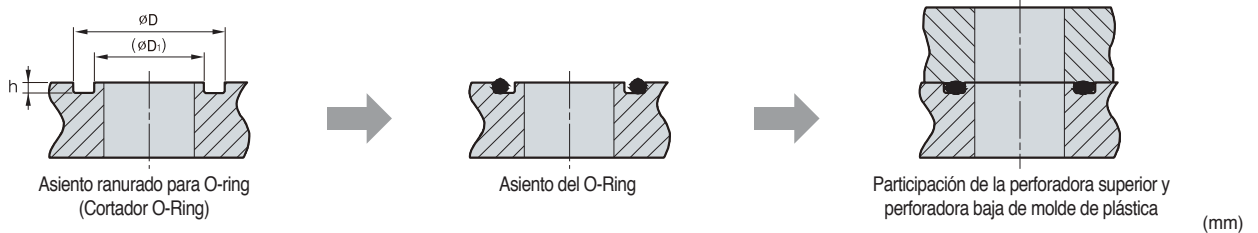
## ☛ Sistema de código Portaherramientas



## ☛ Sistema de código de inserto



## ☛ Ranurado y ensamblado del O-Ring



| Tamaño O-ring | ØD   | (ØD <sub>1</sub> ) | h ± 0.05 |
|---------------|------|--------------------|----------|
| P08           | 11.0 | 5.8                | 1.40     |
| P09           | 12.0 | 6.8                |          |
| P10           | 13.0 | 7.8                |          |
| P11           | 15.0 | 8.5                |          |
| P12           | 16.0 | 9.5                |          |
| P14           | 18.0 | 11.5               | 1.80     |
| P15           | 19.0 | 12.5               |          |
| P16           | 20.0 | 13.5               |          |
| P18           | 22.0 | 15.5               |          |
| P20           | 24.0 | 17.5               |          |
| P21           | 25.0 | 18.5               | 2.70     |
| P22           | 26.0 | 19.5               |          |
| P24           | 30.0 | 20.6               |          |
| P25           | 31.0 | 21.6               |          |

| Tamaño O-ring | ØD   | (ØD <sub>1</sub> ) | h ± 0.05 |
|---------------|------|--------------------|----------|
| P26           | 32.0 | 22.6               | 2.70     |
| P28           | 34.0 | 24.6               |          |
| P29           | 35.0 | 25.6               |          |
| P30           | 36.0 | 26.6               |          |
| P31           | 37.0 | 27.6               |          |
| P32           | 38.0 | 28.6               |          |
| P34           | 40.0 | 30.6               |          |
| P35           | 41.0 | 31.6               |          |
| P38           | 44.0 | 34.6               |          |
| G40           | 46.0 | 36.6               |          |
| G25           | 30.0 | 21.8               | 2.40     |
| G30           | 35.0 | 26.8               |          |
| G35           | 40.0 | 31.8               |          |
| G40           | 45.0 | 36.8               |          |

## ☛ Condiciones de corte recomendadas

| Pieza Trabajo               | fz (mm/diente) | vc (m/min)    |
|-----------------------------|----------------|---------------|
|                             |                | Recubrimiento |
|                             |                | PC3500        |
| Acero Inoxidable (STS304)   | 0.03~0.12      | 60~130        |
| Acero al carbono (SM□□C)    | 0.05~0.15      | 80~150        |
| Acero aleado (SCM)          | 0.05~0.15      | 80~150        |
| Acero endurecido (STD, NAK) | 0.03~0.12      | 60~130        |

## ☛ Ejemplo maquinado



## ORC



(mm)

| Codigo |     | ØD   | Ød1  | Ød   | ℓ  | L   | Insertos disponibles | Tamaño O-ring |     |
|--------|-----|------|------|------|----|-----|----------------------|---------------|-----|
| ORC -  | P08 | 1    | 11.0 | 5.7  | 16 | 30  | 150                  | ORG265        | P08 |
|        | P09 | 1    | 12.0 | 6.7  | 16 | 30  | 150                  | ORG265        | P09 |
|        | P10 | 1    | 13.0 | 7.7  | 16 | 30  | 150                  | ORG265        | P10 |
|        | P11 | 1    | 15.0 | 8.5  | 16 | 30  | 150                  | ORG325        | P11 |
|        | P12 | 2    | 16.0 | 9.5  | 16 | 30  | 200                  | ORG325        | P12 |
|        | P14 | 2    | 18.0 | 11.5 | 20 | 30  | 200                  | ORG325        | P14 |
|        | P15 | 2    | 19.0 | 12.5 | 20 | 30  | 200                  | ORG325        | P15 |
|        | P16 | 2    | 20.0 | 13.5 | 20 | 30  | 200                  | ORG325        | P16 |
|        | P18 | 2    | 22.0 | 15.5 | 20 | 30  | 200                  | ORG325        | P18 |
|        | P20 | 2    | 24.0 | 17.5 | 25 | 30  | 200                  | ORG325        | P20 |
|        | P21 | 2    | 25.0 | 18.5 | 25 | 30  | 200                  | ORG325        | P21 |
|        | P22 | 2    | 26.0 | 19.5 | 25 | 30  | 200                  | ORG325        | P22 |
|        | P24 | 2    | 30.0 | 20.6 | 32 | 40  | 250                  | ORG470        | P24 |
|        | P25 | 2    | 31.0 | 21.6 | 32 | 40  | 250                  | ORG470        | P25 |
|        | P26 | 2    | 32.0 | 22.6 | 32 | 40  | 250                  | ORG470        | P26 |
|        | P28 | 2    | 34.0 | 24.6 | 32 | 40  | 250                  | ORG470        | P28 |
|        | P29 | 2    | 35.0 | 25.6 | 32 | 40  | 250                  | ORG470        | P29 |
|        | P30 | 2    | 36.0 | 26.6 | 32 | 40  | 250                  | ORG470        | P30 |
|        | P31 | 2    | 37.0 | 27.6 | 32 | 40  | 250                  | ORG470        | P31 |
|        | P32 | 2    | 38.0 | 28.6 | 32 | 40  | 250                  | ORG470        | P32 |
| P34    | 2   | 40.0 | 30.6 | 42   | 40 | 250 | ORG470               | P34           |     |
| P35    | 2   | 41.0 | 31.6 | 42   | 40 | 250 | ORG470               | P35           |     |
| P38    | 2   | 44.0 | 34.6 | 42   | 40 | 250 | ORG470               | P38           |     |
| P40    | 2   | 46.0 | 36.6 | 42   | 40 | 250 | ORG470               | P40           |     |
| ORC -  | G25 | 2    | 30.0 | 21.9 | 32 | 40  | 250                  | ORG405        | G25 |
|        | G30 | 2    | 35.0 | 26.9 | 32 | 40  | 250                  | ORG405        | G30 |
|        | G35 | 2    | 40.0 | 31.9 | 42 | 40  | 250                  | ORG405        | G35 |
|        | G40 | 2    | 45.0 | 36.9 | 42 | 40  | 250                  | ORG405        | G40 |

### Insertos disponibles

ORG



| Cortador Codigo | Codigo  | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|-----------------|---------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|                 |         | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| ORC-P08~P10     | ORG 265 |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| ORC-P11~P22     | 325     |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| ORC-P24~P40     | 470     |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |
| ORC-G25~G40     | 405     |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |

### Partes

| Especificaciones |           |       |
|------------------|-----------|-------|
| Ø11~Ø26          | FTKA0307  | TW09S |
| Ø30~Ø46          | FTGA03508 | TW15S |
| Ø30~Ø45          |           |       |

Insertos disponibles E14





Diversas aplicaciones para chamfers

# Chamfer Tool

- Diversas aplicaciones para Chamfer
- Chamfer en ángulo 15°, 30°, 45°, 60° para las necesidades del cliente
- El filo proporciona una amplia gama de Chamfer



Herramientas Frontales y Posteriores



Herramientas largas de Chaflán

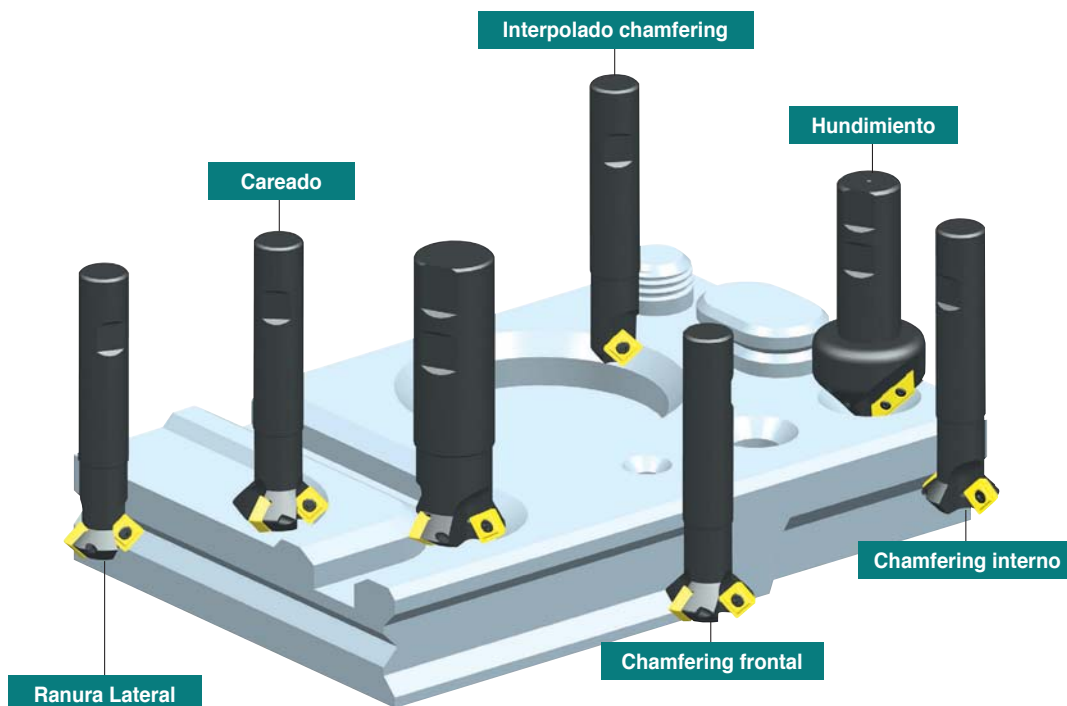
🔗 Sistema codificación

|                                 |                               |   |                                   |   |  |                                  |
|---------------------------------|-------------------------------|---|-----------------------------------|---|--|----------------------------------|
| <b>CE</b>                       | <b>45</b>                     | <b>- 11</b>   | <b>25</b>                         | <b>R -</b>                              | <b>S</b>   | <b>20</b>                        |
| <b>Cortador para Chafilanes</b> | <b>Angulo Chafilán</b><br>45° | <b>Insertos Disponibles</b><br>11: SPMT110408-KC<br>12: SPMN120308<br>31: XCET310404ER-KC | <b>Diametro corte Min.</b><br>Ø25 | <b>Mano Hetta</b><br>R: Der.<br>L: Izq. | <b>Longitud Hetta</b><br>S: Standard<br>M: Medio<br>L: Largo | <b>Diametro del Zanco</b><br>Ø20 |

🔗 Condiciones de corte recomendadas

| Pieza Trabajo | Calidades | ØD (Ø5~Ø20) |                | ØD (Ø25~Ø35) |                |
|---------------|-----------|-------------|----------------|--------------|----------------|
|               |           | vc (m/min)  | fz (mm/diente) | vc (m/min)   | fz (mm/diente) |
| <b>P</b>      | PC3500    | 160~270     | 0.05~0.25      | 160~270      | 0.05~0.25      |
|               | PC5300    | 190~310     |                | 190~310      |                |
|               | ST30A     | 60~100      |                | 60~100       |                |
| <b>M</b>      | PC5300    | 100~160     | 0.05~0.20      | 100~160      | 0.10~0.30      |
|               | PC5400    | 70~120      |                | 70~120       |                |
| <b>K</b>      | PC5300    | 110~180     | 0.10~0.30      | 110~180      | 0.30~0.50      |
|               | G10       | 50~90       |                | 50~90        |                |

🔗 Ej. Aplicación

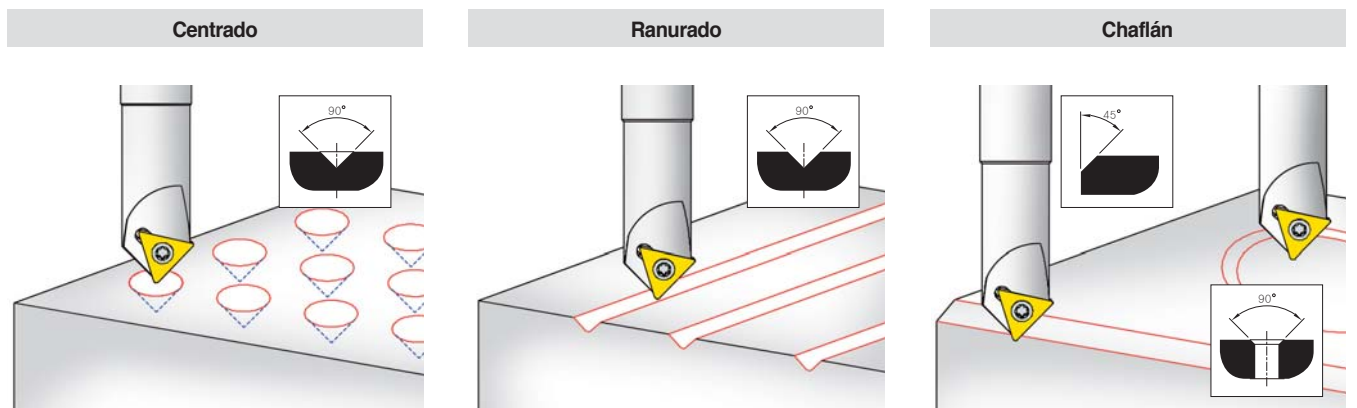


## Multi-funcional Chamfer Tool

### ☛ Sistema codificación

|                              |                           |                                |                        |                    |                       |                       |
|------------------------------|---------------------------|--------------------------------|------------------------|--------------------|-----------------------|-----------------------|
| CE                           | 45                        | - 16                           | 00                     | R                  | - S                   | 20                    |
| <b>Cortador para Chaflán</b> | <b>Angulo del Chaflán</b> | <b>Tamaño Inserto</b>          | <b>Diametro minimo</b> | <b>Mano Hetta</b>  | <b>Longitud Hetta</b> | <b>Diametro Zanco</b> |
|                              | 45°                       | 16: TWX16R-KC<br>22: TWX22R-KC | Ø0                     | R: Der.<br>L: Izq. | S: 90,110<br>L: 200   | Ø12<br>Ø20<br>Ø25     |

### ☛ Area de Aplicacion y Condición de Corte Recomendado



| Pieza Trabajo                                   | Dureza (HRC) | Centrado, Ranurado |                | Chaflán    |                |
|---|--------------|--------------------|----------------|------------|----------------|
|   |              | vc (m/min)         | fz (mm/diente) | vc (m/min) | fz (mm/diente) |
| Acero Medio, Acero al Carbon, Aleación de Acero | Under HRC 30 | 80~200             | 0.01~0.04      | 100~250    | 0.04~0.06      |
| Aleación de Acero, Acero Alto en Carbon         | HRC 30, 40   | 150~250            | 0.02~0.06      | 150~300    | 0.05~0.10      |
| Aluminio, Cobre                                 | -            | 150~300            | 0.04~0.08      | 150~350    | 0.05~0.10      |
| Fundición                                       | -            | 80~150             | 0.02~0.06      | 100~250    | 0.05~0.10      |
| Stainless steel                                 | -            | 60~120             | 0.01~0.03      | 60~150     | 0.03~0.06      |
| HRSA  | -            | 60~80              | 0.01~0.03      | 60~100     | 0.03~0.06      |

Not) Lütfen ilerlemeyi koruyun, yanlış ilerleme çapaklanmaya neden olur

### ☛ Ej. Maquinados



# Solid Chamfer Tool

## Sistema codificación

|   |                                   |                               |   |                 |                                   |
|---|-----------------------------------|-------------------------------|---|-----------------|-----------------------------------|
| CCT   | 090                               | T                             | - | 080             | L                                 |
| <b>Tipo</b>   | <b>Ángulo chamfer</b>             | <b>Filo de corte</b>          |   | <b>Diametro</b> | <b>Longitud de la herramienta</b> |
| CCT: Centrado & Herramienta Chafánado<br>CET: Chafánado & Herramienta Endmill Chafánado | 060: 60°<br>090: 90°<br>120: 120° | Ninguno: Sencillo<br>T: Doble |   | 080: Ø8.0       | Ninguno: Estándar<br>L: Largo     |

## Características

**CET (Chafánado & Herramienta Endmill Chafán)**

- Para biselado interno de hasta 0.5 mm
- Puede ser aplicado a fresado lateral y fácil de rectificación

**CCT (Centrado & Herramienta Chafán)**

- La resistencia del astillamiento realizado en el maquinado en velocidad alta debido al doble ángulo de punta
- Proceso de corte bajo debido membrana delgada

## Ejemplo de aplicación CET/CCT

| Tipo             | Centrado | Hueco de Chafán | Chafán (Externo) | Chafán (Interno) | Fresado lateral | Fresado ranurado |
|------------------|----------|-----------------|------------------|------------------|-----------------|------------------|
| Aplicación (CET) |          |                 |                  |                  |                 |                  |
| 60°              | ×        | ●               | ●                | ●~▲              | ●               | ×                |
| 90°              | ▲        | ●               | ●                | ●                | ●               | ●~▲              |
| 120°             | ●        | ●               | ●                | ●                | ●               | ●                |
| Aplicación (CCT) |          |                 |                  |                  |                 |                  |
| 60°              | ●        | ●               | ●~▲              | ▲~×              | ×               | ×                |
| 90°              | ●        | ●               | ●~▲              | ▲~×              | ×               | ×                |
| 120°             | ●        | ●               | ●                | ●                | ×               | ●                |

## CE (Interno & Fronta)

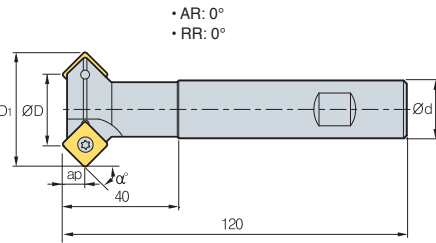


Fig. 1

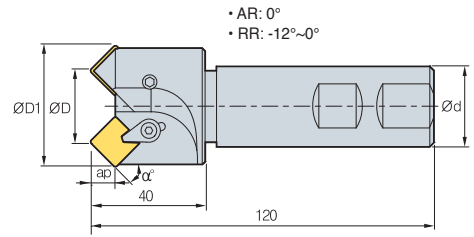


Fig. 2



(mm)

| Codigo | ØD           | ØD <sub>1</sub> | Ød   | ap | Fig. | Insertos disponibles | α° (Angulo chamfer) |         | Rango Disponible (Min~Max) | Usos                      |
|--------|--------------|-----------------|------|----|------|----------------------|---------------------|---------|----------------------------|---------------------------|
|        |              |                 |      |    |      |                      | Fronta              | Interno |                            |                           |
| CE     | 15-1125R-S20 | 25              | 30.5 | 20 | 9.5  | SPMT110408-KC        | 15°                 | -       | Ø25~Ø30                    | Chafilán frontal          |
|        | 30-1125R-S20 | 25              | 35.5 | 20 | 8.5  |                      | 30°                 | 60°     | Ø25~Ø35                    | Chafilán frontal, Interno |
|        | 45-1107R-S20 | 7               | 21.9 | 20 | 7.0  |                      | 45°                 | -       | Ø7~Ø21                     | Chafilán frontal          |
|        | 45-1119R-S20 | 19              | 33.9 | 20 | 7.0  |                      | 45°                 | 45°     | Ø19~Ø33                    | Chafilán frontal, Interno |
|        | 45-1125R-S20 | 25              | 39.9 | 20 | 7.0  |                      | 45°                 | 45°     | Ø25~Ø39                    | Chafilán frontal, Interno |
|        | 60-1125R-S32 | 25              | 43.3 | 32 | 5.0  |                      | 60°                 | 30°     | Ø25~Ø42                    | Chafilán frontal, Interno |
|        | 45-1207R-S32 | 7               | 23.3 | 32 | 7.8  | SPMN120308           | 45°                 | -       | Ø7~Ø22                     | Chafilán frontal          |
|        | 45-1220R-S32 | 20              | 37.3 | 32 | 7.8  |                      | 45°                 | -       | Ø21~Ø36                    | Chafilán frontal          |
|        | 45-1225R-S32 | 25              | 42.3 | 32 | 7.8  |                      | 45°                 | -       | Ø26~Ø41                    | Chafilán frontal          |
|        | 45-1235R-S32 | 35              | 52.3 | 32 | 7.8  |                      | 45°                 | -       | Ø36~Ø51                    | Chafilán frontal          |

### Insertos disponibles

SPMT-KC      SPMN



| Codigo         | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |
|----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|
|                | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 |
| SPMT 110408-KC |        |      |            |        |        |        |        |        | ●      |        |        |        |        |          |        | ●     | ●    |     |
| SPMN 120308    |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        | ●     |      |     |

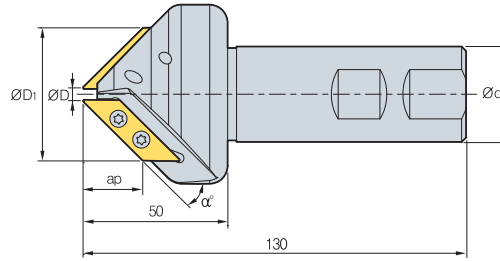
### Partes

| Especificaciones   | Tornillo | Brida | Candado C | Llave | Llave |
|--------------------|----------|-------|-----------|-------|-------|
| Ø7~Ø25 (1100 tipo) | FTKA0408 | -     | -         | TW15S | -     |
| Ø7~Ø35 (1200 tipo) | CHX0617L | CH6R2 | CR05      | -     | HW30L |

Insertos disponibles E25



# CE (Chamfer largo)



- AR:  $-5^{\circ}\sim-1^{\circ}$
- RR:  $0^{\circ}$

(mm)

| Codigo |              | ØD | ØD1 | Ød | ap | α°<br>(Angulo Chafilán) | Rango Disponible<br>(Min-Max) | Usos   |                  |
|--------|--------------|----|-----|----|----|-------------------------|-------------------------------|--------|------------------|
| CE     | 30-3105R-S32 | 1  | 5   | 35 | 32 | 26                      | 30°                           | Ø5~Ø35 | Chafilán frontal |
|        | 45-3105R-S32 | 2  | 5   | 48 | 32 | 21                      | 45°                           | Ø5~Ø48 | Chafilán frontal |
|        | 60-3105R-S32 | 2  | 5   | 57 | 32 | 15                      | 60°                           | Ø5~Ø57 | Chafilán frontal |

## Insertos disponibles

XCET-KC



| Codigo           | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|                  | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| XCET 310404ER-KC |        |      |            |        |        |        |        |        | ●      |        |        |        |        |          |        | ●     | ●    |     | E29 |

## Partes

| Especificaciones |                       |                |
|------------------|-----------------------|----------------|
| Ø5               | Tornillo<br>FTKA03510 | Llave<br>TW15S |

Insertos disponibles E29

## CE (Multi-funcional)

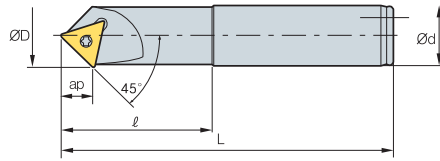


Fig. 1

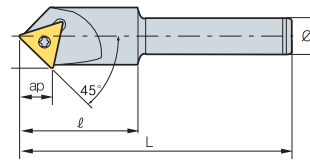
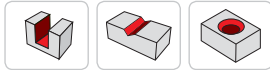


Fig. 2



• AR: -12°~15°  
• RR: 0°

(mm)

| Codigo | ØD           | Ød   | ℓ  | L  | ap  | Fig. | Insertos Disponibles | Rango Disponible (Min~Max) | Usos     |                                  |
|--------|--------------|------|----|----|-----|------|----------------------|----------------------------|----------|----------------------------------|
| CE     | 45-1600R-S12 | 21.2 | 12 | 40 | 90  | 10   | 2                    | TWX16R-KC                  | Ø0 ~ Ø20 | Centrado<br>Ranurado<br>Chafilán |
|        | 45-1600R-S20 | 21.2 | 20 | 50 | 110 | 10   | 1                    | TWX16R-KC                  | Ø0 ~ Ø20 |                                  |
|        | 45-1600R-L20 | 21.2 | 20 | 60 | 200 | 10   | 1                    | TWX16R-KC                  | Ø0 ~ Ø20 |                                  |
|        | 45-2200R-S12 | 28.8 | 12 | 40 | 90  | 14   | 2                    | TWX22R-KC                  | Ø0 ~ Ø27 |                                  |
|        | 45-2200R-S25 | 28.8 | 25 | 50 | 110 | 14   | 1                    | TWX22R-KC                  | Ø0 ~ Ø27 |                                  |
|        | 45-2200R-L25 | 28.8 | 25 | 60 | 200 | 14   | 1                    | TWX22R-KC                  | Ø0 ~ Ø27 |                                  |

### Insertos disponibles

TWX-KC



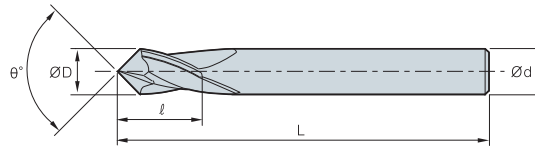
| Codigo | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|        | CN2000 | CN30 | NCM325     | NC5330 | NCM635 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| TWX    | 16R-KC |      |            |        |        |        |        |        |        | ●      |        |        |        | ●        |        |       |      |     | E27 |
|        | 22R-KC |      |            |        |        |        |        |        |        | ●      |        |        |        |          |        |       |      |     |     |

### Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø22~Ø29          | FTNA0408 | TW15L |

Insertos disponibles E27



**CET**

(mm)

| Codigo   | ØD  | Ød | ℓ  | L   | θ°   |
|----------|-----|----|----|-----|------|
| CET060 - | 030 | 3  | 3  | 5.5 | 60°  |
|          | 040 | 4  | 4  | 7   |      |
|          | 060 | 6  | 6  | 10  |      |
|          | 080 | 8  | 8  | 13  |      |
|          | 100 | 10 | 10 | 16  |      |
|          | 120 | 12 | 12 | 18  |      |
|          | 160 | 16 | 16 | 24  |      |
| CET090 - | 030 | 3  | 3  | 5.5 | 90°  |
|          | 040 | 4  | 4  | 7   |      |
|          | 060 | 6  | 6  | 10  |      |
|          | 080 | 8  | 8  | 13  |      |
|          | 100 | 10 | 10 | 16  |      |
|          | 120 | 12 | 12 | 18  |      |
|          | 160 | 16 | 16 | 24  |      |
| CET120 - | 030 | 3  | 3  | 5.5 | 120° |
|          | 040 | 4  | 4  | 7   |      |
|          | 060 | 6  | 6  | 10  |      |
|          | 080 | 8  | 8  | 13  |      |
|          | 100 | 10 | 10 | 16  |      |
|          | 120 | 12 | 12 | 18  |      |
|          | 160 | 16 | 16 | 24  |      |



## CCT

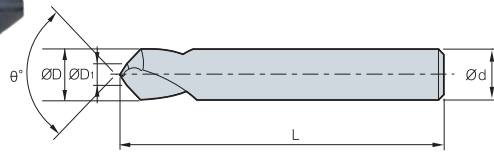


Fig. 1

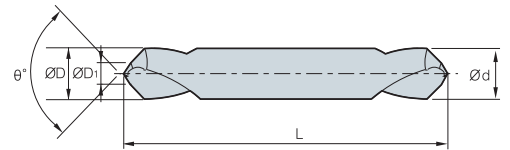


Fig. 2

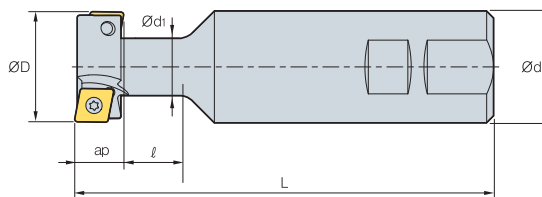
(mm)

| Codigo    | $\text{OD} = \text{ODd}$ | $\text{OD1}$ | L   | $\theta^\circ$ | Fig. |
|-----------|--------------------------|--------------|-----|----------------|------|
| CCT060 -  | 030                      | 3            | 1.0 | 60°            | 1    |
|           | 040                      | 4            | 1.5 |                |      |
|           | 060                      | 6            | 2.0 |                |      |
|           | 080                      | 8            | 2.5 |                |      |
|           | 100                      | 10           | 3.0 |                |      |
|           | 120                      | 12           | 4.0 |                |      |
|           | 160                      | 16           | 5.0 |                |      |
| CCT060T - | 030                      | 3            | 1.0 |                | 2    |
|           | 040                      | 4            | 1.5 |                |      |
|           | 060                      | 6            | 2.0 |                |      |
|           | 080                      | 8            | 2.5 |                |      |
|           | 100                      | 10           | 3.0 |                |      |
|           | 120                      | 12           | 4.0 |                |      |
|           | 160                      | 16           | 5.0 |                |      |
| CCT060T - | 030L                     | 3            | 1.0 | 100            |      |
|           | 040L                     | 4            | 1.5 |                |      |
|           | 060L                     | 6            | 2.0 |                |      |
|           | 080L                     | 8            | 2.5 |                |      |
|           | 100L                     | 10           | 3.0 |                |      |
|           | 120L                     | 12           | 4.0 |                |      |
|           | 150L                     | 12           | 4.0 |                |      |
| CCT090 -  | 030                      | 3            | 1.0 | 90°            | 1    |
|           | 040                      | 4            | 1.5 |                |      |
|           | 060                      | 6            | 2.0 |                |      |
|           | 080                      | 8            | 2.5 |                |      |
|           | 100                      | 10           | 3.0 |                |      |
|           | 120                      | 12           | 4.0 |                |      |
|           | 160                      | 16           | 5.0 |                |      |
| CCT090T - | 030                      | 3            | 1.0 | 100            | 2    |
|           | 040                      | 4            | 1.5 |                |      |
|           | 060                      | 6            | 2.0 |                |      |
|           | 080                      | 8            | 2.5 |                |      |
|           | 100                      | 10           | 3.0 |                |      |
|           | 120                      | 12           | 4.0 |                |      |
|           | 160                      | 16           | 5.0 |                |      |
| CCT090T - | 030L                     | 3            | 1.0 | 100            |      |
|           | 040L                     | 4            | 1.5 |                |      |
|           | 060L                     | 6            | 2.0 |                |      |
|           | 080L                     | 8            | 2.5 |                |      |
|           | 100L                     | 10           | 3.0 |                |      |
|           | 120L                     | 12           | 4.0 |                |      |
|           | 150L                     | 12           | 4.0 |                |      |
| CCT120 -  | 030                      | 3            | 1.0 | 120°           | 1    |
|           | 040                      | 4            | 1.5 |                |      |
|           | 060                      | 6            | 2.0 |                |      |
|           | 080                      | 8            | 2.5 |                |      |
|           | 100                      | 10           | 3.0 |                |      |
|           | 120                      | 12           | 4.0 |                |      |
|           | 160                      | 16           | 5.0 |                |      |
| CCT120T - | 030                      | 3            | 1.0 | 40             | 2    |
|           | 040                      | 4            | 1.5 |                |      |
|           | 060                      | 6            | 2.0 |                |      |
|           | 080                      | 8            | 2.5 |                |      |
|           | 100                      | 10           | 3.0 |                |      |
|           | 120                      | 12           | 4.0 |                |      |
|           | 160                      | 16           | 5.0 |                |      |
| CCT120T - | 030L                     | 3            | 1.0 | 100            |      |
|           | 040L                     | 4            | 1.5 |                |      |
|           | 060L                     | 6            | 2.0 |                |      |
|           | 080L                     | 8            | 2.5 |                |      |
|           | 100L                     | 10           | 3.0 |                |      |
|           | 120L                     | 12           | 4.0 |                |      |
|           | 150L                     | 12           | 4.0 |                |      |





# TFE



AA  
**90°**

• AR: 5°  
• RR: -5°

(mm)

| Codigo |         | ØD | Ød | Ød1 | l    | L  | ap  | Insertos disponibles |        |
|--------|---------|----|----|-----|------|----|-----|----------------------|--------|
| TFE    | 2125R/L | 2  | 21 | 25  | 10.5 | 20 | 109 | 9                    | CPMT06 |
|        | 2525R/L | 2  | 25 | 25  | 12.5 | 21 | 112 | 11                   | CPMT08 |
|        | 3232R/L | 2  | 32 | 32  | 16.5 | 26 | 120 | 14                   | CPMT09 |
|        | 4032R/L | 2  | 40 | 32  | 20.5 | 32 | 130 | 18                   | CPMH12 |
|        | 5032R/L | 4  | 50 | 32  | 26.5 | 38 | 140 | 22                   | CPMH12 |



## Insertos disponibles

CPMT CPMH

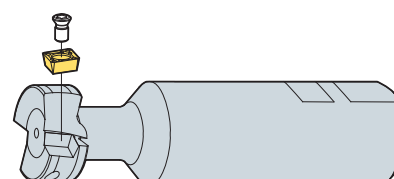


| Codigo | Cermet    |      | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |       |     | pag. |     |
|--------|-----------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-------|-----|------|-----|
|        | CN2000    | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | ST30A | G10 |      | H01 |
| CPMT   | 060204-MM |      |            |        |        |        |        |        |        | ●      |        |        |        |        |          |       |     |      | E07 |
|        | 080308-MM |      |            |        |        |        |        |        |        | ●      |        |        |        |        |          |       |     |      |     |
|        | 09T308-MM |      |            |        |        |        |        |        |        | ●      |        |        |        |        |          |       |     |      |     |
| CPMH   | 120408-MM |      |            |        |        |        |        |        |        | ●      |        |        |        |        |          |       |     |      |     |

## Partes

| Especificaciones | <br>Tornillo | <br>Llave |
|------------------|---|--|
| Ø21              | FTNA02555   | TW08S  |
| Ø25              | FTNA0306  | TW09S  |
| Ø32              | FTNA0407  | TW15S  |
| Ø40              | PTMA0511A   | TW15S  |
| Ø50              |   |  |

Ensamblado



Insertos disponibles E07

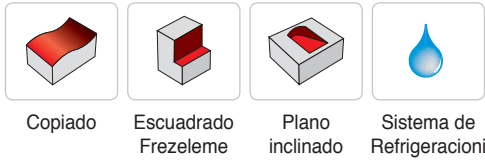
# E Información técnica Pro-A Mill

**Pulimentado en al cara superior, asegura el buen control de la viruta y reduce la adhesión de material al borde del filo**



## Pro-A Mill

- Pulimentado en al cara superior, asegura el buen control de la viruta y reduce la adhesión de material al borde del filo
- Tipo modular, de tamaño pequeño para maquinado en Aluminio.
- Diferentes tipos modulares para el trabajo en Aluminio.
- Para Escuadra, superficie curva, Plano inclinado.
- El rompeviruta el alto angulo de incidencia permiten una rugosidad superficial exelente Mejor efecto de enfriamiento y control de la viruta a través de sistema de refrigeración de mecanizado, incluso bolsillo profundo.

### Usos



### Pro-A Mill serie

| Tipo   |                   | Productos disponibles  | Sistema de Refrigeracion |
|--|-------------------|--|--------------------------|
| Aplicación de maquinado de aluminio con el tamaño pequeño. | <b>Pro-A 2000</b> |  <ul style="list-style-type: none"> <li>• Modulos: Ø12~Ø42</li> <li>• Mango: Ø12~Ø42</li> <li>• Inserto: VDKT11T210N-MA<br/>VDKT11T220N-MA</li> </ul> | ○                        |
| Aplicación general de maquinado de aluminio                | <b>Pro-A 4000</b> |  <ul style="list-style-type: none"> <li>• Cortador: Ø40~Ø100</li> <li>• Mango: Ø32~Ø40</li> <li>• Inserto: VCKT220530N-MA</li> </ul>                  | ○                        |

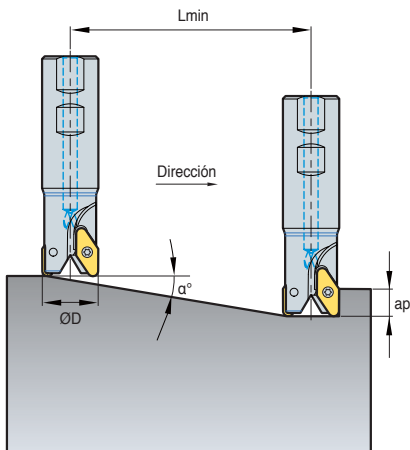
### Condiciones de corte recomendadas

| Pieza Trabajo        |              | Velocidad de Corte vc (m/min) |
|----------------------|--------------|-------------------------------|
| Aleación de Aluminio | Rm < 280 MPa | 1000                          |
|                      | Rm > 280 MPa | 800                           |
| Aleación de Cobre    | Viruta Larga | 250                           |
| Plástico térmico     | -            | 300                           |
| Aleación de Aluminio | Si < 12%     | 800                           |
| Aleación de Cobre    | Viruta Corta | 400                           |
| Aleación de Magnesio | -            | 400                           |
| Plastico Duro        | -            | 150                           |

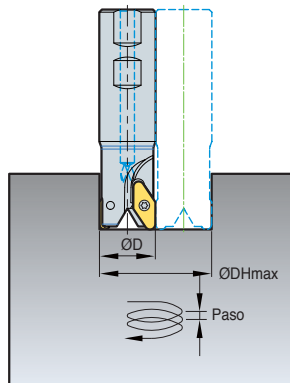


**Datos Técnicos para Plano inclinado & Corte helicoidal**

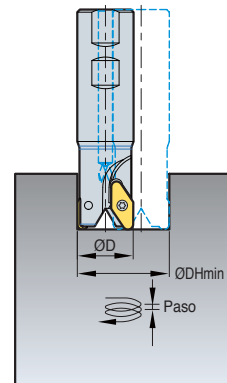
1. Rampeado



2. Corte helicoidal en agujero ciego



3. Corte helicoidal a través del agujero ciego



(mm)

| Codigo       | ØD  | 1. Rampeado |      | 2. Corte helicoidal en agujero ciego |      |        |      | 3. Corte helicoidal a través del agujero ciego |      |
|--------------|-----|-------------|------|--------------------------------------|------|--------|------|--|------|
|              |     | α°          | Lmin | ØDHmin                               | dmax | ØDHmax | dmax | ØDHmin   | dmax |
| PAS2012HR    | 12  | 11.9        | 38   | 21                                   | 4.4  | 23     | 4.8  | 19   | 4.0  |
| PAS2016HR    | 16  | 12.5        | 36   | 29                                   | 6.4  | 31     | 6.9  | 27   | 6.0  |
| PAS2020HR    | 20  | 9.7         | 47   | 37                                   | 6.3  | 39     | 6.7  | 35   | 6.0  |
| PAS2025HR    | 25  | 7.6         | 60   | 47                                   | 6.3  | 49     | 6.5  | 45   | 6.0  |
| PAS2032HR    | 32  | 5.8         | 79   | 61                                   | 6.2  | 63     | 6.4  | 59   | 6.0  |
| PAS2042HR    | 42  | 4.3         | 105  | 81                                   | 6.2  | 83     | 6.3  | 79   | 6.0  |
| PAS4032HR    | 32  | 24.4        | 22   | 54                                   | 15.0 | 59     | 26.8 | 40   | 15.0 |
| PAS4040HR    | 40  | 18.4        | 30   | 70                                   | 15.0 | 75     | 25.0 | 56   | 15.0 |
| PAS4050HR    | 50  | 14.0        | 40   | 90                                   | 15.0 | 95     | 23.8 | 76   | 15.0 |
| PAS4063HR    | 63  | 10.7        | 53   | 116                                  | 15.0 | 121    | 22.8 | 102  | 15.0 |
| PAC(M)4080HR | 80  | 8.1         | 70   | 150                                  | 15.0 | 155    | 22.1 | 136  | 15.0 |
| PAC(M)4100HR | 100 | 6.3         | 90   | 190                                  | 15.0 | 195    | 21.7 | 176  | 15.0 |

- Lmin: Cuando ap = 8 mm
- Lmin: Inclinación Mínima Longitud de corte
- α°: Angulo maximo plano incl.
- ap: Profundida de corte

$$Lmin = \frac{ap}{\tan \alpha^\circ} \text{ (mm)}$$

# E Información técnica Pro-X Mill

**Fijación con abrazadera fuerte debido a la parte cóncava del lado de la parte inferior del inserto**

## Pro-X Mill

- Fijación con abrazadera fuerte debido a la parte cóncava del lado de la parte inferior del inserto.
- El buen flujo de la viruta y menos borde de la acumulación han sido adquiridos debido a la superficie pulimentada del inserto.
- El alto ángulo de incidencia del inserto proporciona buen acabado superficial y carga baja de corte.
- Diseñado especialmente para trabajar a máquina de alta velocidad del aluminio.
- Ideal para escuadrado y maquinado de superficies curvas.

### 🔗 Sistema de Sujeción para Alta Velocidad

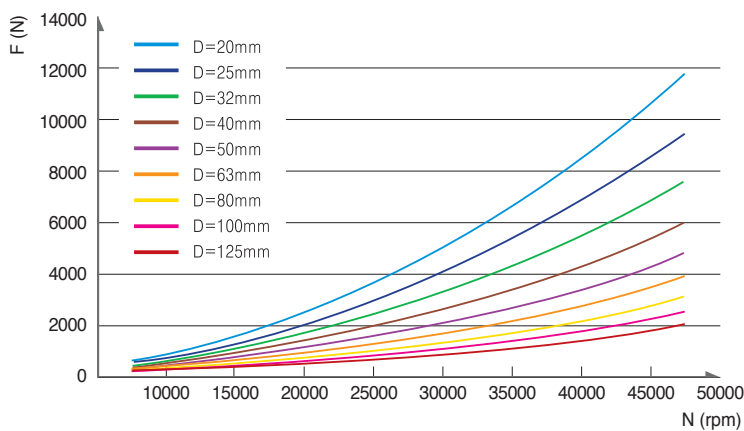
Diseño especial de fuerte fijación con abrazadera para trabajar a alta velocidad que evita que el inserto se mueva

Rompeviruta tridimensional de baja carga de corte

Varios insertos disponibles (R0.4 ~ R5.0)

•Fijación de diseño con abrazadera según análisis FEM  
•Fijación fuerte con abrazadera del inserto.

### 🔗 Fuerza Centrifuga según RPM



※ TORQUE Tornillo = 4 N·m  
 ※ Inserto indexable: 6.8g

Marca [ · Codigo · Max. RPM ]



### 🔗 Max. RPM por diametro de corte

| Diam. Maquinado<br>ØD(mm) | 5000 tipo              |            | 6000 tipo              |            |
|---------------------------|------------------------|------------|------------------------|------------|
|                           | n (min <sup>-1</sup> ) | vc (m/min) | n (min <sup>-1</sup> ) | vc (m/min) |
| 20                        | 14,000                 | 879        | -                      | -          |
| 25                        | 28,000                 | 2,199      | 15,000                 | 1,178      |
| 32                        | 25,000                 | 2,513      | 23,000                 | 2,312      |
| 40                        | 22,000                 | 2,764      | 20,000                 | 2,513      |
| 50                        | 20,000                 | 3,141      | 18,000                 | 2,827      |
| 63                        | 18,000                 | 3,562      | 16,000                 | 3,166      |
| 80                        | 16,000                 | 4,021      | 14,000                 | 3,518      |
| 100                       | 14,000                 | 4,398      | 13,000                 | 4,084      |
| 125                       | 13,000                 | 5,105      | 11,000                 | 4,319      |

### 🔗 Condiciones de corte recomendadas

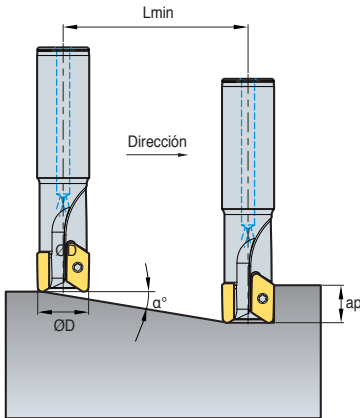
| Pieza Trabajo                          |                | Vel. corte<br>vc(m/min) | Avance<br>fz (mm/diente) |
|--|----------------|-------------------------|--------------------------|
| <b>Aleaciones de Aluminio</b>          | Rm280 < MPa    | 1200                    | 0.30                     |
|  | Rm280 > MPa    | 1000                    | 0.25                     |
| <b>Aleacion de Cobre Termoplastico</b> | Long chipping  | 400                     | 0.20                     |
|  | -              | 350                     | 0.15                     |
| <b>Aleaciones de Aluminio</b>          | Si < 12%       | 1000                    | 0.25                     |
|  | Si ≥ 12%       | 300                     | 0.23                     |
| <b>Aleacion de Cobre</b>               | Virutas cortas | 500                     | 0.20                     |
| <b>Aleaciones Magnesio</b>             | -              | 450                     | 0.20                     |
| <b>Duroplastics</b>                    | -              | 200                     | 0.15                     |

※ En caso de la fractura accidental trabajaba a máquina real del inserto de la herramienta podía suceder incluso bajo RPM escrita la cubierta o la puerta especial es necesaria prevenir daño del inserto quebrado o de la herramienta quebrada.

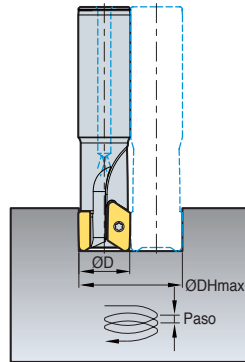


**Datos Técnicos para Plano Inclinado y corte Helicoidal con Pro-X Mill**

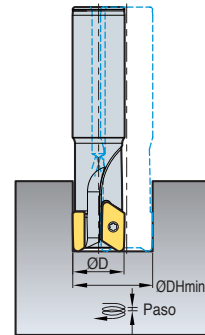
**1. Rampeado**



**2. Corte helicoidal en agujero ciego**



**3. Corte helicoidal a través del agujero ciego**



(mm)

| Codigo        | ØD  | 1. Rampeado |      | 2. Corte helicoidal en agujero ciego |      |        |      | 3. Corte helicoidal a través del agujero ciego |      |
|---------------|-----|-------------|------|--------------------------------------|------|--------|------|--|------|
|               |     | α°          | Lmin | ØDHmin                               | dmax | ØDHmax | dmax | ØDHmin   | dmax |
| PAXS5020HR    | 20  | 8.4         | 68   | 32                                   | 4.7  | 34     | 5.0  | 27   | 4.0  |
| PAXS5025HR    | 25  | 13.2        | 43   | 42                                   | 9.9  | 44     | 10.4 | 34   | 8.0  |
| PAXS5032HR    | 32  | 9.5         | 60   | 56                                   | 9.3  | 58     | 9.7  | 48   | 8.0  |
| PAXS5040HR    | 40  | 7.1         | 80   | 72                                   | 9.0  | 74     | 9.3  | 64   | 8.0  |
| PAXCM5050HR   | 50  | 5.4         | 105  | 92                                   | 8.8  | 94     | 9.0  | 84   | 8.0  |
| PAXCM5063HR   | 63  | 4.2         | 138  | 118                                  | 8.6  | 120    | 8.7  | 110  | 8.0  |
| PAXC(M)5080HR | 80  | 3.2         | 180  | 152                                  | 8.4  | 154    | 8.6  | 144  | 8.0  |
| PAXC(M)5100HR | 100 | 2.5         | 230  | 192                                  | 8.3  | 194    | 8.4  | 184  | 8.0  |
| PAXC(M)5125HR | 125 | 2.0         | 293  | 242                                  | 8.3  | 244    | 8.3  | 234  | 8.0  |
| PAXS6025HR    | 25  | 9.0         | 63   | 42                                   | 6.6  | 44     | 6.9  | 38   | 6.0  |
| PAXS6032HR    | 32  | 6.6         | 87   | 56                                   | 6.5  | 58     | 6.7  | 52   | 6.0  |
| PAXS6040HR    | 40  | 12.1        | 47   | 72                                   | 15.4 | 74     | 15.9 | 56   | 12.0 |
| PAXCM6050HR   | 50  | 9.0         | 63   | 92                                   | 14.5 | 94     | 14.8 | 76   | 12.0 |
| PAXCM6063HR   | 63  | 6.7         | 85   | 118                                  | 13.9 | 120    | 14.1 | 102  | 12.0 |
| PAXC(M)6080HR | 80  | 5.0         | 113  | 152                                  | 13.4 | 154    | 13.6 | 136  | 12.0 |
| PAXC(M)6100HR | 100 | 3.9         | 147  | 192                                  | 13.1 | 194    | 13.2 | 176  | 12.0 |
| PAXC(M)6125HR | 125 | 3.0         | 188  | 242                                  | 12.8 | 244    | 13.0 | 226  | 12.0 |

• Lmin: Cuando ap = 10mm

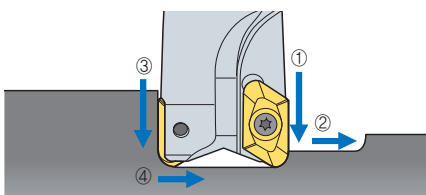
• Lmin: Inclinación Mínima Longitud de corte

α°: Angulo maximo plano incl.

ap: Profundida de corte

$$Lmin = \frac{ap}{\tan \alpha^\circ} \text{ (mm)}$$

**Hudiendo, Ranurado, Datos técnicos de la perforación**



1. En perforación, Ranurado las secuencia de trabajo son ① → ② → ③ → ④
2. Cuando la perforación, ranurado, disminuir el avance y la velocidad de corte un 30% ~ 50% a partir de los datos recomendados

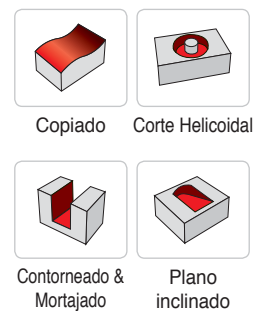
**• Condiciones de Corte**

| Porta herramientas | ap (mm)   |           |
|--------------------|-----------|-----------|
|                    | 5000 tipo | 6000 tipo |
| Ø20                | 8         | -         |
| Ø25                | 4         | 11        |
| Ø32                | 4         | 6         |
| Ø40~125            | 4         | 6         |

| Insertos | ap (mm) |   |
|----------|---------|---|
|          | XETK19  | 4 |
| XETK25   | 6       |   |

**• Usos**



Nueva fresa de placa intercambiable para el mecanizado de piezas de alta calidad

## Pro-L Mill

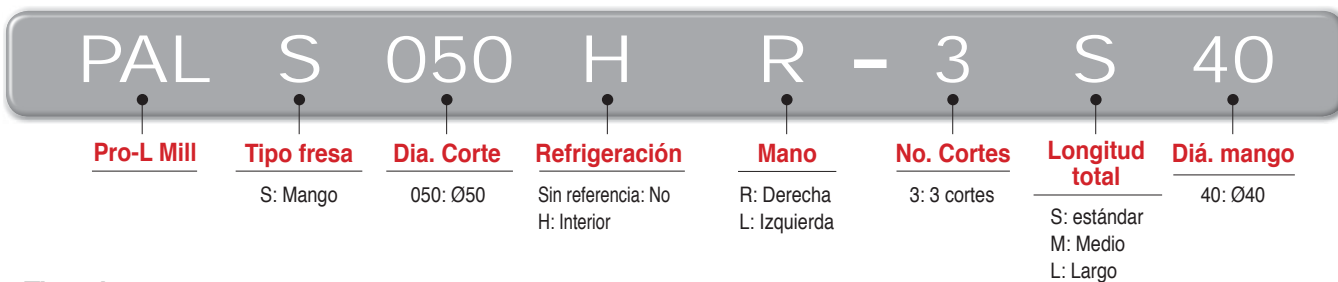
- Perpendicularidad mejorada y menor Resistencia de corte mediante la combinación de la holgura de la cara y la hélice de corte
- Aumento de la productividad incrementando la profundidad de corte en más del 50% en comparación con las soluciones existentes
- Amarre de diseño robusto adoptando un Sistema de doble tornillo
- Flujo de viruta mejorado por el diseño helicoidal de los canales de salida y la refrigeración interior

### Usos

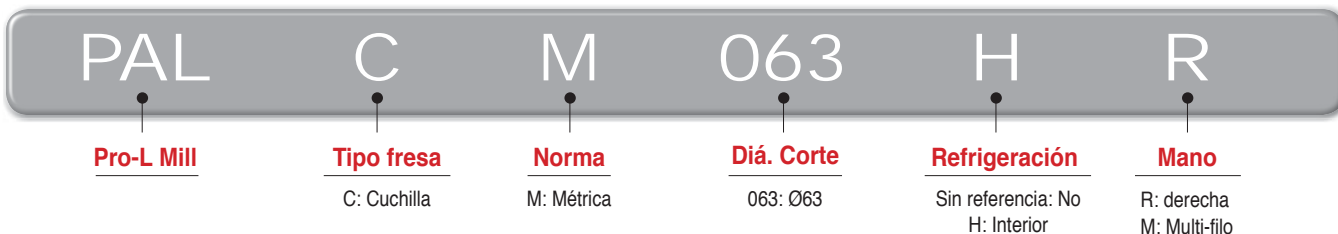


### Sistema codificación

#### Tipo mango



#### Tipo plato



### Características



### Características de la rompevirutas

| Inserto | Filo de corte | Usos                             | Características   |
|---------|---------------|----------------------------------|---|
| MA      |               | Al                               | Filo optimizado para el mecanizado de aluminio el acabado lapeado posibilita una calidad excelente de mecanizado                    |
| ML      |               | Materiales de difícil mecanizado | Rompevirutas diseñado para producir baja Resistencia de corte posibilita un excelente resultado en materiales de difícil mecanizado |



➤ Selección de calidades y rompevirutas

| Categoría | M (Acero inoxidable) | N (aleaciones de aluminio) | S (HRSA)      |
|-----------|----------------------|----------------------------|---------------|
| Calidades | PC5300/PC5400        | H01                        | PC5300/PC5400 |
| MA        | -                    | ○                          | -             |
| ML        | ○                    | -                          | ○             |

➤ Ejemplos de aplicación

**Al6061 (HRC30)**

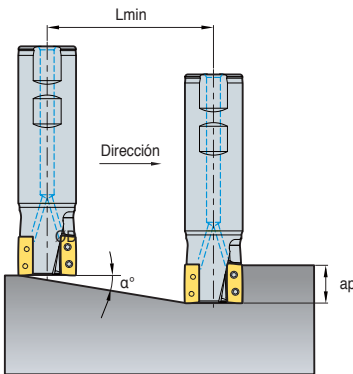
■ Condiciones de corte

- vc = 500 m/min
- fz = 0.2 mm/diente
- ap = 30~60 mm
- ae = 1~5 mm (Acabado: 1 mm, Desbaste: 5 mm)
- z = 3

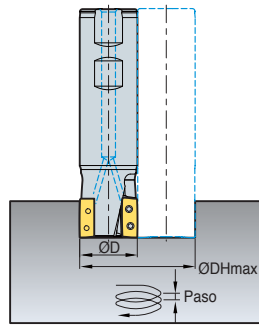


➤ Datos técnicos de corte helicoidal y en rampa para Pro-L mill

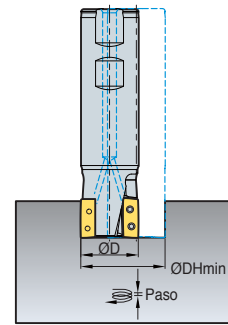
1. Rampeado



2. Corte helicoidal en agujero ciego



3. Corte helicoidal a través del agujero ciego



(mm)

| Codigo         | ØD | 1. Rampeado |      | 2. Corte helicoidal en agujero ciego |      |        |      | 3. Corte helicoidal a través del agujero ciego |      |
|----------------|----|-------------|------|--------------------------------------|------|--------|------|--|------|
|                |    | α°          | Lmin | ØDHmin                               | dmax | ØDHmax | dmax | ØDHmin   | dmax |
| PALS032HR-2S20 | 32 | 3.37        | 170  | 60                                   | 3.5  | 62     | 3.6  | 55   | 3.2  |
| PALS032HR-2S25 | 32 | 3.37        | 170  | 60                                   | 3.5  | 62     | 3.6  | 55   | 3.2  |
| PALS032HR-2S32 | 32 | 3.37        | 170  | 60                                   | 3.5  | 62     | 3.6  | 55   | 3.2  |
| PALS040HR-2S32 | 40 | 2.12        | 270  | 76                                   | 2.8  | 78     | 2.9  | 71   | 2.6  |
| PALS040HR-2S40 | 40 | 2.12        | 270  | 76                                   | 2.8  | 78     | 2.9  | 71   | 2.6  |
| PALS040HR-2S42 | 40 | 2.12        | 270  | 76                                   | 2.8  | 78     | 2.9  | 71   | 2.6  |
| PALS040HR-3S32 | 40 | 2.12        | 270  | 76                                   | 2.8  | 78     | 2.9  | 71   | 2.6  |
| PALS040HR-3S40 | 40 | 2.12        | 270  | 76                                   | 2.8  | 78     | 2.9  | 71   | 2.6  |
| PALS040HR-3S42 | 40 | 2.12        | 270  | 76                                   | 2.8  | 78     | 2.9  | 71   | 2.6  |
| PALS050HR-3S32 | 50 | 2.08        | 275  | 96                                   | 3.5  | 98     | 3.6  | 91   | 3.3  |
| PALS050HR-3S40 | 50 | 2.08        | 275  | 96                                   | 3.5  | 98     | 3.6  | 91   | 3.3  |
| PALS050HR-3S42 | 50 | 2.08        | 275  | 96                                   | 3.5  | 98     | 3.6  | 91   | 3.3  |
| PALS063HR-4S32 | 63 | 1.76        | 325  | 122                                  | 3.8  | 124    | 3.8  | 117  | 3.6  |
| PALS063HR-4S40 | 63 | 1.76        | 325  | 122                                  | 3.8  | 124    | 3.8  | 117  | 3.6  |
| PALS063HR-4S42 | 63 | 1.76        | 325  | 122                                  | 3.8  | 124    | 3.8  | 117  | 3.6  |
| PALS063HM-4S32 | 63 | 1.76        | 325  | 122                                  | 3.8  | 124    | 3.8  | 117  | 3.6  |
| PALS063HM-4S40 | 63 | 1.76        | 325  | 122                                  | 3.8  | 124    | 3.8  | 117  | 3.6  |
| PALS063HM-4S42 | 63 | 1.76        | 325  | 122                                  | 3.8  | 124    | 3.8  | 117  | 3.6  |
| PALCM063HR     | 63 | 1.76        | 325  | 122                                  | 3.8  | 124    | 3.8  | 117  | 3.6  |

- Lmin: Cuando ap = 10 mm
- Lmin: Longitud mínima de rampeado
- α°: Ángulo máximo de rampeado
- ap: profundidad de corte

$$Lmin = \frac{ap}{\tan \alpha^\circ} \text{ (mm)}$$

# E Información técnica Pro-XL Mill

Fresa para alta profundidad de corte para aumentar la productividad

## Pro-XL Mill **new**

- **Productividad** - tiempo de corte reducido al terminar el proceso de maquinado con una sola pasada en escuadrado de aluminio
- **Alta calidad** - El paso único permite caras laterales perpendiculares sin irregularidades
- **Amarre estable** - El sistema de dos tornillos asegura la estabilidad de sujeción

### Características

#### Cortadores existentes



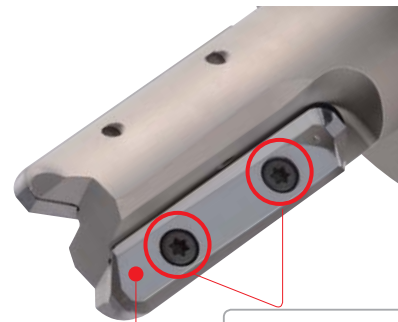
Corte completado después de 4 pasadas

- 4 veces más corto tiempo de corte
- Acabado superficial satisfactorio de las caras laterales sin necesidad de procesamiento adicional

#### Pro-XL Mill



Corte completado en una pasadas  
Max ap: 57 mm



Potente sistema de dos tornillos

Flujo de viruta mejorado e inhibición de los bordes acumulados gracias al acabado y bruñido de los filos de corte en forma de espejo

### Ejemplos de aplicaciones

#### Al7075

##### ■ Condiciones de corte

$vc = 500 \text{ m/min}$ ,  $fz = 0.25 \text{ mm/diente}$   
 $ap = 56 \text{ mm}$ ,  $ae = 1 \text{ mm}$   
 $z = 2$

##### ■ Herramientas

**Insertos** LDET650550PPFR-MA  
**Grados** H01  
**Porta herramientas** BT50-PXL04090HR-2F ( $\varnothing D = 40 \text{ mm}$ )





Fresa de calidad superior para mecanizado de alta velocidad de aluminio

# Pro-V Mill **new**

- **Productividad mejorada** - mayor productividad debido a la capacidad de alta velocidad
- **Acabado superficial mejorado** - excelente acabado superficial y perpendicularidad con productos de alta precisión
- **Excelente estabilidad de sujeción** - fuerza de sujeción satisfactoria de los insertos mediante el uso de la forma de la llave

## ➤ Sistema codificación

### • Tipo Mango

**PAV S 032 R - 2 C 32 - 150 - XD19 - A**

|                   |                         |                             |  |  |  |                                      |                                      |   |  |
|-------------------|-------------------------|-----------------------------|--|--|--|--------------------------------------|--------------------------------------|---|--|
| <b>Pro-V Mill</b> | <b>Tipo</b><br>S: Mango | <b>Diámetro</b><br>032: Ø32 | <b>Refrigeración &amp; mano</b><br>R: Con refrigeración Interna mano derecha<br>NR: Sin refrigeración Interna mano derecha | <b>Número de dientes</b><br>2: 2 Dientes | <b>Tipo de mango</b><br>C: Cilindro<br>W: Weldon | <b>Diámetro del mango</b><br>32: Ø32 | <b>Longitud total</b><br>150: 150 mm | <b>Insertos disponibles</b><br>XD19: XDET19 | <b>Radio de punta del inserto</b><br>A: radio de punta 3.2 o menor<br>B: radio de punta 4.0 o superior |
|-------------------|-------------------------|-----------------------------|--|--|--|--------------------------------------|--------------------------------------|---|--|

Diámetro del mango  
25: Ø25 mm

### • Tipo Plato

**PAV C M 050 R - 22 - 4 - XD19 - A**

|                   |   |                         |                             |  |                                       |  |   |  |
|-------------------|---|-------------------------|-----------------------------|--|---------------------------------------|--|---|--|
| <b>Pro-V Mill</b> | <b>Tipo de adaptación</b><br>M: Métrica<br>A: Pulgadas<br>Sin: Asia | <b>Tipo</b><br>C: Plato | <b>Diámetro</b><br>050: Ø50 | <b>Refrigeración &amp; mano</b><br>R: Con refrigeración Interna mano derecha<br>NR: Sin refrigeración Interna mano derecha | <b>Diámetro interior</b><br>22: 22 mm | <b>Número de dientes</b><br>4: 4 Dientes | <b>Insertos disponibles</b><br>XD19: XDET19 | <b>Radio de punta del inserto</b><br>A: radio de punta 3.2 o menor<br>B: radio de punta 4.0 o superior |
|-------------------|---|-------------------------|-----------------------------|--|---------------------------------------|--|---|--|

### • Sistema de acoplamiento HSK

**HSK63A PAV 050 R - 4 - 100 - XD19 - A**

|                         |                   |                             |  |  |                                      |   |  |
|-------------------------|-------------------|-----------------------------|--|--|--------------------------------------|---|--|
| <b>Acoplamiento HSK</b> | <b>Pro-V Mill</b> | <b>Diámetro</b><br>050: Ø50 | <b>Refrigeración &amp; mano</b><br>R: Con refrigeración Interna mano derecha<br>NR: Sin refrigeración Interna mano derecha | <b>Número de dientes</b><br>4: 4 Dientes | <b>Longitud total</b><br>100: 100 mm | <b>Insertos disponibles</b><br>XD19: XDET19 | <b>Radio de punta del inserto</b><br>A: radio de punta 3.2 o menor<br>B: radio de punta 4.0 o superior |
|-------------------------|-------------------|-----------------------------|--|--|--------------------------------------|---|--|

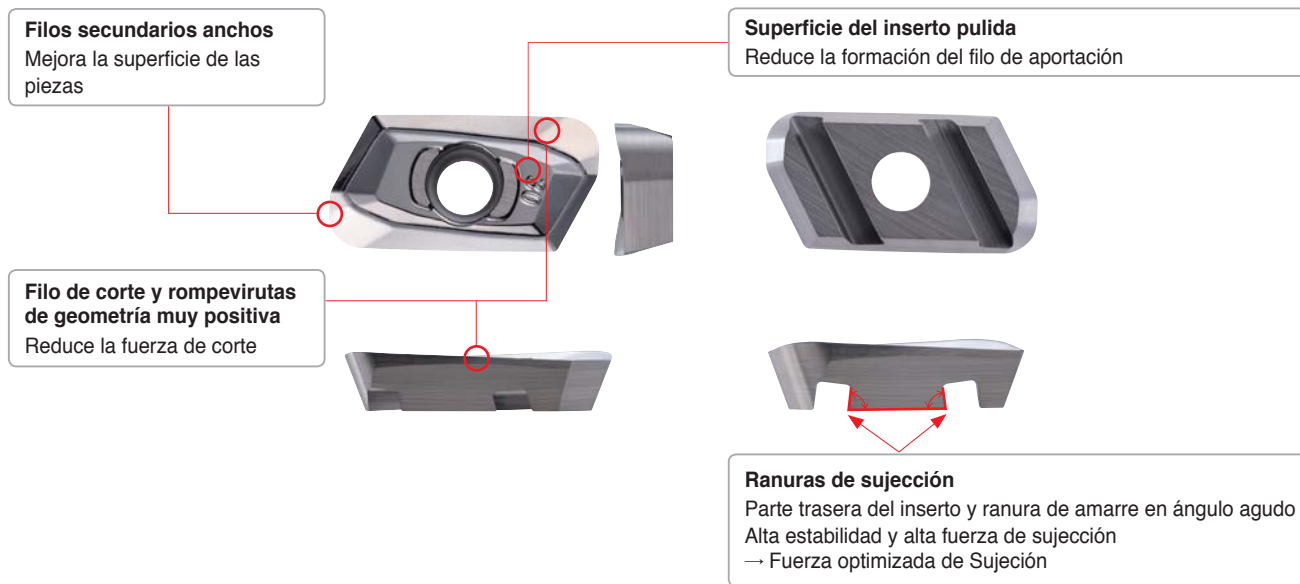
# E Información técnica Pro-V Mill

## Características de la fresa

- El sistema combinado de la sujeción con las ranuras especiales en la cara posterior del inserto y el tornillo asegura un amarre excepcional
- Mecanizado estable previniendo la rotura del inserto
- Evita problemas de rotura del inserto gracias al ángulo axial extremadamente positivo
- Reduce las vibraciones y deja un mejor acabado



## Características de los insertos



## Características del rompevirutas

| Inserto | Filo de corte | Usos                        | Características  |
|---------|---------------|-----------------------------|--|
| MA      |               | Para materiales no ferrosos | Asegura un mecanizado satisfactorio gracias a los filos de corte pulidos optimizados para aluminio |

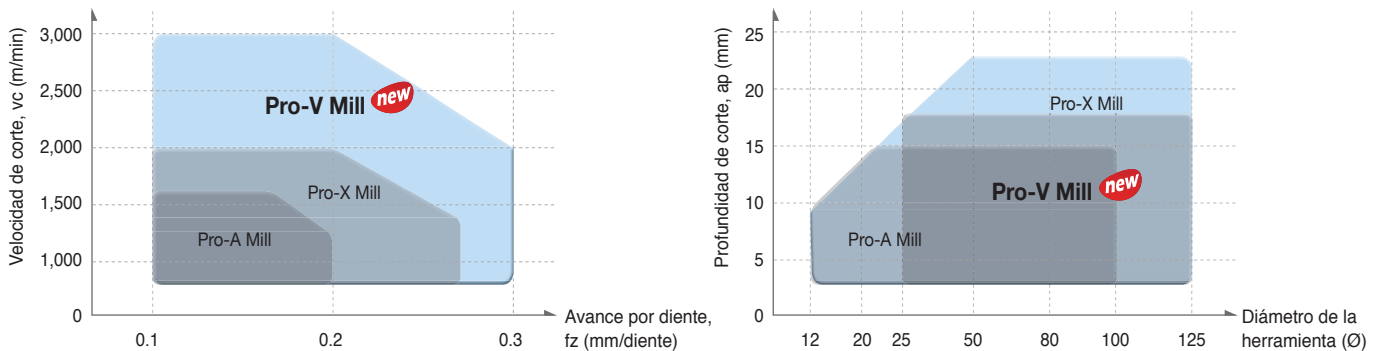


**Condiciones de corte recomendadas**

| Material                                    |                 | Grado                                     | vc (m/min)          | Max. ap (mm) |
|---|-----------------|---|---------------------|--------------|
| <b>N</b>                                    | <b>Aluminio</b> | Si ≤ 5%<br>(Contenido de Si: menos de 5%) |                     | 17           |
|   |                 | H01                                       | 1,300 (500 - 2,200) |              |
|   |                 | H05                                       | 1,000 (300 - 1,700) |              |
|   |                 | PD1005                                    | 1,500 (500 - 3,000) |              |
| Si ≤ 10%<br>(Contenido de Si: menos de 10%) |                 | PD1010                                    | 1,200 (300 - 2,200) |              |

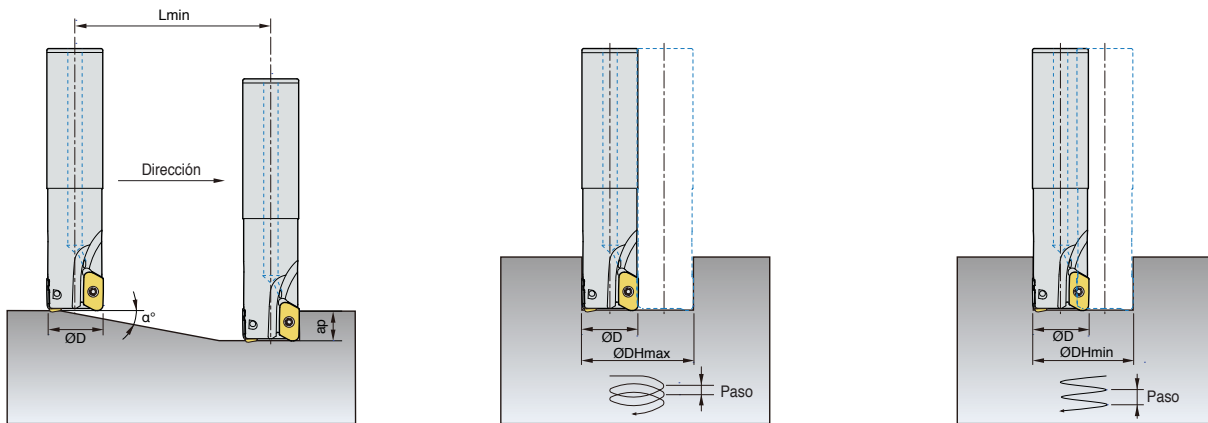
\* Las condiciones de corte recomendadas deben entenderse como unos parámetros generales. Los detalles pueden variar dependiendo del tipo y método de mecanizado, así como de otras condiciones.

**Área de aplicación**



**Condiciones de corte en mecanizado en rampa y corte helicoidal**

- 1. Rampeado
- 2. Corte helicoidal en agujero ciego
- 3. Corte helicoidal a través del agujero ciego



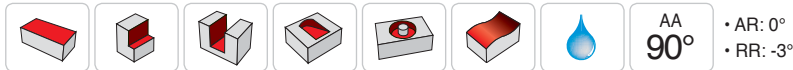
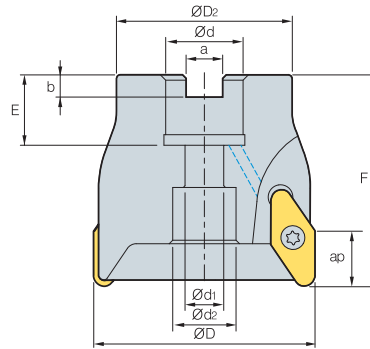
(mm)

| ØD  | 1. Rampeado |       | 2. Corte helicoidal en agujero ciego |      |        |      | 3. Corte helicoidal a través del agujero ciego |      |
|-----|-------------|-------|--------------------------------------|------|--------|------|--|------|
|     | α°          | Lmin  | ØDHmin                               | dmax | ØDHmax | dmax | ØDHmin   | dmax |
| 25  | 15.0        | 59    | 41                                   | 13.0 | 44     | 15.5 | 27   | 2.0  |
| 32  | 10.0        | 99    | 55                                   | 11.0 | 58     | 12.5 | 41   | 4.5  |
| 40  | 7.0         | 142.5 | 71                                   | 10.5 | 74     | 11.5 | 57   | 6.0  |
| 50  | 5.0         | 200   | 91                                   | 10.0 | 94     | 10.5 | 77   | 6.5  |
| 63  | 3.5         | 286   | 117                                  | 9.2  | 120    | 9.5  | 103  | 7.0  |
| 80  | 2.6         | 385   | 151                                  | 9.0  | 154    | 9.5  | 137  | 7.3  |
| 100 | 2.0         | 501   | 191                                  | 9.0  | 194    | 9.0  | 177  | 7.6  |
| 125 | 1.5         | 668   | 241                                  | 8.5  | 244    | 8.5  | 227  | 7.5  |

- Ajuste el avance de la mesa a menos del 70% de la condición de corte recomendada para mecanizados en rampa y cortes helicoidales
- En fresado helicoidal el paso máximo, DHmax, debe ser inferior a la profundidad máxima de corte, ap.
- En mecanizado en rampa la profundidad de corte debe ser inferior a la profundidad máxima de corte, ap.

- Lmin:  $ap/\tan(\alpha^\circ)$  (mm)
- Lmin: longitud de corte con inclinación mínima
- α° : ángulo máximo de bajada
- ap : profundidad de corte

## PAC(M)2000/4000



(mm)

| Codigo      | ØD     | ØD2 | Ød  | Ød1 | Ød2   | a  | b    | E    | F   | ap | $\frac{g}{kg}$ |     |     |
|-------------|--------|-----|-----|-----|-------|----|------|------|-----|----|----------------|-----|-----|
| <b>PACM</b> | 2040HR | 3   | 40  | 34  | 16    | 9  | 14   | 8.4  | 5.6 | 18 | 40             | 8.7 | 0.2 |
|             | 2050HR | 4   | 50  | 42  | 22    | 11 | 18   | 10.4 | 6.3 | 22 | 50             | 8.7 | 0.4 |
|             | 2063HR | 5   | 63  | 49  | 22    | 11 | 18   | 10.4 | 6.3 | 22 | 50             | 8.7 | 0.6 |
|             | 2080HR | 5   | 80  | 57  | 27    | 14 | 20   | 12.4 | 7.0 | 25 | 50             | 8.7 | 0.9 |
|             | 2100HR | 6   | 100 | 67  | 32    | 18 | 26   | 14.4 | 8.0 | 30 | 63             | 8.7 | 1.9 |
|             | 4040HR | 3   | 40  | 32  | 16    | 9  | 11.5 | 8.4  | 5.6 | 20 | 55             | 15  | 0.2 |
|             | 4050HR | 3   | 50  | 40  | 22    | 11 | 18   | 10.4 | 6.3 | 20 | 55             | 15  | 0.3 |
|             | 4063HR | 4   | 63  | 50  | 22    | 11 | 18   | 10.4 | 6.3 | 20 | 60             | 15  | 0.6 |
|             | 4080HR | 4   | 80  | 60  | 27    | 14 | 20   | 12.4 | 7.0 | 25 | 60             | 15  | 1.0 |
|             | 4100HR | 5   | 100 | 80  | 32    | 18 | 26   | 14.4 | 8.0 | 26 | 60             | 15  | 1.6 |
| <b>PAC</b>  | 2080HR | 5   | 80  | 57  | 25.4  | 14 | 20   | 9.5  | 6.0 | 25 | 50             | 8.7 | 0.9 |
|             | 2100HR | 6   | 100 | 67  | 31.75 | -  | 44   | 12.7 | 8.0 | 37 | 63             | 8.7 | 1.9 |
|             | 4080HR | 4   | 80  | 60  | 25.4  | 14 | 20   | 9.5  | 6.0 | 25 | 60             | 15  | 1.0 |
|             | 4100HR | 5   | 100 | 80  | 31.75 | -  | 44   | 12.7 | 8.0 | 37 | 60             | 15  | 1.6 |

### Insertos disponibles

#### VCKT-MA



| Codigo          | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |     |
|-----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|-----|
|                 | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |     |
| VCKT 220530N-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     | ●   | E27 |

### Adaptadores disponibles

| Codigo            | Ød     | Adaptadores disponibles | Codigo            | Ød              | Adaptadores NC   |      |                 |
|-------------------|--------|-------------------------|-------------------|-----------------|------------------|------|-----------------|
| <b>PAC (PACM)</b> | 2040HR | BT□□-FMC16-□□           | <b>PAC (PACM)</b> | 4040HR          | BT□□-FMC16-□□    |      |                 |
|                   | 2050HR | BT□□-FMC22-□□           |                   | 4050HR          | BT□□-FMC22-□□    |      |                 |
|                   | 2063HR | BT□□-FMC22-□□           |                   | 4063HR          | BT□□-FMC22-□□    |      |                 |
|                   | 2080HR | 25.4                    |                   | BT□□-FMC25.4-□□ | 4080HR           | 25.4 | BT□□-FMC25.4-□□ |
|                   |        | 27                      |                   | BT□□-FMC27-□□   |                  | 27   | BT□□-FMC27-□□   |
| 2100HR            | 31.75  | BT□□-FMC31.75-□□        | 4100HR            | 31.75           | BT□□-FMC31.75-□□ |      |                 |
|                   | 32     | BT□□-FMC32-□□           |                   | 32              | BT□□-FMC32-□□    |      |                 |

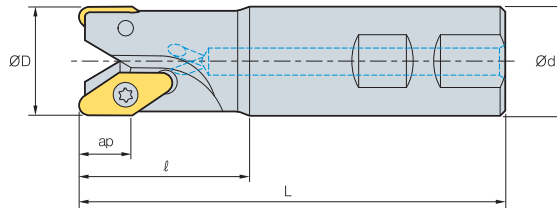
### Partes

| Especificaciones | Tornillo                     | Llave | Tornillo adaptador |
|------------------|------------------------------|-------|--------------------|
| Ø40~Ø100         | FTNC04509 (Ø40)<br>FTNC04511 | TW20S | PHMA0834(Ø40)      |

Insertos disponibles E27    Detalles del cortador E400~E402



# PAS2000/4000



AA 90°  
 • AR: 0°~7°  
 • RR: -21°~-3°

(mm)

| Codigo |               | ØD | Ød | l  | L  | ap  |      |
|--------|---------------|----|----|----|----|-----|------|
| PAS    | 2012HR        | 1  | 12 | 16 | 25 | 85  | 0.1  |
|        | 2016HR        | 2  | 16 | 16 | 25 | 90  | 0.11 |
|        | * 2016HR-R2.0 | 2  | 16 | 16 | 25 | 90  | 0.11 |
|        | 2020HR        | 2  | 20 | 20 | 30 | 100 | 0.2  |
|        | * 2020HR-R2.0 | 2  | 20 | 20 | 30 | 100 | 0.2  |
|        | 2025HR        | 3  | 25 | 25 | 35 | 115 | 0.36 |
|        | 2032HR        | 4  | 32 | 32 | 40 | 125 | 0.66 |
|        | 2042HR        | 5  | 42 | 32 | 42 | 130 | 0.84 |
|        | 4032HR        | 2  | 32 | 32 | 50 | 125 | 0.6  |
|        | 4040HR        | 3  | 40 | 32 | 50 | 140 | 0.8  |
|        | 4040HR-S40    | 3  | 40 | 40 | 60 | 150 | 1.2  |
|        | 4040HR-S42    | 3  | 40 | 42 | 60 | 150 | 1.2  |

Porta herramientas marcados con un asterisco son válidos únicamente para VDKT11T220N-MA.

## Insertos desmontables

VDKT-MA

VCKT-MA



| Tipo      | Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|-----------|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|           |        | CN2000     | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| 2000 tipo | VDKT   | 11T210N-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     | ●   |
|           |        | 11T220N-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
| 4000 tipo | VCKT   | 220530N-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     | ●   |

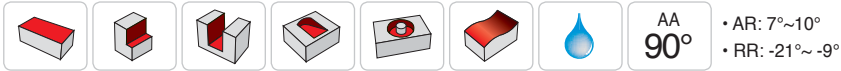
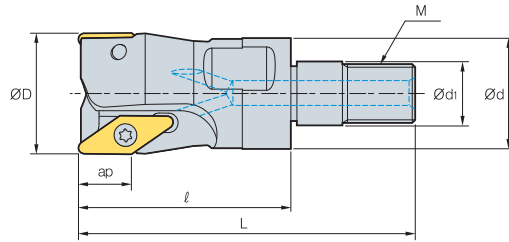
## Partes

| Especificaciones    |            |       |
|---------------------|------------|-------|
| Ø12~Ø42 (2000 tipo) | ETNA02505* | TW07S |
|                     | ETNA02506  | TW07S |
| Ø32~Ø40 (4000 tipo) | FTNC04509  | TW20S |

Insertos disponibles E27

\* Para PAS2012-2016

## PAM2000



AA  
90°

• AR: 7°~10°  
• RR: -21°~-9°

(mm)

| Codigo |            | ØD | Ød | Ød1  | l    | L  | M   | ap |      |
|--------|------------|----|----|------|------|----|-----|----|------|
| PAM    | 2012HR-M06 | 1  | 12 | 11.0 | 6.5  | 33 | M06 | 8  | 0.02 |
|        | 2016HR-M08 | 2  | 16 | 14.5 | 8.5  | 36 | M08 | 8  | 0.04 |
|        | 2020HR-M10 | 2  | 20 | 18.0 | 10.5 | 36 | M10 | 8  | 0.06 |
|        | 2025HR-M12 | 3  | 25 | 22.5 | 12.5 | 41 | M12 | 8  | 0.1  |
|        | 2032HR-M16 | 4  | 32 | 28.5 | 17.0 | 45 | M16 | 8  | 0.18 |
|        | 2042HR-M16 | 5  | 42 | 28.5 | 17.0 | 45 | M16 | 8  | 0.27 |

### Insertos disponibles

VDKT-MA



| Codigo | Cermet     |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------|------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|        | CN2000     | CN80 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| VDKT   | 11T210N-MA |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      | ●   | E27 |

### Adaptador disponibles

| Codigo | Adaptador disponibles |         |
|--------|-----------------------|---------|
| PAM    | 2012HR-M06            | MAT-M06 |
|        | 2016HR-M08            | MAT-M08 |
|        | 2020HR-M10            | MAT-M10 |
|        | 2025HR-M12            | MAT-M12 |
|        | 2032HR-M16            | MAT-M16 |
|        | 2042HR-M16            | MAT-M16 |

Codigo: PAM2012HR-M06  
Cabeza de acoplaje modular, acoplaje tamaño (M06)

II

Codigo del Zanco: MAT-M06-030-S20S  
Especificacion del Mango (M06)

### Partes

| Especificaciones | Tornillo                | Llave |
|------------------|-------------------------|-------|
| Ø12~Ø42          | ETNA02505*<br>ETNA02506 | TW07S |

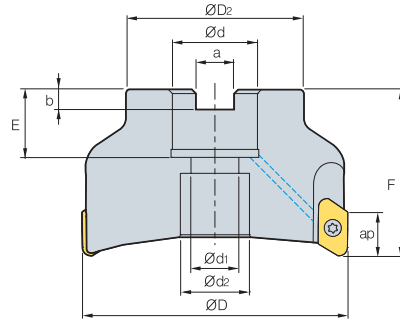
\* Para PAS2012-2016

Insertos disponibles E27

Adaptador disponibles E371~E372



# PAXC(M)5000



AA 90°  
 • AR: 8°~17.5°  
 • RR: -9.5°~-5°

| Codigo                    | 3 | 4 | 5 (4) | 5 | 6 | 7 | ØD  | ØD2 | Ød         | Ød1 | Ød2 | a           | b      | E       | F  | Max rpm | ap | kg   |
|---------------------------|---|---|-------|---|---|---|-----|-----|------------|-----|-----|-------------|--------|---------|----|---------|----|------|
| <b>PAXCM</b> 5040HR-A,B   |   |   |       |   |   |   | 40  | 34  | 16         | 9   | 14  | 8.4         | 5.6    | 19      | 40 | 25,800  | 17 | 0.15 |
| 5050HR-A,B                |   |   |       |   |   |   | 50  | 42  | 22         | 11  | 18  | 10.4        | 6.3    | 21      | 50 | 23,000  | 17 | 0.3  |
| 5063HR-A,B                |   |   |       |   |   |   | 63  | 49  | 22         | 11  | 18  | 10.4        | 6.3    | 21      | 50 | 20,500  | 17 | 0.56 |
| <b>PAXC</b> 5080HR-A,B    |   |   |       |   |   |   | 80  | 57  | 25.4 (27)  | 14  | 20  | 9.5 (12.4)  | 6 (7)  | 2 4(23) | 50 | 18,200  | 17 | 1.0  |
| <b>(PAXCM)</b> 5100HR-A,B |   |   |       |   |   |   | 100 | 67  | 31.75 (32) | 18  | 26  | 12.7 (14.4) | 8(8)   | 32 (26) | 63 | 16,300  | 17 | 2.3  |
| 5125HR-A,B                |   |   |       |   |   |   | 125 | 87  | 38.1 (40)  | 22  | 32  | 15.9 (16.4) | 10 (9) | 35 (29) | 63 | 14,600  | 17 | 3.2  |

• Tipo A: Inserto Radio NoseR 0.4~3.2, Tipo B: Inserto Radio NoseR 4.0~5.0 ( ) Tamaño métrico

## Insertos disponibles

XEKT-MA XEKT-ML



| Codigo                  | Cermet     |      |        |        |        |        |        |        |        |        | pag.   | Codigo | Cermet   |        |        |        |        |        |     |     |     |     | pag.                    |             |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |     |     |     |  |     |  |
|-------------------------|------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|-----|-----|-----|-----|-------------------------|-------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|-----|-----|--|-----|--|
|                         | Recubierta |      |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        |        |        |        |     |     |     |     |                         |             |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |     |     |     |  |     |  |
|                         | CN2000     | CN30 | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3700 | PC6510 | PC9530 | PC9540 | PC9530 | PC9540   | PC5300 | PC5400 | PD2000 | PD1010 | ST300A | G10 | H01 | H05 |     |                         | CN2000      | CN30        | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400 | PD2000 | PD1010 | ST300A | G10 | H01 | H05 |  |     |  |
| <b>XEKT</b> 19M504FR-MA |            |      |        |        |        |        |        |        |        |        | ●      | ●      |          |        |        |        |        |        |     | ●   | ●   | E29 | <b>XEKT</b> 19M504ER-ML |             |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |     |     |     |  | E29 |  |
| 19M508FR-MA             |            |      |        |        |        |        |        |        |        |        | ●      | ●      |          |        |        |        |        |        |     | ●   | ●   |     | 19M508ER-ML             |             |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |     |     |     |  |     |  |
| 19M512FR-MA             |            |      |        |        |        |        |        |        |        |        | ●      | ●      |          |        |        |        |        |        |     | ●   | ●   |     | 19M512ER-ML             |             |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |     |     |     |  |     |  |
| 19M516FR-MA             |            |      |        |        |        |        |        |        |        |        |        |        | ●        |        |        |        |        |        |     |     | ●   |     | ●                       | 19M516ER-ML |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |     |     |     |  |     |  |
| 19M518FR-MA             |            |      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |     |     |     |     | ●                       | ●           | 19M518ER-ML |        |        |        |        |        |        |        |        |        |        |        |        |        |        |     |     |     |  |     |  |
| 19M520FR-MA             |            |      |        |        |        |        |        |        |        |        |        | ●      | ●        |        |        |        |        |        |     |     | ●   |     | ●                       | 19M520ER-ML |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |     |     |     |  |     |  |
| 19M530FR-MA             |            |      |        |        |        |        |        |        |        |        |        |        | ●        |        |        |        |        |        |     |     | ●   |     | ●                       | 19M530ER-ML |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |     |     |     |  |     |  |
| 19M532FR-MA             |            |      |        |        |        |        |        |        |        |        |        | ●      | ●        |        |        |        |        |        |     |     | ●   |     | ●                       | 19M532ER-ML |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |     |     |     |  |     |  |
| 19M540FR-MA             |            |      |        |        |        |        |        |        |        |        |        | ●      | ●        |        |        |        |        |        |     |     | ●   |     | ●                       | 19M540ER-ML |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |     |     |     |  |     |  |
| 19M550FR-MA             |            |      |        |        |        |        |        |        |        |        |        | ●      | ●        |        |        |        |        |        |     |     | ●   |     | ●                       | 19M550ER-ML |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |     |     |     |  |     |  |

## Adaptadores disponibles

| Codigo                  | Ød    | Adaptadores disponibles |
|-------------------------|-------|-------------------------|
| <b>PAXCM</b> 5040HR-A,B | 16    | BT□□-FMC16-□□           |
| 5050HR-A,B              | 22    | BT□□-FMC22-□□           |
| 5063HR-A,B              |       |                         |
| <b>PAXC</b> 5080HR-A,B  | 25.4  | BT□□-FMA25.4-□□         |
| <b>(PAXCM)</b>          | 27    | BT□□-FMC27-□□           |
| 5100HR-A,B              | 31.75 | BT□□-FMA31.75-□□        |
|                         | 32    | BT□□-FMC32-□□           |
| 5125HR-A,B              | 38.1  | BT□□-FMA38.1-□□         |
|                         | 40    | BT□□-FMC40-□□           |

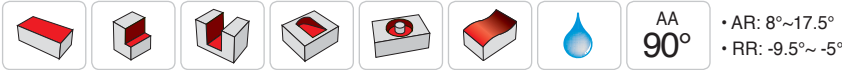
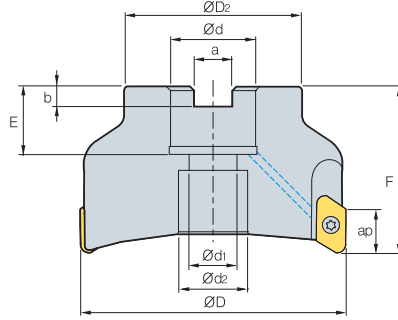
## Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø40~Ø125         | PTKA0408 | TW15S |

Insertos disponibles E29 Detalles del cortador E400~E402



## PAXC(M)6000



(mm)

| Codigo                  | ØD | ØD2 | Ød | Ød1        | Ød2 | a  | b           | E      | F         | Max rpm | ap     | kg   |      |
|-------------------------|----|-----|----|------------|-----|----|-------------|--------|-----------|---------|--------|------|------|
| PAXCM 6050HR-A,B        | 2  | 50  | 42 | 16         | 9   | 14 | 8.4         | 5.6    | 18        | 23,000  | 23     | 0.32 |      |
|                         | 3  | 63  | 49 | 22         | 11  | 18 | 10.4        | 6.3    | 21        | 20,500  | 23     | 0.53 |      |
| PAXC (PAXCM) 6080HR-A,B | 4  | 80  | 57 | 25.4 (27)  | 14  | 20 | 9.5 (12.4)  | 6 (7)  | 25 (23)   | 50      | 18,200 | 23   | 0.73 |
|                         | 5  | 100 | 67 | 31.75 (32) | 18  | 26 | 12.7 (14.4) | 8 (8)  | 32.5 (26) | 63      | 16,300 | 23   | 1.7  |
| 6125HR-A,B              | 6  | 125 | 87 | 38.1 (40)  | 22  | 32 | 15.9 (16.4) | 10 (9) | 35 (29)   | 63      | 14,600 | 23   | 3.06 |

• Tipo A: Inserto Radio NoseR 0.4~3.2, Tipo B: Inserto Radio NoseR 4.0~5.0

( ) Tamaño métrico

### Insertos disponibles

XEKT-MA XEKT-ML



| Codigo   | Cermet | Recubierta |      |        |        |        |        |        |        |        |        |        | Sin Rec. | pag. | Codigo | Cermet | Recubierta |        |  |        |       |     |     |     |        |      |        | Sin Rec. | pag. |        |        |        |        |        |        |        |        |        |        |        |        |       |     |     |     |  |  |  |  |  |  |   |   |     |
|--|--------|------------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------|--------|--------|------------|--------|--|--------|-------|-----|-----|-----|--------|------|--------|----------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-----|-----|-----|--|--|--|--|--|--|---|---|-----|
|  |        | CN2000     | CN30 | NCM925 | NC5330 | NCM635 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 |          |      |        |        | PC9530     | PC9540 | PC5300   | PC5400 | ST30A | G10 | H01 | H05 | CN2000 | CN30 | NCM925 |          |      | NC5330 | NCM635 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400 | ST30A | G10 | H01 | H05 |  |  |  |  |  |  |   |   |     |
| XEKT 250604FR-MA<br>250608FR-MA<br>250612FR-MA<br>250616FR-MA<br>250620FR-MA<br>250630FR-MA<br>250632FR-MA<br>250640FR-MA<br>250650FR-MA |        |            |      |        |        |        |        |        |        |        |        |        |          |      |        | ●      | ●          | E29    | XEKT 250604ER-ML<br>250608ER-ML<br>250612ER-ML<br>250616ER-ML<br>250620ER-ML<br>250630ER-ML<br>250632ER-ML<br>250640ER-ML<br>250650ER-ML |        |       |     |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |        |       |     |     |     |  |  |  |  |  |  | ● | ● | E29 |

### Adaptadores disponibles

| Codigo  | Ød    | Adaptadores disponibles |
|---|-------|-------------------------|
| PAXCM 6050HR-A,B<br>6063HR-A,B                              | 16    | BT□□-FMC16-□□           |
|   | 22    | BT□□-FMC22-□□           |
| PAXC (PAXCM) 6080HR-A,B<br><br>6100HR-A,B<br><br>6125HR-A,B | 25.4  | BT□□-FMA25.4-□□         |
|   | 27    | BT□□-FMC27-□□           |
|   | 31.75 | BT□□-FMA31.75-□□        |
|   | 32    | BT□□-FMC32-□□           |
|   | 38.1  | BT□□-FMA38.1-□□         |
|   | 40    | BT□□-FMC40-□□           |

### Partes

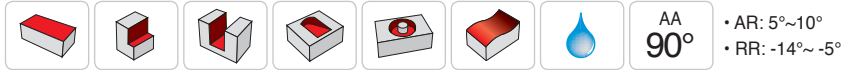
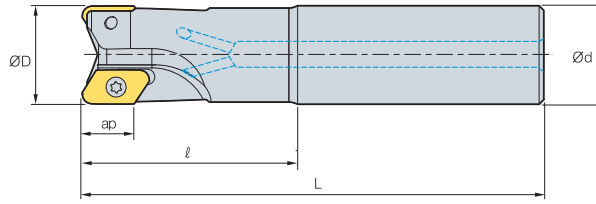
| Especificaciones | Tornillo   | Llave    |
|------------------|------------|----------|
| Ø50~Ø125         | FTGA0513-P | TW20-100 |

Insertos disponibles E29 Detalles del cortador E400~E402





# PAXS5000



| Codigo          |   | ØD | Ød | l  | L   | Max rpm | ap |      |
|-----------------|---|----|----|----|-----|---------|----|------|
| PAXS 5020HR-A,B | 1 | 20 | 20 | 60 | 130 | 15,000  | 17 | 0.24 |
| 5025HR-A,B      | 2 | 25 | 25 | 60 | 140 | 32,600  | 17 | 0.4  |
| 5025HR-A,B-L200 | 2 | 25 | 25 | 60 | 200 | 32,600  | 17 | 0.63 |
| 5032HR-A,B      | 2 | 32 | 32 | 70 | 150 | 28,800  | 17 | 0.74 |
| 5032HR-A,B-L220 | 2 | 32 | 32 | 70 | 220 | 28,800  | 17 | 1.2  |
| 5040HR-A,B-S32  | 3 | 40 | 32 | 70 | 160 | 25,800  | 17 | 1.0  |
| 5040HR-A,B-L220 | 3 | 40 | 32 | 70 | 220 | 25,800  | 17 | 1.4  |
| 5040HR-A,B-S40  | 3 | 40 | 40 | 70 | 160 | 25,800  | 17 | 1.3  |
| 5040HR-A,B-S42  | 3 | 40 | 42 | 70 | 160 | 25,800  | 17 | 1.4  |

• Tipo A: Inserto Radio NoseR 0.4~3.2, Tipo B: Inserto Radio NoseR 4.0~5.0

## Insertos disponibles

XEKT-MA XEKT-ML



| Codigo           | Cubierta |      |        |        |        |        |         |        |        |        | pag. | Codigo | Cubierta |                  |        |        |       |     |     |     |        |      | pag. |        |        |        |        |         |        |        |        |        |        |        |        |
|------------------|----------|------|--------|--------|--------|--------|---------|--------|--------|--------|------|--------|----------|------------------|--------|--------|-------|-----|-----|-----|--------|------|------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|
|                  | CN2000   | CN30 | NC5330 | NCM535 | NCM545 | PC2505 | PC22510 | PC3700 | PC6510 | PC9530 |      |        | PC9540   | PC5300           | PD2000 | PD1010 | ST30A | G10 | H01 | H05 | CN2000 | CN30 |      | NC5330 | NCM535 | NCM545 | PC2505 | PC22510 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PD2000 | PD1010 |
| XEKT 19M504FR-MA |          |      |        |        |        |        |         |        |        |        | ●●   | ●●     |          | XEKT 19M504ER-ML |        |        |       |     |     |     |        |      |      |        |        |        |        |         |        |        |        |        |        |        |        |
| 19M508FR-MA      |          |      |        |        |        |        |         |        |        |        | ●●   | ●●     |          | 19M508ER-ML      |        |        |       |     |     |     |        |      |      |        |        |        |        |         |        |        |        |        |        |        |        |
| 19M512FR-MA      |          |      |        |        |        |        |         |        |        |        | ●●   | ●●     |          | 19M512ER-ML      |        |        |       |     |     |     |        |      |      |        |        |        |        |         |        |        |        |        |        |        |        |
| 19M516FR-MA      |          |      |        |        |        |        |         |        |        |        | ●    | ●●     |          | 19M516ER-ML      |        |        |       |     |     |     |        |      |      |        |        |        |        |         |        |        |        |        |        |        |        |
| 19M518FR-MA      |          |      |        |        |        |        |         |        |        |        |      | ●●     |          | 19M518ER-ML      |        |        |       |     |     |     |        |      |      |        |        |        |        |         |        |        |        |        |        |        |        |
| 19M520FR-MA      |          |      |        |        |        |        |         |        |        |        | ●●   | ●●     |          | 19M520ER-ML      |        |        |       |     |     |     |        |      |      |        |        |        |        |         |        |        |        |        |        |        |        |
| 19M530FR-MA      |          |      |        |        |        |        |         |        |        |        | ●    | ●●     |          | 19M530ER-ML      |        |        |       |     |     |     |        |      |      |        |        |        |        |         |        |        |        |        |        |        |        |
| 19M532FR-MA      |          |      |        |        |        |        |         |        |        |        | ●●   | ●●     |          | 19M532ER-ML      |        |        |       |     |     |     |        |      |      |        |        |        |        |         |        |        |        |        |        |        |        |
| 19M540FR-MA      |          |      |        |        |        |        |         |        |        |        | ●●   | ●●     |          | 19M540ER-ML      |        |        |       |     |     |     |        |      |      |        |        |        |        |         |        |        |        |        |        |        |        |
| 19M550FR-MA      |          |      |        |        |        |        |         |        |        |        | ●●   | ●●     |          | 19M550ER-ML      |        |        |       |     |     |     |        |      |      |        |        |        |        |         |        |        |        |        |        |        |        |

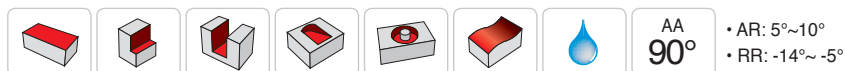
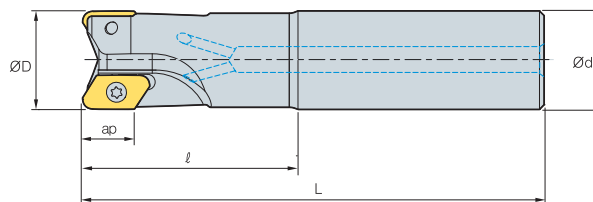
## Partes

| Especificaciones |          |       |
|------------------|----------|-------|
| Ø20              | PTKA0407 | TW15S |
| Ø25~Ø40          | PTKA0408 |       |

Insertos disponibles E29



## PAXS6000



| Codigo |                 | ØD | Ød | l  | L  | Max rpm | ap     | kg   |
|--------|-----------------|----|----|----|----|---------|--------|------|
| PAXS   | 6025HR-A,B      | 1  | 25 | 25 | 60 | 140     | 32,600 | 0.42 |
|        | 6025HR-A,B-L200 | 1  | 25 | 25 | 60 | 200     | 32,600 | 0.63 |
|        | 6032HR-A,B      | 1  | 32 | 32 | 70 | 150     | 28,800 | 0.72 |
|        | 6032HR-A,B-L220 | 1  | 32 | 32 | 70 | 220     | 28,800 | 1.14 |
|        | 6040HR-A,B-S32  | 2  | 40 | 32 | 70 | 160     | 25,800 | 0.88 |
|        | 6040HR-A,B-L220 | 2  | 40 | 32 | 70 | 220     | 25,800 | 1.23 |
|        | 6040HR-A,B-S40  | 2  | 40 | 40 | 70 | 160     | 25,800 | 1.2  |
|        | 6040HR-A,B-S42  | 2  | 40 | 42 | 70 | 160     | 25,800 | 1.3  |

• Tipo A: Inserto Radio NoseR 0.4~3.2, Tipo B: Inserto Radio NoseR 4.0~5.0

### Insertos disponibles

XEKT-MA XEKT-ML



| Codigo      | Cermet      |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. | Codigo | Cermet |     | Recubierto |     |        |      |        |        |        |        |        |        | Sin Rec. |        |        | pag. |        |        |        |        |       |     |     |     |     |     |     |     |     |     |     |
|-------------|-------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|--------|--------|-----|------------|-----|--------|------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|--------|--------|--------|--------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|             | CN2000      | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      |        | ST30A  | G10 | H01        | H05 | CN2000 | CN30 | NCM325 | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600   | PC3700 | PC6510 |      | PC9530 | PC9540 | PC5300 | PC5400 | ST30A | G10 | H01 | H05 |     |     |     |     |     |     |     |
| XEKT        | 250604FR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      | ●      | ●      |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     | E29 |     |     |     |     |     |     |
|             | 250608FR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      | ●      | ●      |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     | E29 |     |     |     |     |     |     |     |
|             | 250612FR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      | ●      | ●      |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     | E29 |     |     |     |     |     |
|             | 250616FR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      | ●      | ●      |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     |     | E29 |     |     |     |     |
|             | 250620FR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      | ●      | ●      |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     |     |     | E29 |     |     |     |
|             | 250630FR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      | ●      | ●      |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     |     |     |     | E29 |     |     |
|             | 250632FR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      | ●      | ●      |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     |     |     |     |     | E29 |     |
|             | 250640FR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      | ●      | ●      |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     |     |     |     |     |     | E29 |
| 250650FR-MA |             |      |            |        |        |        |        |        |        |        |        |        |          |        |        | ●    | ●      |        |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     | E29 |     |     |     |     |     |     |     |     |
| XEKT        | 250604ER-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |        |        |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     |     |     |     |     |     |     |
|             | 250608ER-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |        |        |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     | E29 |     |     |     |     |     |
|             | 250612ER-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |        |        |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     |     | E29 |     |     |     |     |
|             | 250616ER-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |        |        |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     |     |     | E29 |     |     |     |
|             | 250620ER-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |        |        |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     |     |     |     | E29 |     |     |
|             | 250630ER-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |        |        |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     |     |     |     |     | E29 |     |
|             | 250632ER-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |        |        |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     |     |     |     |     |     | E29 |
|             | 250640ER-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |        |        |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     | E29 |     |     |     |     |     |     |
|             | 250650ER-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |        |        |     |            |     |        |      |        |        |        |        |        |        |          |        |        |      |        |        |        |        |       |     |     |     |     |     |     |     |     |     |     |

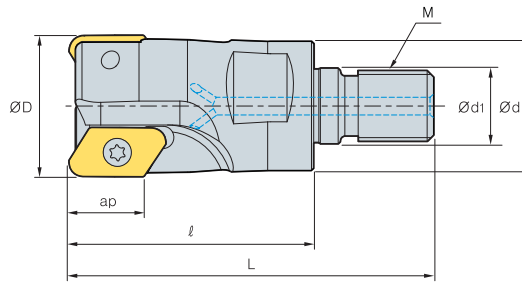
### Partes

| Especificaciones | Tornillo   | Llave    |
|------------------|------------|----------|
| Ø25~Ø32          | FTGA0510-P | TW20-100 |
| Ø40              | FTGA0513-P |          |

Insertos disponibles E29



# PAXM5000



• AR: 6°~8°  
• RR: -7°~-5°

(mm)

| Codigo              | Icono | ØD | Ød | Ød1  | l  | L  | M   | ap | kg   |
|---------------------|-------|----|----|------|----|----|-----|----|------|
| PAXM 5025HR-A,B-M12 |       | 25 | 23 | 12.5 | 55 | 79 | M12 | 17 | 0.12 |
| 5032HR-A,B-M16      |       | 32 | 29 | 17.0 | 55 | 82 | M16 | 17 | 0.2  |
| 5040HR-A,B-M16      |       | 40 | 29 | 17.0 | 55 | 82 | M16 | 17 | 0.4  |

• Tipo A: Inserto Radio NoseR 0.4~3.2, Tipo B: Inserto Radio NoseR 4.0~5.0

## Insertos disponibles

XEKT-MA XEKT-ML



| Codigo           | Cermet |      |        |        |        |        |        |        |        |        | Sin Rec. | pag. | Codigo           | Cermet |        |        |        |        |       |     |     |     |        | Sin Rec. | pag. |      |        |        |        |        |        |        |        |        |        |        |        |        |
|------------------|--------|------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------|------------------|--------|--------|--------|--------|--------|-------|-----|-----|-----|--------|----------|------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  | CN2000 | CN30 | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3700 | PC6510 | PC9530 |          |      |                  | PC9540 | PC5300 | PC5400 | PD2000 | PD1010 | ST30A | G10 | H01 | H05 | CN2000 |          |      | CN30 | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400 | PD2000 |
| XEKT 19M504FR-MA |        |      |        |        |        |        |        |        |        |        | ●●       |      | XEKT 19M504ER-ML |        |        |        |        |        |       |     |     |     |        |          |      |      |        |        |        |        |        |        |        |        |        |        |        |        |
| 19M508FR-MA      |        |      |        |        |        |        |        |        |        |        | ●●       |      | 19M508ER-ML      |        |        |        |        |        |       |     |     |     |        |          |      |      |        |        |        |        |        |        |        |        |        |        |        |        |
| 19M512FR-MA      |        |      |        |        |        |        |        |        |        |        | ●●       |      | 19M512ER-ML      |        |        |        |        |        |       |     |     |     |        |          |      |      |        |        |        |        |        |        |        |        |        |        |        |        |
| 19M516FR-MA      |        |      |        |        |        |        |        |        |        |        | ●●       |      | 19M516ER-ML      |        |        |        |        |        |       |     |     |     |        |          |      |      |        |        |        |        |        |        |        |        |        |        |        |        |
| 19M518FR-MA      |        |      |        |        |        |        |        |        |        |        | ●●       |      | 19M518ER-ML      |        |        |        |        |        |       |     |     |     |        |          |      |      |        |        |        |        |        |        |        |        |        |        |        |        |
| 19M520FR-MA      |        |      |        |        |        |        |        |        |        |        | ●●       |      | 19M520ER-ML      |        |        |        |        |        |       |     |     |     |        |          |      |      |        |        |        |        |        |        |        |        |        |        |        |        |
| 19M530FR-MA      |        |      |        |        |        |        |        |        |        |        | ●●       |      | 19M530ER-ML      |        |        |        |        |        |       |     |     |     |        |          |      |      |        |        |        |        |        |        |        |        |        |        |        |        |
| 19M532FR-MA      |        |      |        |        |        |        |        |        |        |        | ●●       |      | 19M532ER-ML      |        |        |        |        |        |       |     |     |     |        |          |      |      |        |        |        |        |        |        |        |        |        |        |        |        |
| 19M540FR-MA      |        |      |        |        |        |        |        |        |        |        | ●●       |      | 19M540ER-ML      |        |        |        |        |        |       |     |     |     |        |          |      |      |        |        |        |        |        |        |        |        |        |        |        |        |
| 19M550FR-MA      |        |      |        |        |        |        |        |        |        |        | ●●       |      | 19M550ER-ML      |        |        |        |        |        |       |     |     |     |        |          |      |      |        |        |        |        |        |        |        |        |        |        |        |        |

## Available adaptor

| Codigo              | Available adaptor |
|---------------------|-------------------|
| PAXM 5025HR-A,B-M12 | MAT-M12           |
| 5032HR-A,B-M16      | MAT-M16           |
| 5040HR-A,B-M16      |                   |

Codigo: PAXM5025HR-M12  
Tamaño de medida de roscado de cabeza modular (M12)

II

Codigo del Zanco: MAT-M12-030-S25S  
Especificacion del Mango (M12)

## Partes

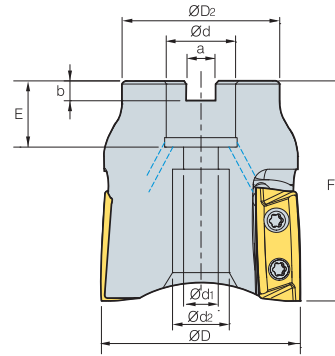
| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø25~Ø40          | PTKA0408 | TW15S |

Insertos disponibles E29 Adaptador disponibles E371~E372





# PALCM



| Codigo      | ØD | ØD <sub>2</sub> | Ød | Ød <sub>1</sub> | Ød <sub>2</sub> | a  | b  | E   | F  | ap | (mm) |      |
|-------------|----|-----------------|----|-----------------|-----------------|----|----|-----|----|----|------|------|
| PALCM 063HR | 4  | 63              | 50 | 22              | 11              | 21 | 10 | 6.3 | 20 | 70 | 34   | 0.57 |

## Insertos disponibles

LXET-MA LXET-ML



| Codigo                | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |       |     | pag. |     |
|-----------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-------|-----|------|-----|
|                       | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | ST30A | G10 |      | H01 |
| LXET 340504PEFR-63-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |     |
| 3405PEFR-63-MA        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     | ●    |     |
| 340512PEFR-63-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |     |
| 340516PEFR-63-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |     |
| 340504PEER-63-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |     |
| 3405PEER-63-ML        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |     |
| 340512PEER-63-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |     |
| 340516PEER-63-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |     |

## Adaptadores disponibles

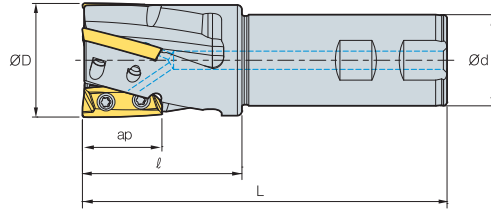
| Codigo      | Ød | Adaptadores disponibles |
|-------------|----|-------------------------|
| PALCM 063HR | 22 | BT□□-FMC22-□□           |

## Partes

| Especificaciones | Tornillo   | Llave    |
|------------------|------------|----------|
| Ø63              | FTGA0511-P | TW20-100 |

Insertos disponibles E12    Detalles del cortador E400~E402

## PALS (Filo único)



| Codigo |            | ⚙️ | ØD | Ød | l  | L   | ap | kg   |
|--------|------------|----|----|----|----|-----|----|------|
| PALS   | 032HR-2S20 | 2  | 32 | 20 | 50 | 140 | 25 | 0.36 |
|        | 032HR-2S25 | 2  | 32 | 25 | 50 | 140 | 25 | 0.48 |
|        | 032HR-2S32 | 2  | 32 | 32 | 50 | 140 | 25 | 0.71 |
|        | 040HR-2S32 | 2  | 40 | 32 | 50 | 140 | 25 | 0.85 |
|        | 040HR-2S40 | 2  | 40 | 40 | 50 | 140 | 25 | 1.16 |
|        | 040HR-2S42 | 2  | 40 | 42 | 50 | 140 | 25 | 1.26 |
|        | 040HR-3S32 | 3  | 40 | 32 | 50 | 140 | 25 | 0.80 |
|        | 040HR-3S40 | 3  | 40 | 40 | 50 | 140 | 25 | 1.10 |
|        | 040HR-3S42 | 3  | 40 | 42 | 50 | 140 | 25 | 1.20 |

### Insertos disponibles

LXET-MA LXET-ML



| Tipo | Codigo                | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        |        | Sin Rec. |       |     | pag. |
|------|-----------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-------|-----|------|
|      |                       | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400   | ST30A | G10 |      |
| Ø32  | LXET 250404PEFR-32-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |
|      | 2504PEFR-32-MA        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     | ●    |
|      | 250412PEFR-32-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |
|      | 250416PEFR-32-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |
|      | 250404PEER-32-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |
|      | 2504PEER-32-ML        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |
|      | 250412PEER-32-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |
| Ø40  | LXET 250404PEFR-40-MA |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |
|      | 2504PEFR-40-MA        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |
|      | 250412PEFR-40-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |
|      | 250416PEFR-40-MA      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |
|      | 250404PEER-40-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |
|      | 2504PEER-40-ML        |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |
|      | 250412PEER-40-ML      |        |      |            |        |        |        |        |        |        |        |        |        |        |        |          |       |     |      |

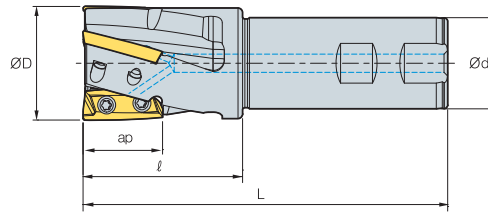
### Partes

| Especificaciones | Tornillo | Llave |
|------------------|----------|-------|
| Ø32              | FTKA0408 | TW15S |
| Ø40              | FTKA0410 | TW15S |

Insertos disponibles E12



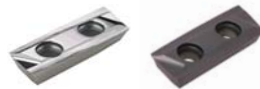
# PALS (Filo único)



| Codigo |            | ØD | Ød | l  | L  | ap  |      |
|--------|------------|----|----|----|----|-----|------|
| PALS   | 050HR-3S32 | 3  | 50 | 32 | 70 | 160 | 1.10 |
|        | 050HR-3S40 | 3  | 50 | 40 | 70 | 160 | 1.40 |
|        | 050HR-3S42 | 3  | 50 | 42 | 70 | 160 | 1.50 |
|        | 063HR-4S32 | 4  | 63 | 32 | 70 | 160 | 1.60 |
|        | 063HR-4S40 | 4  | 63 | 40 | 70 | 160 | 1.92 |
|        | 063HR-4S42 | 4  | 63 | 42 | 70 | 160 | 2.00 |

## Insertos disponibles

LXET-MA LXET-ML



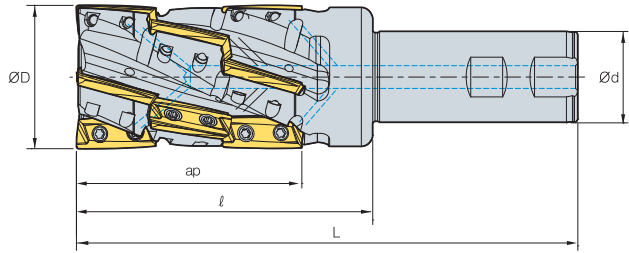
| Tipo | Codigo                | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |  |  |
|------|-----------------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|--|--|
|      |                       | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |  |  |
| Ø50  | LXET 340504PEFR-50-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
|      | 3405PEFR-50-MA        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
|      | 340512PEFR-50-MA      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
|      | 340516PEFR-50-MA      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
|      | 340504PEER-50-ML      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
|      | 3405PEER-50-ML        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
|      | 340512PEER-50-ML      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
| Ø63  | LXET 340504PEFR-63-MA |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
|      | 3405PEFR-63-MA        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
|      | 340512PEFR-63-MA      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
|      | 340516PEFR-63-MA      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
|      | 340504PEER-63-ML      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
|      | 3405PEER-63-ML        |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |
|      | 340512PEER-63-ML      |        |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |  |  |

## Partes

| Especificaciones |            |          |
|------------------|------------|----------|
| Ø50              | FTGA0510-P | TW20-100 |
| Ø63              | FTGA0511-P | TW20-100 |

Insertos disponibles E12

## PALS (Múltiples Filos)

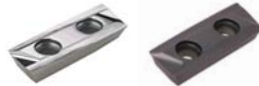


(mm)

| Codigo |            | Ød | Ød1 | l  | L   | ap  |      |
|--------|------------|----|-----|----|-----|-----|------|
| PALS   | 063HM-4S32 | 12 | 63  | 32 | 130 | 220 | 1.60 |
|        | 063HM-4S40 | 12 | 63  | 40 | 130 | 220 | 1.92 |
|        | 063HM-4S42 | 12 | 63  | 42 | 130 | 220 | 2.00 |

### Insertos disponibles

LXET-MA LXET-ML



| Codigo | Cermet           |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|------------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000           | CN30 | NCM325     | NC5330 | NCM635 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| LXET   | 340504PEFR-63-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 3405PEFR-63-MA   |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     | ●   |
|        | 340512PEFR-63-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 340516PEFR-63-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 340504PEER-63-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 3405PEER-63-ML   |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 340512PEER-63-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |
|        | 340516PEER-63-ML |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |

### Partes

| Especificaciones |                        |                   |
|------------------|------------------------|-------------------|
| Ø63              | Tornillo<br>FTGA0511-P | Llave<br>TW20-100 |

Insertos disponibles E12





# PXL(S) new

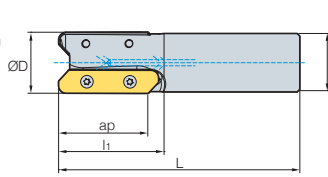


Fig. 1

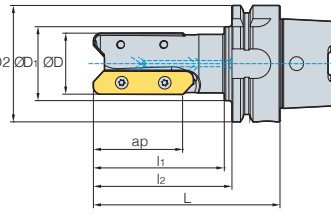


Fig. 2

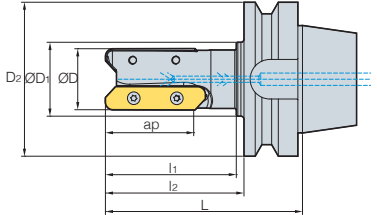
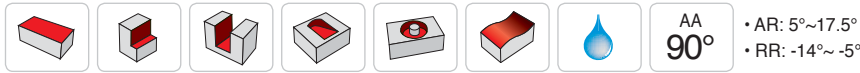


Fig. 3



AA  
90°  
• AR: 5°~17.5°  
• RR: -14°~-5°

(mm)

| Codigo  | Fig.          | ØD | ØD1 | ØD2 | l1  | l2 | L   | ap  | kg | Fig. |   |
|---------|---------------|----|-----|-----|-----|----|-----|-----|----|------|---|
| PXLS    | 040HR-2S40    | 2  | 40  | 40  | -   | 85 | -   | 175 | 57 | 1.23 | 1 |
|         | 040HR-3S40    | 3  | 40  | 40  | -   | 85 | -   | 175 | 57 | 1.11 | 1 |
|         | 050HR-3S40    | 3  | 50  | 40  | -   | 85 | -   | 185 | 57 | 1.51 | 1 |
| HSK63A  | PXL04090HR-2F | 2  | 40  | 48  | 63  | 85 | 90  | 116 | 57 | 1.13 | 2 |
| HSK100A | PXL04090HR-3F | 3  | 40  | 70  | 100 | 90 | 100 | 129 | 57 | 2.74 | 2 |
|         | PXL08090HR-5F | 5  | 80  | 77  | 100 | -  | 90  | 119 | 57 | 4.29 | 2 |
| BT50    | PXL04090HR-2F | 2  | 40  | 48  | 100 | 85 | 90  | 128 | 57 | 4.13 | 3 |

## Insertos disponibles

LDET-MA



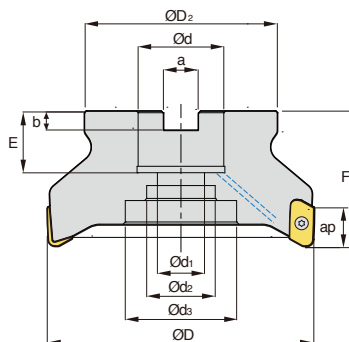
| Codigo | Cermet        |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|---------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000        | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| LDET   | 650540PPFR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     | E10 |
|        | 650550PPFR-MA |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |

## Partes

| Especificaciones | Tornillo   | Llave    |
|------------------|------------|----------|
| Ø40~80           | FTGA0511-P | TW20-100 |

Insertos disponibles E10

## PAVCM-XD19



AA  
90°  
• AR: 11°~14°  
• RR: -11°~-9°

(mm)

| Codigo                          | ØD | ØD <sub>2</sub> | Ød | Ød <sub>1</sub> | Ød <sub>2</sub> | Ød <sub>3</sub> | a  | b    | E   | F  | ap | kg |      |
|---------------------------------|----|-----------------|----|-----------------|-----------------|-----------------|----|------|-----|----|----|----|------|
| <b>PAVCM 040R-16-3-XD19-A,B</b> | 3  | 40              | 34 | 16              | 9               | 13.5            | -  | 8.4  | 5.6 | 16 | 45 | 17 | 0.17 |
| <b>050R-22-4-XD19-A,B</b>       | 4  | 50              | 42 | 22              | 11              | 18              | -  | 10.4 | 6.3 | 21 | 50 | 17 | 0.35 |
| <b>063R-22-5-XD19-A,B</b>       | 5  | 63              | 42 | 22              | 11              | 18              | -  | 10.4 | 6.3 | 21 | 50 | 17 | 0.53 |
| <b>080R-27-5-XD19-A,B</b>       | 5  | 80              | 60 | 27              | 14              | 20              | -  | 12.4 | 7.0 | 24 | 50 | 17 | 0.88 |
| <b>100R-32-6-XD19-A,B</b>       | 6  | 100             | 70 | 32              | 18              | 26              | 42 | 14.4 | 8.0 | 25 | 63 | 17 | 1.72 |
| <b>125R-40-7-XD19-A,B</b>       | 7  | 125             | 90 | 40              | 22              | 32              | 52 | 16.4 | 9.0 | 29 | 63 | 17 | 2.82 |

• Tipo A: Inserto Radio NoseR 0.4~3.2, Tipo B: Inserto Radio NoseR 4.0~5.0

• Cuando use un huso a alta velocidad, verifique el equilibrio de la herramienta y úsela después de reemplazarla con el nuevo tornillo.

### Insertos disponibles

XDET-MA



| Codigo             | Recubierta |      |        |        |        |        |        |        |        |        | Sin Rec. | pag. | Codigo | Recubierta |        |        |        |        |     |     |        |      |        | Sin Rec. | pag. |        |        |        |        |        |        |        |        |        |        |        |        |     |
|--------------------|------------|------|--------|--------|--------|--------|--------|--------|--------|--------|----------|------|--------|------------|--------|--------|--------|--------|-----|-----|--------|------|--------|----------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
|                    | CN2000     | CN30 | NCM325 | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510 | PC9530 |          |      |        | PC9540     | PC5300 | PC5400 | PD1005 | PD1010 | H01 | H05 | CN2000 | CN30 | NCM325 |          |      | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400 | PD1005 | PD1010 | H01 |
| XDET 190504PEFR-MA |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |        |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |        |     |
| 190508PEFR-MA      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |        |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |        |     |
| 190512PEFR-MA      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |        |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |        |     |
| 190516PEFR-MA      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |        |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |        |     |
| 190520PEFR-MA      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |        |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |        |     |
| XDET 190524PEFR-MA |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |        |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |        |     |
| 190530PEFR-MA      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |        |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |        |     |
| 190532PEFR-MA      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |        |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |        |     |
| 190540PEFR-MA      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |        |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |        |     |
| 190550PEFR-MA      |            |      |        |        |        |        |        |        |        |        |          |      |        |            |        |        |        |        |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        |        |        |        |     |

### Adaptadores disponibles

| Codigo                      | Adaptadores disponibles |
|-----------------------------|-------------------------|
| <b>PAVCM 040R-16-3-XD19</b> | BT□□-FMC16-□□           |
| <b>050R-22-4-XD19</b>       | BT□□-FMC22-□□           |
| <b>063R-22-5-XD19</b>       | BT□□-FMC22-□□           |
| <b>080R-27-5-XD19</b>       | BT□□-FMC27-□□           |
| <b>100R-32-6-XD19</b>       | BT□□-FMC32-□□           |
| <b>125R-40-7-XD19</b>       | BT□□-FMC40-□□           |

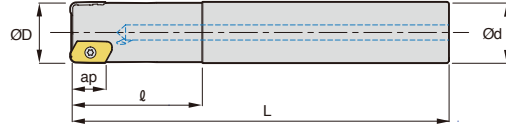
### Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø40~Ø125         | PTKA0408-A | TW15S |

Insertos disponibles E10 Detalles del cortador E400~E402



# PAVS-XD19



AA 90°  
 • AR: 8°~11°  
 • RR: -14°~-11°

(mm)

| Codigo |                        | ØD | Ød | l  | L  | ap  | kg   |
|--------|------------------------|----|----|----|----|-----|------|
| PAVS   | 025R-2C25-140-XD19-A,B | 2  | 25 | 25 | 60 | 140 | 0.40 |
|        | 032R-2C32-150-XD19-A,B | 2  | 32 | 32 | 70 | 150 | 0.76 |
|        | 032R-2C32-200-XD19-A,B | 2  | 32 | 32 | 70 | 200 | 1.06 |
|        | 040R-3C40-200-XD19-A,B | 3  | 40 | 40 | 70 | 200 | 1.71 |

- Tipo A: Inserto Radio NoseR 0.4~3.2, Tipo B: Inserto Radio NoseR 4.0~5.0
- Cuando use un huso a alta velocidad, verifique el equilibrio de la herramienta y úsela después de reemplazarla con el nuevo tornillo.

## Insertos disponibles

### XDET-MA



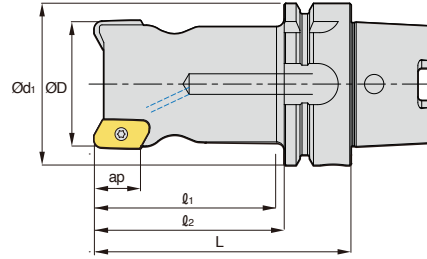
| Codigo | Cemet  |         | Recubierto |        |        |        |        |        |        |        | Sin Rec. | pag. | Codigo | Cemet  |        | Recubierto |        |         |     |     |        |      |        | Sin Rec. | pag. |        |        |        |        |        |        |        |        |        |        |        |
|--------|--------|---------|------------|--------|--------|--------|--------|--------|--------|--------|----------|------|--------|--------|--------|------------|--------|---------|-----|-----|--------|------|--------|----------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|        | CN2000 | CN30    | NCM325     | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510 | PC9530 |          |      |        | PC9540 | PC5300 | PC5400     | PD1005 | PD1010  | H01 | H05 | CN2000 | CN30 | NCM325 |          |      | NC5330 | NCM535 | NCM545 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300 | PC5400 | PD1005 |
| XDET   | 190504 | PEFR-MA |            |        |        |        |        |        |        |        |          |      |        | ●      | E10    | XDET       | 190524 | PEFR-MA |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        | ●      | E10    |
|        | 190508 | PEFR-MA |            |        |        |        |        |        |        |        |          |      |        | ●●     |        |            | 190530 | PEFR-MA |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        | ●●     |        |
|        | 190512 | PEFR-MA |            |        |        |        |        |        |        |        |          |      |        | ●      |        |            | 190532 | PEFR-MA |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        | ●      |        |
|        | 190516 | PEFR-MA |            |        |        |        |        |        |        |        |          |      |        | ●●     |        |            | 190540 | PEFR-MA |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        | ●●     |        |
|        | 190520 | PEFR-MA |            |        |        |        |        |        |        |        |          |      |        | ●      |        |            | 190550 | PEFR-MA |     |     |        |      |        |          |      |        |        |        |        |        |        |        |        |        | ●      |        |

## Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø25~Ø40          | PTKA0408-A | TW15S |

➔ Insertos disponibles E10 ➔ Detalles del cortador E400~E402

## HSK-XD19



AA  
90°  
• AR: 9°~13°  
• RR: -11°~-13°

(mm)

| Codigo                        | 3 | ØD | Ød <sub>1</sub> | l <sub>1</sub> | l <sub>2</sub> | L   | ap | kg   |
|-------------------------------|---|----|-----------------|----------------|----------------|-----|----|------|
| HSK63A PAV032R-3-100-XD19-A,B | 3 | 32 | 63              | 60             | 74             | 100 | 17 | 0.97 |
| PAV050R-3-100-XD19-A,B        | 3 | 50 | 63              | 72             | 74             | 100 | 17 | 1.37 |

• Tipo A: Inserto Radio NoseR 0.4~3.2, Tipo B: Inserto Radio NoseR 4.0~5.0

• Cuando use un huso a alta velocidad, verifique el equilibrio de la herramienta y úsela después de reemplazarla con el nuevo tornillo.

### Insertos disponibles

#### XDET-MA



| Codigo             | Cermet |      | Recubierto |        |        |        |        |        | Sin Rec. | pag. | Codigo | Cermet             |        | Recubierto |        |        |        |        |     | Sin Rec. | pag. |     |
|--------------------|--------|------|------------|--------|--------|--------|--------|--------|----------|------|--------|--------------------|--------|------------|--------|--------|--------|--------|-----|----------|------|-----|
|                    | CN2000 | CN30 | NCM325     | NCM530 | NCM535 | NCM645 | PC3600 | PC3700 |          |      |        | PC6510             | PC9530 | PC9540     | PC5300 | PC5400 | PD1005 | PD1010 | H01 |          |      | H05 |
| XDET 190504PEFR-MA |        |      |            |        |        |        |        |        |          | ●    | E10    | XDET 190524PEFR-MA |        |            |        |        |        |        |     |          | ●    | E10 |
| 190508PEFR-MA      |        |      |            |        |        |        |        |        | ●        |      |        | 190530PEFR-MA      |        |            |        |        |        |        |     |          | ●    |     |
| 190512PEFR-MA      |        |      |            |        |        |        |        |        | ●        |      |        | 190532PEFR-MA      |        |            |        |        |        |        |     |          | ●    |     |
| 190516PEFR-MA      |        |      |            |        |        |        |        |        | ●        |      |        | 190540PEFR-MA      |        |            |        |        |        |        |     |          | ●    |     |
| 190520PEFR-MA      |        |      |            |        |        |        |        |        | ●        |      |        | 190550PEFR-MA      |        |            |        |        |        |        |     |          | ●    |     |

### Partes

| Especificaciones | Tornillo   | Llave |
|------------------|------------|-------|
| Ø32~Ø50          | PTKA0408-A | TW15S |

➔ Insertos disponibles E10

➔ Detalles del cortador E400~E402

# MAT (Mango de Carburo Cementado)

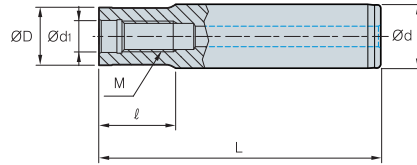


Fig. 1

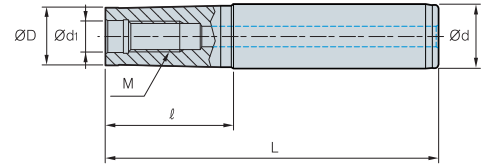


Fig. 2

(mm)

| Codigo                   | ØD   | Ød | Ød <sub>1</sub> | ℓ   | L   | M   | Fig. |
|--------------------------|------|----|-----------------|-----|-----|-----|------|
| <b>MAT-</b> M06-020-S10S | 9.5  | 10 | 6.5             | 20  | 70  | M06 | 1    |
| M6B-020-S12S             | 11.0 | 12 | 6.5             | 20  | 76  | M06 | 1    |
| M6B-040-S12S             | 11.0 | 12 | 6.5             | 40  | 96  | M06 | 1    |
| M08-020-S16S             | 14.5 | 16 | 8.5             | 20  | 80  | M08 | 1    |
| M10-030-S20S             | 18.0 | 20 | 10.5            | 30  | 100 | M10 | 1    |
| M12-030-S25S             | 22.5 | 25 | 12.5            | 29  | 110 | M12 | 1    |
| M16-035-S32S             | 28.5 | 32 | 17.0            | 35  | 125 | M16 | 1    |
| M06-040-S12T             | 9.5  | 12 | 6.5             | 40  | 96  | M06 | 2    |
| M06-065-S16T             | 9.5  | 16 | 6.5             | 65  | 125 | M06 | 2    |
| M6B-065-S16T             | 11.0 | 16 | 6.5             | 65  | 125 | M06 | 2    |
| M6B-080-S16T             | 11.0 | 16 | 6.5             | 80  | 140 | M06 | 2    |
| M08-040-S16T             | 14.5 | 16 | 8.5             | 40  | 100 | M08 | 2    |
| M08-065-S16T             | 14.5 | 16 | 8.5             | 65  | 125 | M08 | 2    |
| M08-080-S20T             | 14.5 | 20 | 8.5             | 80  | 150 | M08 | 2    |
| M08-110-S25T             | 14.5 | 25 | 8.5             | 110 | 190 | M08 | 2    |
| M10-050-S20T             | 18.0 | 20 | 10.5            | 50  | 120 | M10 | 2    |
| M10-070-S20T             | 18.0 | 20 | 10.5            | 70  | 140 | M10 | 2    |
| M10-090-S25T             | 18.0 | 25 | 10.5            | 90  | 170 | M10 | 2    |
| M10-110-S25T             | 18.0 | 25 | 10.5            | 110 | 190 | M10 | 2    |
| M10-130-S32T             | 18.0 | 32 | 10.5            | 130 | 220 | M10 | 2    |
| M12-050-S25T             | 22.5 | 25 | 12.5            | 50  | 130 | M12 | 2    |
| M12-070-S25T             | 22.5 | 25 | 12.5            | 70  | 150 | M12 | 2    |
| M12-090-S25T             | 22.5 | 25 | 12.5            | 90  | 170 | M12 | 2    |
| M12-110-S32T             | 22.5 | 32 | 12.5            | 110 | 200 | M12 | 2    |
| M12-175-S40T             | 22.5 | 40 | 12.5            | 175 | 300 | M12 | 2    |
| M16-055-S32T             | 28.5 | 32 | 17.0            | 55  | 145 | M16 | 2    |
| M16-080-S32T             | 28.5 | 32 | 17.0            | 80  | 170 | M16 | 2    |
| M16-120-S32T             | 28.5 | 32 | 17.0            | 120 | 210 | M16 | 2    |
| M16-175-S40T             | 28.5 | 40 | 17.0            | 175 | 300 | M16 | 2    |

• S: Adaptador Recto • T: Adaptador Conico

|  |                                 |                                       |                                   |                                   |  |
|--|---------------------------------|---------------------------------------|-----------------------------------|-----------------------------------|--|
| <b>FMRM tipo</b><br><br>E244~247, E256~259 | <b>LBE-MHD tipo</b><br><br>E322 | <b>PAM/PAXM tipo</b><br><br>E356, 361 | <b>AMM tipo</b><br><br>E180~182   | <b>RM3PM tipo</b><br><br>E94      | <b>RM4PM/RM4ZM tipo</b><br><br>E107, 109 |
| <b>RM6PM tipo</b><br><br>E114              | <b>HFMDM tipo</b><br><br>E267   | <b>HFMM tipo</b><br><br>E275          | <b>HRMM tipo</b><br><br>E297, 298 | <b>HRMDM tipo</b><br><br>E289~291 | <b>GBEM tipo</b><br><br>E326             |

➔ Modular Disponibles E42, E43 (FMRM, LBE, PAM, AMM, RM4PM, HFMM, RM4ZM, HRMM, PAXM)

## MAT-C (Mango de Carburo Cementado)

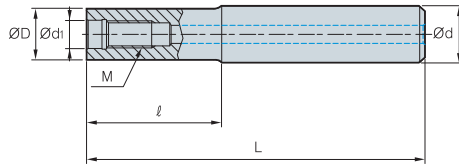


Fig. 1

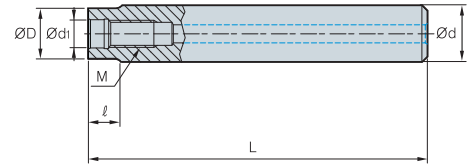


Fig. 2

(mm)

| Codigo                 | ØD   | Ød | Ød <sub>1</sub> | ℓ   | L   | M   | Fig. |
|------------------------|------|----|-----------------|-----|-----|-----|------|
| MAT-M06-030-S10S-C-80  | 9.5  | 10 | 6.5             | 30  | 80  | M06 | 1    |
| MAT-M06-050-S10S-C-100 | 9.5  | 10 | 6.5             | 50  | 100 | M06 | 1    |
| MAT-M06-080-S10S-C-130 | 9.5  | 10 | 6.5             | 80  | 130 | M06 | 1    |
| MAT-M6B-030-S12S-C-80  | 11   | 12 | 6.5             | 30  | 80  | M06 | 1    |
| MAT-M6B-050-S12S-C-100 | 11   | 12 | 6.5             | 50  | 100 | M06 | 1    |
| MAT-M6B-080-S12S-C-130 | 11   | 12 | 6.5             | 80  | 130 | M06 | 1    |
| MAT-M08-080-S16S-C     | 14.5 | 16 | 8.5             | 80  | 150 | M08 | 1    |
| MAT-M08-110-S16S-C     | 14.5 | 16 | 8.5             | 110 | 180 | M08 | 1    |
| MAT-M08-150-S16S-C     | 14.5 | 16 | 8.5             | 150 | 250 | M08 | 1    |
| MAT-M08-010-S16S-C-150 | 14.5 | 16 | 8.5             | 10  | 150 | M08 | 2    |
| MAT-M08-010-S16S-C-180 | 14.5 | 16 | 8.5             | 10  | 180 | M08 | 2    |
| MAT-M08-010-S16S-C-250 | 14.5 | 16 | 8.5             | 10  | 250 | M08 | 2    |
| MAT-M10-090-S20S-C     | 18   | 20 | 10.5            | 90  | 170 | M10 | 1    |
| MAT-M10-110-S20S-C     | 18   | 20 | 10.5            | 110 | 200 | M10 | 1    |
| MAT-M10-175-S20S-C     | 18   | 20 | 10.5            | 175 | 300 | M10 | 1    |
| MAT-M10-010-S20S-C-170 | 18   | 20 | 10.5            | 10  | 170 | M10 | 2    |
| MAT-M10-010-S20S-C-200 | 18   | 20 | 10.5            | 10  | 200 | M10 | 2    |
| MAT-M10-010-S20S-C-300 | 18   | 20 | 10.5            | 10  | 300 | M10 | 2    |
| MAT-M12-090-S25S-C     | 22.5 | 25 | 12.5            | 90  | 170 | M12 | 1    |
| MAT-M12-110-S25S-C     | 22.5 | 25 | 12.5            | 110 | 200 | M12 | 1    |
| MAT-M12-175-S25S-C     | 22.5 | 25 | 12.5            | 175 | 300 | M12 | 1    |
| MAT-M12-015-S25S-C-170 | 22.5 | 25 | 12.5            | 15  | 170 | M12 | 2    |
| MAT-M12-015-S25S-C-200 | 22.5 | 25 | 12.5            | 15  | 200 | M12 | 2    |
| MAT-M12-015-S25S-C-300 | 22.5 | 25 | 12.5            | 15  | 300 | M12 | 2    |
| MAT-M16-090-S32S-C     | 28.5 | 32 | 17              | 90  | 180 | M16 | 1    |
| MAT-M16-120-S32S-C     | 28.5 | 32 | 17              | 120 | 210 | M16 | 1    |
| MAT-M16-175-S32S-C     | 28.5 | 32 | 17              | 175 | 300 | M16 | 1    |
| MAT-M16-020-S32S-C-180 | 28.5 | 32 | 17              | 20  | 180 | M16 | 2    |
| MAT-M16-020-S32S-C-210 | 28.5 | 32 | 17              | 20  | 210 | M16 | 2    |
| MAT-M16-020-S32S-C-300 | 28.5 | 32 | 17              | 20  | 300 | M16 | 2    |




↻ Modular Disponibles E42, E43 (FMRM, LBE, PAM, AMM, RM4PM, HFMM, RM4ZM, HRMM, PAXM)




# Ajuste Fresado Lateral

## ➤ Sistema de codificación

P: Tipo plano



B: Tipo saliente



A: Ajuste del cortador

**Ajuste**


Tipo de fresa

Para cortador lateral medio, la anchura de corte sera escrita solamente


**Anchura máxima del Cortador**

**R A FC B 125 14 18 - R**

**Sistema de Sujeción**




R: Tipo Radial (usando SDXT)




T: Tipo tangencial (usando CNHQ)

**Configuración del Inserto**



FC Cortador Completo



HC Cortador Medio

**Diametro del corte (Ø)**

125

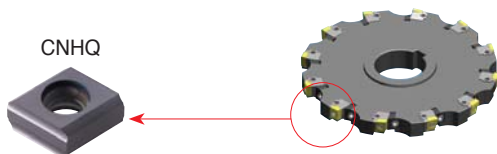
**Anchura máxima del Cortador**

14

**Mano del Cortador**

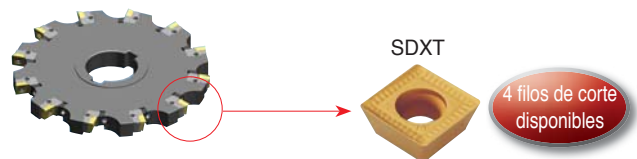
| Sin Marca                   | R                               | L    |
|-----------------------------|---------------------------------|------|
| Neutral                     | Der.                            | Izq. |
| Cortador Lateral Tipo Plano | Cortador Lateral Medio Con Base |      |

## ➤ Tipo Tangencial (Alta Rigidez)



- Medio/desbaste
- Funcionamiento excelente en el medio a la operación de la tabla de la gama del desbaste (14~30 mm) debido a la rigidez fuerte del cortador
- Buen funcionamiento con la interrupción pesada y la profundidad

## ➤ Tipo Radial (Baja Carga de Corte)

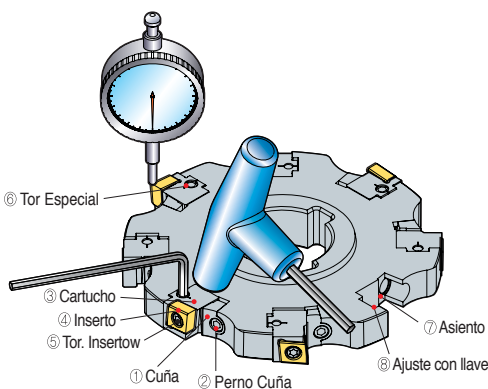


- Medio/acabamiento
- Conveniente para operación de anchura pequeña de corte (12~24mm)
- Rompeviruta 3dimensional proporciona una operación de corte lisa
- Varios rompevirutas según usos, están disponibles: MF, MM, FA
- Inserto económico usando 4 filos por pastilla

## ➤ Característica del inserto

- El cortador lateral ajustable exacto puede controlar la anchura del cortador por la unidad.
- Puesto que la anchura del cortador es ajustable hasta ±1.5 mm, el solo cortador puede cubrir varia anchura de corte.
- Diseñado especialmente la fijación del sistema con abrazadera del localizador proporciona rigidez excelente usando la deformación elástica del localizador.
- El tipo tangencial que afianza el sistema con abrazadera de parte movable proporciona bastante fuerza puede soportar la anchura grande de la operación del corte.
- Rompeviruta de 3 dimensiones del inserto proporciona el corte liso y carga baja de corte para corte medio a acabado

## ➤ Manual Operacion



### • Cómo montar el cortador lateral de ajuste

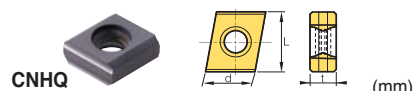
1. La cuña de la abrazadera ① en ⑦localizador-acuña levemente elbolsillo usando ②el tornillo de la cuña.
2. Ponga ③ el localizador en ⑦localizador-acuña el bolsillo junto con ⑧la chavetera.
3. Apriete ⑥el tornillo de la forma cónica poco pedacito para fijar la posición apropiada del localizador.
4. Apriete ②el tornillo de la cuña firmemente usando el esfuerzo de torsión de los 70~80N.m.
5. Después de que esté puesto el ④insert en el bolsillo del parte movable ③del localizador, lo afianza con abrazadera con el tornillo del parte movable de ⑤usando el esfuerzo de torsión de los 40~50N.m.

### • Cómo ajustar anchura del agotamiento y de corte

1. Coloque el cortador lateral de ajuste después de limpiar a la plantilla para la medida.
2. Desatornille ②el tornillo de la cuña primero, después apriete ①la cuña levemente otra vez usando el esfuerzo de torsión de los 8N.m.
3. Ajustando la altura del filo usando un calibrador del dial para fijar la anchura del cortador.
4. Apriete ②el tornillo de la cuña firmemente usando el esfuerzo de torsión de los 70~80N.m.
5. Para acabar el ajuste, apriete ⑥el tornillo de la forma cónica para la abrazadera fuerte.

## Tipo Tangencial

### Ancho de corte según el tipo de inserto y de corte



| Codigo   | Recubierto |        | Anchura de corte para cortador lateral medio (ap) | Anchura del corte para cortador lateral (ap) | L    | d  | t   |
|----------|------------|--------|---|--|------|----|-----|
|          | NCM325     | PC6510 |   |  |      |    |     |
| CNHQ1005 | - C0.5     |        | 9.0   | 14~18  | 10   | 10 | 5.4 |
|          | - R0.5     |        |   |  |      |    |     |
|          | - C1.0     |        |   |  |      |    |     |
|          | - R1.0     |        |   |  |      |    |     |
| CNHQ1305 | - C0.5     |        | 12  | 18~21/21~24                                  | 12.7 | 10 | 5.4 |
|          | - R0.5     |        | 11.5  | 18~21/21~23                                  |      |    |     |
|          | - C1.0     |        | 11  | 18~21/21~22                                  |      |    |     |
|          | - R1.0     |        |   |  |      |    |     |
|          | - C1.5     |        |   |  |      |    |     |
| CNHQ1606 | - C0.5     |        | 15  | 24~27/27~30                                  | 16   | 12 | 6.4 |
|          | - R0.5     |        | 14.5  | 24~27/27~29                                  |      |    |     |
|          | - C1.0     |        | 14  | 24~27/27~28                                  |      |    |     |
|          | - R1.0     |        | 13.5  | 24~27  |      |    |     |
|          | - C1.5     |        |   |  |      |    |     |
|          | - R1.5     |        |   |  |      |    |     |
|          | - C2.0     |        |   |  |      |    |     |

Portaherramientas disponibles E375, E376 Detalles del cortador E400~E402

### Condiciones de corte recomendadas

| ISO | Calidades | vc (m/min) | fz (mm/diente) |
|-----|-----------|------------|----------------|
| P   | NCM325    | 190~310    | 0.10~0.30      |
|     | PC3700    | 160~270    |                |
| M   | PC5300    | 90~150     | 0.10~0.30      |
|     | NCM335    | 180~290    |                |
| K   | PC6510    | 140~230    | 0.10~0.30      |

## Tipo Radial

### Ancho de corte según el tipo de inserto y de corte



| Codigo     | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        | Anchura de corte para cortador lateral medio (ap) | Anchura del corte para cortador lateral (ap) | d | t    |                                  |       |      |
|------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|---|--|---|------|----------------------------------|-------|------|
|            | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2510 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 |   |  |   |      | PC5400                           | H01   | H05  |
| SDXT       | 09M405R-MA |        |        |        |        |        |        |        |        |        |          |        |   | ●  | ● | 8    | 12~14<br>14~16                   | 9.525 | 4    |
|            | 09M405L-MA |        |        |        |        |        |        |        |        |        |          |        |   |  |   |      |                                  |       |      |
|            | 09M405R-MF | ●      |        |        |        |        | ●      |        | ●      | ●      |          | ●      | ●   |  |   |      |                                  |       |      |
|            | 09M405L-MF |        |        |        |        |        |        |        |        |        |          |        |   |  |   |      |                                  |       |      |
|            | 09M405R-MM | ●      |        |        |        |        | ●      |        | ●      | ●      |          | ●      | ●   |  |   |      |                                  |       |      |
| 130508R-MA | 130508L-MA |        |        |        |        |        |        |        |        |        |          |        |   | ●  | ● | 10.5 | 16~18<br>18~20<br>20~22<br>22~24 | 13.5  | 5.56 |
|            | 130508R-MF | ●      |        |        |        |        | ●      |        | ●      | ●      |          | ●      | ●   |  |   |      |                                  |       |      |
|            | 130508L-MF |        |        |        |        |        |        |        |        |        |          |        |   |  |   |      |                                  |       |      |
|            | 130508R-MM | ●      |        |        |        |        | ●      |        | ●      | ●      |          | ●      | ●   |  |   |      |                                  |       |      |
|            | 130508L-MM |        |        |        |        |        |        |        |        |        |          |        |   |  |   |      |                                  |       |      |

Portaherramientas disponibles E377, E378 Detalles del cortador E400~E402

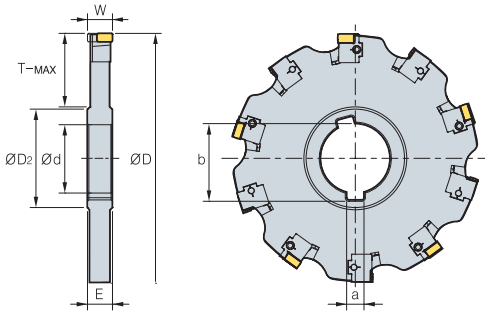
### Condiciones de corte recomendadas

| ISO | Calidades | vc (m/min) | fz (mm/diente) |
|-----|-----------|------------|----------------|
| P   | NCM325    | 190~310    | 0.08~0.30      |
|     | NCM335    | 180~290    | 0.08~0.25      |
|     | PC3700    | 160~270    | 0.10~0.25      |
| M   | PC9530    | 90~150     | 0.10~0.25      |
|     | PC5300    | 90~150     |                |
| K   | PC8110    | 140~230    | 0.10~0.25      |
|     | PC6510    | 140~230    |                |

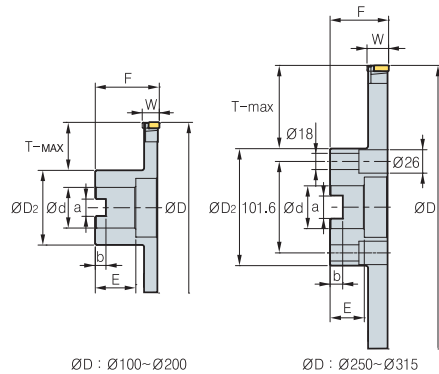




**Tipo Tangencial (Full Cortador Lateral)**



• TAFCP(M)



• TAFCB(M)

| Codigo           | Ød               | E              | ØD2       | a  | b         | T-MAX     | Codigo | Ød                | F                 | ØD2              | a                 | b         | E           | T-MAX | Dimensiones |    |               |       |     |
|------------------|------------------|----------------|-----------|----|-----------|-----------|--------|-------------------|-------------------|------------------|-------------------|-----------|-------------|-------|-------------|----|---------------|-------|-----|
|                  |                  |                |           |    |           |           |        |                   |                   |                  |                   |           |             |       | ØD          | W  | No. de diente |       |     |
| <b>TAFCP (M)</b> | <b>1001418</b>   | 31.75 (32)     | 14        | 48 | 7.92 (8)  | 35.2      | 24     | <b>TAFCB (M)</b>  | <b>1001418R/L</b> | 31.75 (32)       | 50                | 54        | 12.7 (14.4) | 8     | 28          | 21 | 100           | 14-18 | 6   |
|                  | <b>1251418</b>   | 38.1 (40)      | 14        | 56 | 9.52 (10) | 42.3      | 32     |                   | <b>1251418R/L</b> | 38.1 (40)        | 60                | 70        | 15.9 (16.4) | 10    | 30          | 25 | 125           | 14-18 | 8   |
|                  | <b>1601418</b>   | 38.1 (40)      | 14        | 56 | 9.52 (10) | 42.3      | 50     |                   | <b>1601418R/L</b> | 38.1 (40)        | 60                | 70        | 15.9 (16.4) | 10    | 30          | 43 | 160           | 14-18 | 10  |
|                  | <b>2001418</b>   | 50.8 (50)      | 14        | 72 | 12.7 (12) | 55.8      | 61     |                   | <b>2001418R/L</b> | 50.8 (40)        | 65                | 90        | 19.0 (16.4) | 11    | 30          | 53 | 200           | 14-18 | 12  |
|                  | <b>2501418</b>   | 50.8 (50)      | 14        | 72 | 12.7 (12) | 55.8      | 86     |                   | <b>2501418R/L</b> | 47.625 (60)      | 65                | 130       | 25.4 (25.7) | 14    | 38          | 58 | 250           | 14-18 | 16  |
|                  | <b>3151418</b>   | 50.8 (50)      | 14        | 72 | 12.7 (12) | 55.8      | 118    |                   | <b>3151418R/L</b> | 47.625 (60)      | 65                | 130       | 25.4 (25.7) | 14    | 38          | 90 | 315           | 14-18 | 20  |
| <b>TAFCP (M)</b> | <b>1001821</b>   | 31.75 (32)     | 18        | 48 | 7.92 (8)  | 35.2      | 24     | <b>TAFCB (M)</b>  | <b>1001821R/L</b> | 31.75 (32)       | 50                | 50        | 12.7 (14.4) | 8     | 28          | 21 | 100           | 18-21 | 6   |
|                  | <b>1251821</b>   | 38.1 (40)      | 18        | 56 | 9.52 (10) | 42.3      | 32     |                   | <b>1251821R/L</b> | 38.1 (40)        | 60                | 70        | 15.9 (16.4) | 10    | 30          | 25 | 125           | 18-21 | 8   |
|                  | <b>1601821</b>   | 38.1 (40)      | 18        | 56 | 9.52 (10) | 42.3      | 50     |                   | <b>1601821R/L</b> | 38.1 (40)        | 60                | 70        | 15.9 (16.4) | 10    | 30          | 43 | 160           | 18-21 | 10  |
|                  | <b>2001821</b>   | 50.8 (50)      | 18        | 72 | 12.7 (12) | 55.8      | 61     |                   | <b>2001821R/L</b> | 50.8 (40)        | 65                | 90        | 19.0 (16.4) | 11    | 30          | 53 | 200           | 18-21 | 12  |
|                  | <b>2501821</b>   | 50.8 (50)      | 18        | 72 | 12.7 (12) | 55.8      | 86     |                   | <b>2501821R/L</b> | 47.625 (60)      | 65                | 130       | 25.4 (25.7) | 14    | 38          | 58 | 250           | 18-21 | 16  |
|                  | <b>3151821</b>   | 50.8 (50)      | 18        | 72 | 12.7 (12) | 55.8      | 118    |                   | <b>3151821R/L</b> | 47.625 (60)      | 65                | 130       | 25.4 (25.7) | 14    | 38          | 90 | 315           | 18-21 | 20  |
| <b>TAFCP (M)</b> | <b>1002124</b>   | 31.75 (32)     | 21        | 48 | 7.92 (8)  | 35.2      | 24     | <b>TAFCB (M)</b>  | <b>1002124R/L</b> | 31.75 (32)       | 50                | 54        | 12.7 (14.4) | 8     | 28          | 21 | 100           | 21-24 | 6   |
|                  | <b>1252124</b>   | 38.1 (40)      | 21        | 56 | 9.52 (10) | 42.3      | 32     |                   | <b>1252124R/L</b> | 38.1 (40)        | 60                | 70        | 15.9 (16.4) | 10    | 30          | 25 | 125           | 21-24 | 8   |
|                  | <b>1602124</b>   | 38.1 (40)      | 21        | 56 | 9.52 (10) | 42.3      | 50     |                   | <b>1602124R/L</b> | 38.1 (40)        | 60                | 70        | 15.9 (16.4) | 10    | 30          | 43 | 160           | 21-24 | 10  |
|                  | <b>2002124</b>   | 50.8 (50)      | 21        | 72 | 12.7 (12) | 55.8      | 61     |                   | <b>2002124R/L</b> | 50.8 (40)        | 65                | 90        | 19.0 (16.4) | 11    | 30          | 53 | 200           | 21-24 | 12  |
|                  | <b>2502124</b>   | 50.8 (50)      | 21        | 72 | 12.7 (12) | 55.8      | 86     |                   | <b>2502124R/L</b> | 47.625 (60)      | 65                | 130       | 25.4 (25.7) | 14    | 38          | 58 | 250           | 21-24 | 16  |
|                  | <b>3152124</b>   | 50.8 (50)      | 21        | 72 | 12.7 (12) | 55.8      | 118    |                   | <b>3152124R/L</b> | 47.625 (60)      | 65                | 130       | 25.4 (25.7) | 14    | 38          | 90 | 315           | 21-24 | 20  |
| <b>TAFCP (M)</b> | <b>1252427</b>   | 38.1 (40)      | 24        | 56 | 9.52 (10) | 42.3      | 32     | <b>TAFCB (M)</b>  | <b>1252427R/L</b> | 38.1 (40)        | 60                | 70        | 15.9 (16.4) | 10    | 30          | 25 | 125           | 24-27 | 8   |
|                  | <b>1602427</b>   | 38.1 (40)      | 24        | 56 | 9.52 (10) | 42.3      | 50     |                   | <b>1602427R/L</b> | 38.1 (40)        | 60                | 70        | 15.9 (16.4) | 10    | 30          | 43 | 160           | 24-27 | 10  |
|                  | <b>2002427</b>   | 50.8 (50)      | 24        | 72 | 12.7 (12) | 55.8      | 61     |                   | <b>2002427R/L</b> | 50.8 (40)        | 65                | 90        | 19.0 (16.4) | 11    | 30          | 53 | 200           | 24-27 | 12  |
|                  | <b>2502427</b>   | 50.8 (50)      | 24        | 72 | 12.7 (12) | 55.8      | 86     |                   | <b>2502427R/L</b> | 47.625 (60)      | 65                | 130       | 25.4 (25.7) | 14    | 38          | 58 | 250           | 24-27 | 16  |
|                  | <b>3152427</b>   | 50.8 (50)      | 24        | 72 | 12.7 (12) | 55.8      | 118    |                   | <b>3152427R/L</b> | 47.625 (60)      | 65                | 130       | 25.4 (25.7) | 14    | 38          | 90 | 315           | 24-27 | 20  |
|                  | <b>TAFCP (M)</b> | <b>1252730</b> | 38.1 (40) | 27 | 56        | 9.52 (10) | 42.3   |                   | 32                | <b>TAFCB (M)</b> | <b>1252730R/L</b> | 38.1 (40) | 60          | 70    | 15.9 (16.4) | 10 | 30            | 25    | 125 |
| <b>1602730</b>   |                  | 38.1 (40)      | 27        | 56 | 9.52 (10) | 42.3      | 50     | <b>1602730R/L</b> | 38.1 (40)         |                  | 60                | 70        | 15.9 (16.4) | 10    | 30          | 43 | 160           | 27-30 | 10  |
| <b>2002730</b>   |                  | 50.8 (50)      | 27        | 72 | 12.7 (12) | 55.8      | 61     | <b>2002730R/L</b> | 50.8 (40)         |                  | 65                | 90        | 19.0 (16.4) | 11    | 30          | 53 | 200           | 27-30 | 12  |
| <b>2502730</b>   |                  | 50.8 (50)      | 27        | 72 | 12.7 (12) | 55.8      | 86     | <b>2502730R/L</b> | 47.625 (60)       |                  | 65                | 130       | 25.4 (25.7) | 14    | 38          | 58 | 250           | 27-30 | 16  |
| <b>3152730</b>   |                  | 50.8 (50)      | 27        | 72 | 12.7 (12) | 55.8      | 118    | <b>3152730R/L</b> | 47.625 (60)       |                  | 65                | 130       | 25.4 (25.7) | 14    | 38          | 90 | 315           | 27-30 | 20  |

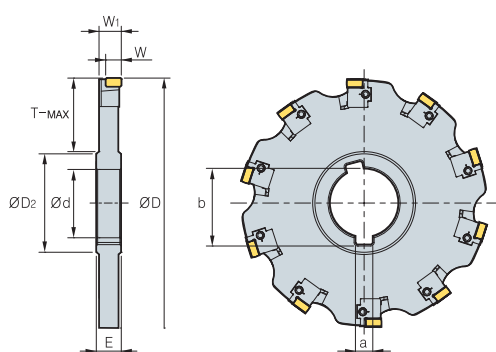
➔ Insertos disponibles y condiciones de corte recomendadas **E374** • El ap (ancho máximo de corte) escrito arriba es el número al que tiene insertos con C0.5 esquina tamaño o R0.5 ( )Tamaño métrico

**Partes**

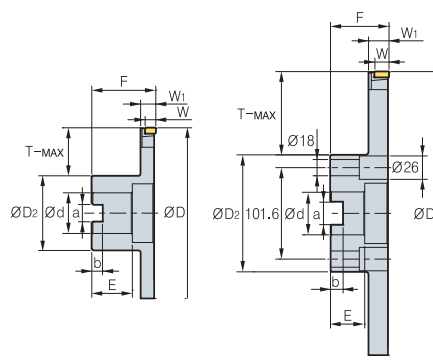
| Especificaciones           |              |             |        |                  |               |                   |               |            |                |
|----------------------------|--------------|-------------|--------|------------------|---------------|-------------------|---------------|------------|----------------|
| Anchura de Corte (TAHCP/B) | Insertos     | Cartucho    | Cuña   | Tornillo Inserto | Tornillo cuña | Tornillo Cartucho | Llave Inserto | Llave Cuña | Llave Cartucho |
| □□□1418R/L                 | CNHQ1005-□□□ | LSA-CH10R/L | WSA10N | FTKA0410         | DHA0617       | SHGA0411          | TW15S         | HW30       | -              |
| □□□1821R/L                 | CNHQ1305-□□□ | LSA-CH13R/L | WSA13N | FTKA0410         | DHA0821F      | SHGA0411          | TW15S         | HW40       | HW30L          |
| □□□2124R/L                 | CNHQ1305-□□□ | LSA-CH13R/L | WSA13N | FTKA0410         | DHA0821F      | SHGA0411          | TW15S         | HW40       | HW30L          |
| □□□2427R/L                 | CNHQ1606-□□□ | LSA-CH16R/L | WSA13N | FTGA0513-P       | DHA0821F      | SHGA0411          | TW20S         | HW40       | HW30L          |
| □□□2730R/L                 | CNHQ1606-□□□ | LSA-CH16R/L | WSA13N | FTGA0513-P       | DHA0821F      | SHGA0411          | TW20S         | HW40       | HW30L          |

• Nota) Tornillo de brida amplia para cortadores 1001821 y 1002124 es DHA0818F

## Tipo Tangencial (Cortador Medio)



• TAHC(P)(M)



ØD : Ø100~Ø200

ØD : Ø250~Ø315

• TAHC(B)(M)

| Codigo       | Ød           | E          | ØD2       | a  | b         | T-MAX     | Codigo | Ød    | F        | ØD2         | a         | b   | E           | T-MAX       | Dimensiones |    |     |               |       |       |
|--------------|--------------|------------|-----------|----|-----------|-----------|--------|-------|----------|-------------|-----------|-----|-------------|-------------|-------------|----|-----|---------------|-------|-------|
|              |              |            |           |    |           |           |        |       |          |             |           |     |             |             | ØD          | W  | W1  | No. de diente |       |       |
| TAHCP<br>(M) | 10014R/L     | 31.75 (32) | 14        | 48 | 7.92 (8)  | 35.2      | 24     | TAHCB | 10014R/L | 31.75 (32)  | 50        | 54  | 12.7 (14.4) | 8           | 28          | 21 | 100 | 9             | 13.25 | 6     |
|              | 12514R/L     | 38.1 (40)  | 14        | 56 | 9.52 (10) | 42.3      | 32     | (M)   | 12514R/L | 38.1 (40)   | 60        | 70  | 15.9 (16.4) | 10          | 30          | 25 | 125 | 9             | 13.25 | 8     |
|              | 16014R/L     | 38.1 (40)  | 14        | 56 | 9.52 (10) | 42.3      | 50     |       | 16014R/L | 38.1 (40)   | 60        | 70  | 15.9 (16.4) | 10          | 30          | 43 | 160 | 9             | 13.25 | 10    |
|              | 20014R/L     | 50.8 (50)  | 14        | 72 | 12.7 (12) | 55.8      | 61     |       | 20014R/L | 50.8 (40)   | 65        | 90  | 19.0 (16.4) | 11          | 30          | 53 | 200 | 9             | 13.25 | 12    |
|              | 25014R/L     | 50.8 (50)  | 14        | 72 | 12.7 (12) | 55.8      | 86     |       | 25014R/L | 47.625 (60) | 65        | 130 | 25.4 (25.7) | 14          | 38          | 58 | 250 | 9             | 13.25 | 16    |
|              | 31514R/L     | 50.8 (50)  | 14        | 72 | 12.7 (12) | 55.8      | 118    |       | 31514R/L | 47.625 (60) | 65        | 130 | 25.4 (25.7) | 14          | 38          | 90 | 315 | 9             | 13.25 | 20    |
| TAHCP<br>(M) | 10018R/L     | 31.75 (32) | 18        | 48 | 7.92 (8)  | 35.2      | 24     | TAHCB | 10018R/L | 31.75 (32)  | 50        | 50  | 12.7 (14.4) | 8           | 28          | 21 | 100 | 12            | 16.75 | 6     |
|              | 12518R/L     | 38.1 (40)  | 18        | 56 | 9.52 (10) | 42.3      | 32     | (M)   | 12518R/L | 38.1 (40)   | 60        | 70  | 15.9 (16.4) | 10          | 30          | 25 | 125 | 12            | 16.75 | 8     |
|              | 16018R/L     | 38.1 (40)  | 18        | 56 | 9.52 (10) | 42.3      | 50     |       | 16018R/L | 38.1 (40)   | 60        | 70  | 15.9 (16.4) | 10          | 30          | 43 | 160 | 12            | 16.75 | 10    |
|              | 20018R/L     | 50.8 (50)  | 18        | 72 | 12.7 (12) | 55.8      | 61     |       | 20018R/L | 50.8 (40)   | 65        | 90  | 19.0 (16.4) | 11          | 30          | 53 | 200 | 12            | 16.75 | 12    |
|              | 25018R/L     | 50.8 (50)  | 18        | 72 | 12.7 (12) | 55.8      | 86     |       | 25018R/L | 47.625 (60) | 65        | 130 | 25.4 (25.7) | 14          | 38          | 58 | 250 | 12            | 16.75 | 16    |
|              | 31518R/L     | 50.8 (50)  | 18        | 72 | 12.7 (12) | 55.8      | 118    |       | 31518R/L | 47.625 (60) | 65        | 130 | 25.4 (25.7) | 14          | 38          | 90 | 315 | 12            | 16.75 | 20    |
| TAHCP<br>(M) | 10021R/L     | 31.75 (32) | 21        | 48 | 7.92 (8)  | 35.2      | 24     | TAHCB | 10021R/L | 31.75 (32)  | 50        | 54  | 12.7 (14.4) | 8           | 28          | 21 | 100 | 12            | 19.75 | 6     |
|              | 12521R/L     | 38.1 (40)  | 21        | 56 | 9.52 (10) | 42.3      | 32     | (M)   | 12521R/L | 38.1 (40)   | 60        | 70  | 15.9 (16.4) | 10          | 30          | 25 | 125 | 12            | 19.75 | 8     |
|              | 16021R/L     | 38.1 (40)  | 21        | 56 | 9.52 (10) | 42.3      | 50     |       | 16021R/L | 38.1 (40)   | 60        | 70  | 15.9 (16.4) | 10          | 30          | 43 | 160 | 12            | 19.75 | 10    |
|              | 20021R/L     | 50.8 (50)  | 21        | 72 | 12.7 (12) | 55.8      | 61     |       | 20021R/L | 50.8 (40)   | 65        | 90  | 19.0 (16.4) | 11          | 30          | 53 | 200 | 12            | 19.75 | 12    |
|              | 25021R/L     | 50.8 (50)  | 21        | 72 | 12.7 (12) | 55.8      | 86     |       | 25021R/L | 47.625 (60) | 65        | 130 | 25.4 (25.7) | 14          | 38          | 58 | 250 | 12            | 19.75 | 16    |
|              | 31521R/L     | 50.8 (50)  | 21        | 72 | 12.7 (12) | 55.8      | 118    |       | 31521R/L | 47.625 (60) | 65        | 130 | 25.4 (25.7) | 14          | 38          | 90 | 315 | 12            | 19.75 | 20    |
| TAHCP<br>(M) | 12524R/L     | 38.1 (40)  | 24        | 56 | 9.52 (10) | 42.3      | 32     | TAHCB | 12524R/L | 38.1 (40)   | 60        | 70  | 15.9 (16.4) | 10          | 30          | 25 | 125 | 15            | 22.75 | 8     |
|              | 16024R/L     | 38.1 (40)  | 24        | 56 | 9.52 (10) | 42.3      | 50     | (M)   | 16024R/L | 38.1 (40)   | 60        | 70  | 15.9 (16.4) | 10          | 30          | 43 | 160 | 15            | 22.75 | 10    |
|              | 20024R/L     | 50.8 (50)  | 24        | 72 | 12.7 (12) | 55.8      | 61     |       | 20024R/L | 50.8 (40)   | 65        | 90  | 19.0 (16.4) | 11          | 30          | 53 | 200 | 15            | 22.75 | 12    |
|              | 25024R/L     | 50.8 (50)  | 24        | 72 | 12.7 (12) | 55.8      | 86     |       | 25024R/L | 47.625 (60) | 65        | 130 | 25.4 (25.7) | 14          | 38          | 58 | 250 | 15            | 22.75 | 16    |
|              | 31524R/L     | 50.8 (50)  | 24        | 72 | 12.7 (12) | 55.8      | 118    |       | 31524R/L | 47.625 (60) | 65        | 130 | 25.4 (25.7) | 14          | 38          | 90 | 315 | 15            | 22.75 | 20    |
|              | TAHCP<br>(M) | 12527R/L   | 38.1 (40) | 27 | 56        | 9.52 (10) | 42.3   | 32    | TAHCB    | 12527R/L    | 38.1 (40) | 60  | 70          | 15.9 (16.4) | 10          | 30 | 25  | 125           | 15    | 25.75 |
| 16027R/L     |              | 38.1 (40)  | 27        | 56 | 9.52 (10) | 42.3      | 50     | (M)   | 16027R/L | 38.1 (40)   | 60        | 70  | 15.9 (16.4) | 10          | 30          | 43 | 160 | 15            | 25.75 | 10    |
| 20027R/L     |              | 50.8 (50)  | 27        | 72 | 12.7 (12) | 55.8      | 61     |       | 20027R/L | 50.8 (40)   | 65        | 90  | 19.0 (16.4) | 11          | 30          | 53 | 200 | 15            | 25.75 | 12    |
| 25027R/L     |              | 50.8 (50)  | 27        | 72 | 12.7 (12) | 55.8      | 86     |       | 25027R/L | 47.625 (60) | 65        | 130 | 25.4 (25.7) | 14          | 38          | 58 | 250 | 15            | 25.75 | 16    |
| 31527R/L     |              | 50.8 (50)  | 27        | 72 | 12.7 (12) | 55.8      | 118    |       | 31527R/L | 47.625 (60) | 65        | 130 | 25.4 (25.7) | 14          | 38          | 90 | 315 | 15            | 25.75 | 20    |

↻ Insertos disponibles y condiciones de corte recomendadas E374 • El ap (ancho máximo de corte) escrito arriba es el número al que tiene insertos con C0.5 esquina tamaño o R0.5

( ) Tamaño métrico

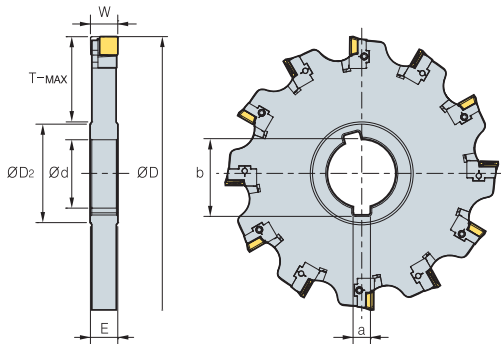
### Partes

| Especificaciones | Insertos     | Cartucho    | Cuña   | Tornillo Inserto | Tomillo cuña | Tornillo Cartucho | Llave Inserto | Llave Cuña | Llave Cartucho |
|------------------|--------------|-------------|--------|------------------|--------------|-------------------|---------------|------------|----------------|
| □□□1418R/L       | CNHQ1005-□□□ | LSA-CH10R/L | WSA10N | FTKA0410         | DHA0617      | SHGA0411          | TW15S         | HW30       | -              |
| □□□1821R/L       | CNHQ1305-□□□ | LSA-CH13R/L | WSA13N | FTKA0410         | DHA0821F     | SHGA0411          | TW15S         | HW40       | HW30L          |
| □□□2124R/L       | CNHQ1305-□□□ | LSA-CH13R/L | WSA13N | FTKA0410         | DHA0821F     | SHGA0411          | TW15S         | HW40       | HW30L          |
| □□□2427R/L       | CNHQ1606-□□□ | LSA-CH16R/L | WSA13N | FTGA0513-P       | DHA0821F     | SHGA0411          | TW20S         | HW40       | HW30L          |
| □□□2730R/L       | CNHQ1606-□□□ | LSA-CH16R/L | WSA13N | FTGA0513-P       | DHA0821F     | SHGA0411          | TW20S         | HW40       | HW30L          |

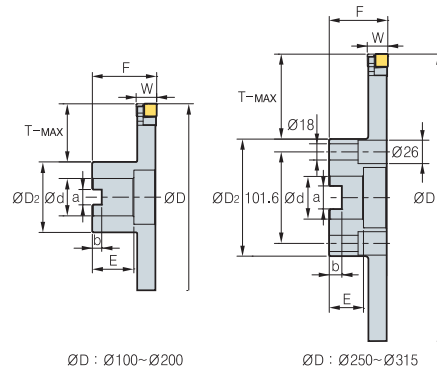
• Nota) Tornillo de brida amplia para cortadores 1001821 y 1002124 es DHA0818F18F



**Tipo Radial (Full Cortador Lateral)**



• RAFCP(M)



• RAFCB(M)

(mm)

| Codigo                   | Ød         | E  | ØD2 | a         | b    | T-MAX | Codigo                      | Ød          | F  | ØD2 | a           | b  | E  | T-MAX | Dimensiones |       |               |
|--------------------------|------------|----|-----|-----------|------|-------|-----------------------------|-------------|----|-----|-------------|----|----|-------|-------------|-------|---------------|
|                          |            |    |     |           |      |       |                             |             |    |     |             |    |    |       | ØD          | W     | No. de diente |
| <b>RAFCP (M)</b> 1001214 | 31.75 (32) | 12 | 48  | 7.92 (8)  | 35.2 | 24    | <b>RAFCB (M)</b> 1001214R/L | 31.75 (32)  | 50 | 54  | 12.7 (14.4) | 8  | 28 | 21    | 100         | 12-14 | 6             |
| 1251214                  | 38.1 (40)  | 12 | 56  | 9.52 (10) | 42.3 | 32    | 1251214R/L                  | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 25    | 125         | 12-14 | 8             |
| 1601214                  | 38.1 (40)  | 12 | 56  | 9.52 (10) | 42.3 | 50    | 1601214R/L                  | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 43    | 160         | 12-14 | 10            |
| 2001214                  | 50.8 (50)  | 12 | 72  | 12.7 (12) | 55.8 | 61    | 2001214R/L                  | 50.8 (40)   | 65 | 90  | 19.0 (16.4) | 11 | 30 | 53    | 200         | 12-14 | 12            |
| 2501214                  | 50.8 (50)  | 12 | 72  | 12.7 (12) | 55.8 | 86    | 2501214R/L                  | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 58    | 250         | 12-14 | 16            |
| 3151214                  | 50.8 (50)  | 12 | 72  | 12.7 (12) | 55.8 | 118   | 3151214R/L                  | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 90    | 315         | 12-14 | 20            |
| <b>RAFCP (M)</b> 1001416 | 31.75 (32) | 14 | 48  | 7.92 (8)  | 35.2 | 24    | <b>RAFCB (M)</b> 1001416R/L | 31.75 (32)  | 50 | 50  | 12.7 (14.4) | 8  | 28 | 21    | 100         | 14-16 | 6             |
| 1251416                  | 38.1 (40)  | 14 | 56  | 9.52 (10) | 42.3 | 32    | 1251416R/L                  | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 25    | 125         | 14-16 | 8             |
| 1601416                  | 38.1 (40)  | 14 | 56  | 9.52 (10) | 42.3 | 50    | 1601416R/L                  | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 43    | 160         | 14-16 | 10            |
| 2001416                  | 50.8 (50)  | 14 | 72  | 12.7 (12) | 55.8 | 61    | 2001416R/L                  | 50.8 (40)   | 65 | 90  | 19.0 (16.4) | 11 | 30 | 53    | 200         | 14-16 | 12            |
| 2501416                  | 50.8 (50)  | 14 | 72  | 12.7 (12) | 55.8 | 86    | 2501416R/L                  | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 58    | 250         | 14-16 | 16            |
| 3151416                  | 50.8 (50)  | 14 | 72  | 12.7 (12) | 55.8 | 118   | 3151416R/L                  | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 90    | 315         | 14-16 | 20            |
| <b>RAFCP (M)</b> 1251618 | 38.1 (40)  | 16 | 56  | 9.52 (10) | 42.3 | 32    | <b>RAFCB (M)</b> 1251618R/L | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 25    | 125         | 16-18 | 8             |
| 1601618                  | 38.1 (40)  | 16 | 56  | 9.52 (10) | 42.3 | 50    | 1601618R/L                  | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 43    | 160         | 16-18 | 10            |
| 2001618                  | 50.8 (50)  | 16 | 72  | 12.7 (12) | 55.8 | 61    | 2001618R/L                  | 50.8 (40)   | 65 | 90  | 19.0 (16.4) | 11 | 30 | 53    | 200         | 16-18 | 12            |
| 2501618                  | 50.8 (50)  | 16 | 72  | 12.7 (12) | 55.8 | 86    | 2501618R/L                  | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 58    | 250         | 16-18 | 16            |
| 3151618                  | 50.8 (50)  | 16 | 72  | 12.7 (12) | 55.8 | 118   | 3151618R/L                  | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 90    | 315         | 16-18 | 20            |
| <b>RAFCP (M)</b> 1251820 | 38.1 (40)  | 18 | 56  | 9.52 (10) | 42.3 | 32    | <b>RAFCB (M)</b> 1251820R/L | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 25    | 125         | 18-20 | 8             |
| 1601820                  | 38.1 (40)  | 18 | 56  | 9.52 (10) | 42.3 | 50    | 1601820R/L                  | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 43    | 160         | 18-20 | 10            |
| 2001820                  | 50.8 (50)  | 18 | 72  | 12.7 (12) | 55.8 | 61    | 2001820R/L                  | 50.8 (40)   | 65 | 90  | 19.0 (16.4) | 11 | 30 | 53    | 200         | 18-20 | 12            |
| 2501820                  | 50.8 (50)  | 18 | 72  | 12.7 (12) | 55.8 | 86    | 2501820R/L                  | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 58    | 250         | 18-20 | 16            |
| 3151820                  | 50.8 (50)  | 18 | 72  | 12.7 (12) | 55.8 | 118   | 3151820R/L                  | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 90    | 315         | 18-20 | 20            |
| <b>RAFCP (M)</b> 1252022 | 38.1 (40)  | 20 | 56  | 9.52 (10) | 42.3 | 32    | <b>RAFCB (M)</b> 1252022R/L | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 25    | 125         | 20-22 | 8             |
| 1602022                  | 38.1 (40)  | 20 | 56  | 9.52 (10) | 42.3 | 50    | 1602022R/L                  | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 43    | 160         | 20-22 | 10            |
| 2002022                  | 50.8 (50)  | 20 | 72  | 12.7 (12) | 55.8 | 61    | 2002022R/L                  | 50.8 (40)   | 65 | 90  | 19.0 (16.4) | 11 | 30 | 53    | 200         | 20-22 | 12            |
| 2502022                  | 50.8 (50)  | 20 | 72  | 12.7 (12) | 55.8 | 86    | 2502022R/L                  | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 58    | 250         | 20-22 | 16            |
| 3152022                  | 50.8 (50)  | 20 | 72  | 12.7 (12) | 55.8 | 118   | 3152022R/L                  | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 90    | 315         | 20-22 | 20            |
| <b>RAFCP (M)</b> 1252224 | 38.1 (40)  | 22 | 56  | 9.52 (10) | 42.3 | 32    | <b>RAFCB (M)</b> 1252224R/L | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 25    | 125         | 22-24 | 8             |
| 1602224                  | 38.1(40)   | 22 | 56  | 9.52 (10) | 42.3 | 50    | 1602224R/L                  | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 43    | 160         | 22-24 | 10            |
| 2002224                  | 50.8 (50)  | 22 | 72  | 12.7 (12) | 55.8 | 61    | 2002224R/L                  | 50.8 (40)   | 65 | 90  | 19.0 (16.4) | 11 | 30 | 53    | 200         | 22-24 | 12            |
| 2502224                  | 50.8 (50)  | 22 | 72  | 12.7 (12) | 55.8 | 86    | 2502224R/L                  | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 58    | 250         | 22-24 | 16            |
| 3152224                  | 50.8 (50)  | 22 | 72  | 12.7 (12) | 55.8 | 118   | 3152224R/L                  | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 90    | 315         | 22-24 | 20            |

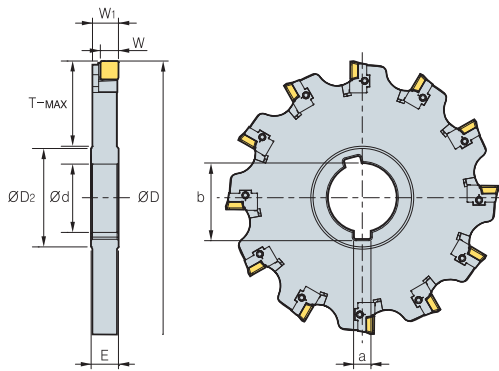
Insertos disponibles y condiciones de corte recomendadas E374 • El ap (ancho máximo de corte) escrito arriba es el número al que tiene insertos con C0.5 esquina tamaño o R0.5 ( ) Tamaño métrico

**Partes**

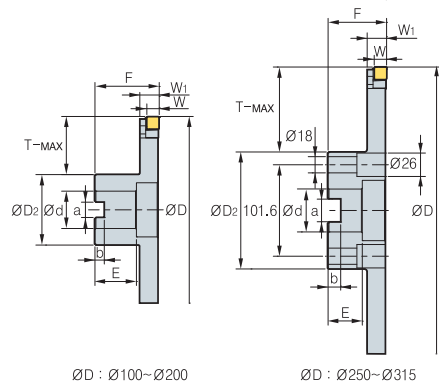
| Especificaciones | Insertos      | Cartucho | WSD09N | Cuña      | WSA10N  | Tornillo Inserto | Tornillo cuña | Tornillo Cartucho | Llave Inserto | Llave Cuña y Cartucho |
|------------------|---------------|----------|--------|-----------|---------|------------------|---------------|-------------------|---------------|-----------------------|
| 1214R/L          | SDXT09M40□R/L | LSD09R/L | WSD09N | FTGA03508 | DHA0617 | SHGA0409         | TW15S         | HW30              |               |                       |
| 1416R/L          | SDXT09M40□R/L | LSD09R/L | WSD09N | FTGA03508 | DHA0617 | SHGA0409         | TW15S         | HW30              |               |                       |
| 1618R/L          | SDXT13050□R/L | LSD13R/L | WSA10N | FTNC04509 | DHA0617 | SHGA0411         | TW20S         | HW30              |               |                       |
| 1820R/L          | SDXT13050□R/L | LSD13R/L | WSA10N | FTNC04509 | DHA0617 | SHGA0411         | TW20S         | HW30              |               |                       |
| 2022R/L          | SDXT13050□R/L | LSD13R/L | WSA10N | FTNC04509 | DHA0617 | SHGA0411         | TW20S         | HW30              |               |                       |
| 2224R/L          | SDXT13050□R/L | LSD13R/L | WSA10N | FTNC04509 | DHA0617 | SHGA0411         | TW20S         | HW30              |               |                       |



## Tipo Radial (Cortador Medio)



• RAHCP(M)



ØD : Ø100-Ø200

ØD : Ø250-Ø315

• RAHCB(M)

(mm)

| Codigo                | Ød         | E  | ØD2 | a         | b    | T-MAX | Codigo                | Ød          | F  | ØD2 | a           | b  | E  | T-MAX | Dimensiones |      |      |               |
|-----------------------|------------|----|-----|-----------|------|-------|-----------------------|-------------|----|-----|-------------|----|----|-------|-------------|------|------|---------------|
|                       |            |    |     |           |      |       |                       |             |    |     |             |    |    |       | ØD          | W    | W1   | No. de diente |
| <b>RAHCP 10012R/L</b> | 31.75 (32) | 12 | 48  | 7.92 (8)  | 35.2 | 24    | <b>RAHCB 10012R/L</b> | 31.75 (32)  | 50 | 54  | 12.7 (14.4) | 8  | 28 | 21    | 100         | 8    | 11.1 | 6             |
| <b>(M) 12512R/L</b>   | 38.1 (40)  | 12 | 56  | 9.52 (10) | 42.3 | 32    | <b>(M) 12512R/L</b>   | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 25    | 125         | 8    | 11.1 | 8             |
| <b>16012R/L</b>       | 38.1 (40)  | 12 | 56  | 9.52 (10) | 42.3 | 50    | <b>16012R/L</b>       | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 43    | 160         | 8    | 11.1 | 10            |
| <b>20012R/L</b>       | 50.8 (50)  | 12 | 72  | 12.7 (12) | 55.8 | 61    | <b>20012R/L</b>       | 50.8 (40)   | 65 | 90  | 19.0 (16.4) | 11 | 30 | 53    | 200         | 8    | 11.1 | 12            |
| <b>25012R/L</b>       | 50.8 (50)  | 12 | 72  | 12.7 (12) | 55.8 | 86    | <b>25012R/L</b>       | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 58    | 250         | 8    | 11.1 | 16            |
| <b>31512R/L</b>       | 50.8 (50)  | 12 | 72  | 12.7 (12) | 55.8 | 118   | <b>31512R/L</b>       | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 90    | 315         | 8    | 11.1 | 20            |
| <b>RAHCP 10014R/L</b> | 31.75 (32) | 14 | 48  | 7.92 (8)  | 35.2 | 24    | <b>RAHCB 10014R/L</b> | 31.75 (32)  | 50 | 50  | 12.7 (14.4) | 8  | 28 | 21    | 100         | 8    | 13.1 | 6             |
| <b>(M) 12514R/L</b>   | 38.1 (40)  | 14 | 56  | 9.52 (10) | 42.3 | 32    | <b>(M) 12514R/L</b>   | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 25    | 125         | 8    | 13.1 | 8             |
| <b>16014R/L</b>       | 38.1 (40)  | 14 | 56  | 9.52 (10) | 42.3 | 50    | <b>16014R/L</b>       | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 43    | 160         | 8    | 13.1 | 10            |
| <b>20014R/L</b>       | 50.8 (50)  | 14 | 72  | 12.7 (12) | 55.8 | 61    | <b>20014R/L</b>       | 50.8 (40)   | 65 | 90  | 19.0 (16.4) | 11 | 30 | 53    | 200         | 8    | 13.1 | 12            |
| <b>25014R/L</b>       | 50.8 (50)  | 14 | 72  | 12.7 (12) | 55.8 | 86    | <b>25014R/L</b>       | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 58    | 250         | 8    | 13.1 | 16            |
| <b>31514R/L</b>       | 50.8 (50)  | 14 | 72  | 12.7 (12) | 55.8 | 118   | <b>31514R/L</b>       | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 90    | 315         | 8    | 13.1 | 20            |
| <b>RAHCP 12516R/L</b> | 38.1 (40)  | 16 | 56  | 9.52 (10) | 42.3 | 32    | <b>RAHCB 12516R/L</b> | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 25    | 125         | 10.5 | 15   | 8             |
| <b>(M) 16016R/L</b>   | 38.1 (40)  | 16 | 56  | 9.52 (10) | 42.3 | 50    | <b>(M) 16016R/L</b>   | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 43    | 160         | 10.5 | 15   | 10            |
| <b>20016R/L</b>       | 50.8 (50)  | 16 | 72  | 12.7 (12) | 55.8 | 61    | <b>20016R/L</b>       | 50.8 (40)   | 65 | 90  | 19.0 (16.4) | 11 | 30 | 53    | 200         | 10.5 | 15   | 12            |
| <b>25016R/L</b>       | 50.8 (50)  | 16 | 72  | 12.7 (12) | 55.8 | 86    | <b>25016R/L</b>       | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 58    | 250         | 10.5 | 15   | 16            |
| <b>31516R/L</b>       | 50.8 (50)  | 16 | 72  | 12.7 (12) | 55.8 | 118   | <b>31516R/L</b>       | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 90    | 315         | 10.5 | 15   | 20            |
| <b>RAHCP 12518R/L</b> | 38.1 (40)  | 18 | 56  | 9.52 (10) | 42.3 | 32    | <b>RAHCB 12518R/L</b> | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 25    | 125         | 10.5 | 17   | 8             |
| <b>(M) 16018R/L</b>   | 38.1 (40)  | 18 | 56  | 9.52 (10) | 42.3 | 50    | <b>(M) 16018R/L</b>   | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 43    | 160         | 10.5 | 17   | 10            |
| <b>20018R/L</b>       | 50.8 (50)  | 18 | 72  | 12.7 (12) | 55.8 | 61    | <b>20018R/L</b>       | 50.8 (40)   | 65 | 90  | 19.0 (16.4) | 11 | 30 | 53    | 200         | 10.5 | 17   | 12            |
| <b>25018R/L</b>       | 50.8 (50)  | 18 | 72  | 12.7 (12) | 55.8 | 86    | <b>25018R/L</b>       | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 58    | 250         | 10.5 | 17   | 16            |
| <b>31518R/L</b>       | 50.8 (50)  | 18 | 72  | 12.7 (12) | 55.8 | 118   | <b>31518R/L</b>       | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 90    | 315         | 10.5 | 17   | 20            |
| <b>RAHCP 12520R/L</b> | 38.1 (40)  | 20 | 56  | 9.52 (10) | 42.3 | 32    | <b>RAHCB 12520R/L</b> | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 25    | 125         | 10.5 | 19   | 8             |
| <b>(M) 16020R/L</b>   | 38.1 (40)  | 20 | 56  | 9.52 (10) | 42.3 | 50    | <b>(M) 16020R/L</b>   | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 43    | 160         | 10.5 | 19   | 10            |
| <b>20020R/L</b>       | 50.8 (50)  | 20 | 72  | 12.7 (12) | 55.8 | 61    | <b>20020R/L</b>       | 50.8 (40)   | 65 | 90  | 19.0 (16.4) | 11 | 30 | 53    | 200         | 10.5 | 19   | 12            |
| <b>25020R/L</b>       | 50.8 (50)  | 20 | 72  | 12.7 (12) | 55.8 | 86    | <b>25020R/L</b>       | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 58    | 250         | 10.5 | 19   | 16            |
| <b>31520R/L</b>       | 50.8 (50)  | 20 | 72  | 12.7 (12) | 55.8 | 118   | <b>31520R/L</b>       | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 90    | 315         | 10.5 | 19   | 20            |
| <b>RAHCP 12522R/L</b> | 38.1 (40)  | 22 | 56  | 9.52 (10) | 42.3 | 32    | <b>RAHCB 12522R/L</b> | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 25    | 125         | 10.5 | 21   | 8             |
| <b>(M) 16022R/L</b>   | 38.1 (40)  | 22 | 56  | 9.52 (10) | 42.3 | 50    | <b>(M) 16022R/L</b>   | 38.1 (40)   | 60 | 70  | 15.9 (16.4) | 10 | 30 | 43    | 160         | 10.5 | 21   | 10            |
| <b>20022R/L</b>       | 50.8 (50)  | 22 | 72  | 12.7 (12) | 55.8 | 61    | <b>20022R/L</b>       | 50.8 (40)   | 65 | 90  | 19.0 (16.4) | 11 | 30 | 53    | 200         | 10.5 | 21   | 12            |
| <b>25022R/L</b>       | 50.8 (50)  | 22 | 72  | 12.7 (12) | 55.8 | 86    | <b>25022R/L</b>       | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 58    | 250         | 10.5 | 21   | 16            |
| <b>31522R/L</b>       | 50.8 (50)  | 22 | 72  | 12.7 (12) | 55.8 | 118   | <b>31522R/L</b>       | 47.625 (60) | 65 | 130 | 25.4 (25.7) | 14 | 38 | 90    | 315         | 10.5 | 21   | 20            |

➔ Insertos disponibles y condiciones de corte recomendadas E374

- El ap (Ancho máximo de corte) escrito arriba es el número de cuando se usan insertos que tengan radio tamaño R0.5. el ap es sujeto a cambiar por el radio de el inserto
- El ap (Ancho máximo de corte) escrito arriba es el número cuando se usa SDXT09M405R-MM. El ap es sujeto a cambio por el radio del inserto

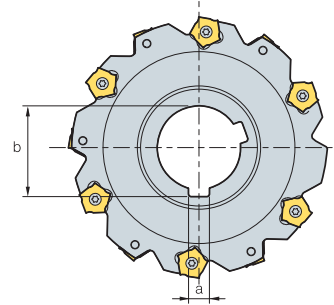
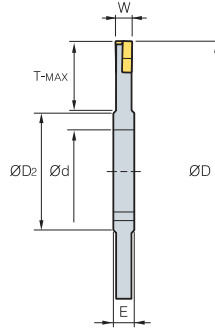
( ) Tamaño métrico

### Partes

| Especificaciones | Insertos      | Cartucho | WSD09N | Cuña   | WSA10N    | Tornillo Inserto | Tomillo cuña | Tornillo Cartucho | Llave Inserto | Llave Cuña y Cartucho |
|------------------|---------------|----------|--------|--------|-----------|------------------|--------------|-------------------|---------------|-----------------------|
| □□□1214R/L       | SDXT09M40□R/L | LSD09R/L | WSD09N | WSA10N | FTGA03508 | DHA0617          | SHGA0409     | TW15S             | HW30          |                       |
| □□□1416R/L       | SDXT09M40□R/L | LSD09R/L | WSD09N | WSA10N | FTGA03508 | DHA0617          | SHGA0409     | TW15S             | HW30          |                       |
| □□□1618R/L       | SDXT13050□R/L | LSD13R/L | WSD09N | WSA10N | FTNC04509 | DHA0617          | SHGA0411     | TW20S             | HW30          |                       |
| □□□1820R/L       | SDXT13050□R/L | LSD13R/L | WSD09N | WSA10N | FTNC04509 | DHA0617          | SHGA0411     | TW20S             | HW30          |                       |
| □□□2022R/L       | SDXT13050□R/L | LSD13R/L | WSD09N | WSA10N | FTNC04509 | DHA0617          | SHGA0411     | TW20S             | HW30          |                       |
| □□□2224R/L       | SDXT13050□R/L | LSD13R/L | WSD09N | WSA10N | FTNC04509 | DHA0617          | SHGA0411     | TW20S             | HW30          |                       |



# SPP(M)



•AR: -2°  
•RR: -28°

(mm)

| Codigo        | ØD | W   | T-MAX | Ød | a          | b         | E            | ØDz | Insertos | Tornillo  | Llave     |       |
|---------------|----|-----|-------|----|------------|-----------|--------------|-----|----------|-----------|-----------|-------|
| <b>SPP</b>    |    |     |       |    |            |           |              |     |          |           |           |       |
| <b>(SPPM)</b> |    |     |       |    |            |           |              |     |          |           |           |       |
| 080-04        | 8  | 80  | 4     | 20 | 25.4 (27)  | 6.35 (7)  | 28.04 (29.8) | 8   | 40       | PNEJ1223N | PTMA0403F | TW15S |
| 080-05        | 8  | 80  | 5     | 20 | 25.4 (27)  | 6.35 (7)  | 28.04 (29.8) | 8   | 40       | PNEJ1230N | PTMA0404F | TW15S |
| 080-06        | 8  | 80  | 6     | 20 | 25.4 (27)  | 6.35 (7)  | 28.04 (29.8) | 8   | 40       | PNEJ1235N | PTMA0405F | TW15S |
| 100-04        | 10 | 100 | 4     | 24 | 31.75 (32) | 7.94 (8)  | 35.18 (34.8) | 8   | 47       | PNEJ1223N | PTMA0403F | TW15S |
| 100-05        | 10 | 100 | 5     | 24 | 31.75 (32) | 7.94 (8)  | 35.18 (34.8) | 8   | 47       | PNEJ1230N | PTMA0404F | TW15S |
| 100-06        | 10 | 100 | 6     | 25 | 31.75 (32) | 7.94 (8)  | 35.18 (34.8) | 8   | 47       | PNEJ1235N | PTMA0405F | TW15S |
| 100-07        | 10 | 100 | 7     | 25 | 31.75 (32) | 7.94 (8)  | 35.18 (34.8) | 10  | 47       | PNEJ1240N | PTMA0406F | TW15S |
| 100-08        | 10 | 100 | 8     | 25 | 31.75 (32) | 7.94 (8)  | 35.18 (34.8) | 10  | 47       | PNEJ1245N | PTKA0407F | TW15S |
| 100-09        | 10 | 100 | 9     | 25 | 31.75 (32) | 7.94 (8)  | 35.18 (34.8) | 12  | 47       | PNEJ1250N | PTKA0408F | TW15S |
| 100-10        | 10 | 100 | 10    | 25 | 31.75 (32) | 7.94 (8)  | 35.18 (34.8) | 12  | 47       | PNEJ1255N | PTKA0409F | TW15S |
| 125-04        | 12 | 125 | 4     | 30 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 8   | 56       | PNEJ1223N | PTMA0403F | TW15S |
| 125-05        | 12 | 125 | 5     | 32 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 8   | 56       | PNEJ1230N | PTMA0404F | TW15S |
| 125-06        | 12 | 125 | 6     | 32 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 8   | 56       | PNEJ1235N | PTMA0405F | TW15S |
| 125-07        | 12 | 125 | 7     | 32 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 10  | 56       | PNEJ1240N | PTMA0406F | TW15S |
| 125-08        | 12 | 125 | 8     | 32 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 10  | 56       | PNEJ1245N | PTKA0407F | TW15S |
| 125-09        | 12 | 125 | 9     | 32 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 12  | 56       | PNEJ1250N | PTKA0408F | TW15S |
| 125-10        | 12 | 125 | 10    | 32 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 12  | 56       | PNEJ1255N | PTKA0409F | TW15S |
| 160-04        | 16 | 160 | 4     | 45 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 8   | 66       | PNEJ1223N | PTMA0403F | TW15S |
| 160-05        | 16 | 160 | 5     | 45 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 8   | 66       | PNEJ1230N | PTMA0404F | TW15S |
| 160-06        | 16 | 160 | 6     | 45 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 8   | 66       | PNEJ1235N | PTMA0405F | TW15S |
| 160-07        | 16 | 160 | 7     | 45 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 10  | 66       | PNEJ1240N | PTMA0406F | TW15S |
| 160-08        | 16 | 160 | 8     | 45 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 10  | 66       | PNEJ1245N | PTKA0407F | TW15S |
| 160-09        | 16 | 160 | 9     | 45 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 12  | 66       | PNEJ1250N | PTKA0408F | TW15S |
| 160-10        | 16 | 160 | 10    | 45 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 12  | 66       | PNEJ1255N | PTKA0409F | TW15S |
| 160-11        | 16 | 160 | 11    | 45 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 14  | 66       | PNEJ1260N | PTKA0410F | TW15S |
| 160-12        | 16 | 160 | 12    | 45 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 14  | 66       | PNEJ1265N | PTKA0411F | TW15S |
| 160-13        | 16 | 160 | 13    | 45 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 16  | 66       | PNEJ1270N | PTKA0412F | TW15S |
| 160-14        | 16 | 160 | 14    | 45 | 38.1 (40)  | 9.53 (10) | 42.32 (43.5) | 16  | 66       | PNEJ1275N | PTKA0413F | TW15S |
| 200-06        | 18 | 200 | 6     | 60 | 50.8 (50)  | 12.7 (12) | 55.83 (53.5) | 8   | 70       | PNEJ1235N | PTMA0405F | TW15S |
| 200-07        | 18 | 200 | 7     | 60 | 50.8 (50)  | 12.7 (12) | 55.83 (53.5) | 10  | 70       | PNEJ1240N | PTMA0406F | TW15S |
| 200-08        | 18 | 200 | 8     | 60 | 50.8 (50)  | 12.7 (12) | 55.83 (53.5) | 10  | 70       | PNEJ1245N | PTKA0407F | TW15S |
| 200-09        | 18 | 200 | 9     | 60 | 50.8 (50)  | 12.7 (12) | 55.83 (53.5) | 12  | 70       | PNEJ1250N | PTKA0408F | TW15S |
| 200-10        | 18 | 200 | 10    | 60 | 50.8 (50)  | 12.7 (12) | 55.83 (53.5) | 12  | 70       | PNEJ1255N | PTKA0409F | TW15S |
| 200-11        | 18 | 200 | 11    | 60 | 50.8 (50)  | 12.7 (12) | 55.83 (53.5) | 14  | 70       | PNEJ1260N | PTKA0410F | TW15S |
| 200-12        | 18 | 200 | 12    | 60 | 50.8 (50)  | 12.7 (12) | 55.83 (53.5) | 14  | 70       | PNEJ1265N | PTKA0411F | TW15S |
| 200-13        | 18 | 200 | 13    | 60 | 50.8 (50)  | 12.7 (12) | 55.83 (53.5) | 16  | 70       | PNEJ1270N | PTKA0412F | TW15S |
| 200-14        | 18 | 200 | 14    | 60 | 50.8 (50)  | 12.7 (12) | 55.83 (53.5) | 16  | 70       | PNEJ1275N | PTKA0413F | TW15S |

( ) Tamaño métrico

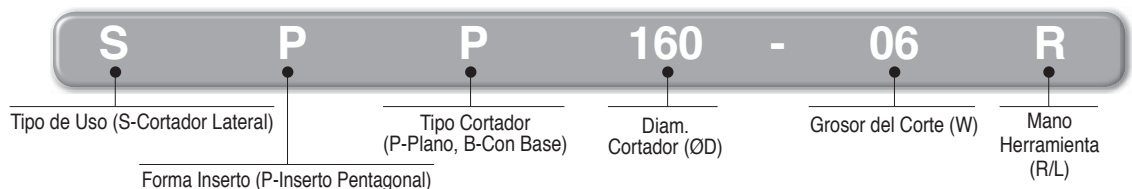
## Adaptadores disponibles

| Codigo      | Adaptadores NC  |                     |                      |
|-------------|-----------------|---------------------|----------------------|
|             | BT30            | BT40                | BT50                 |
| <b>SPP</b>  |                 |                     |                      |
| 080-04~06   | BT30-SCA25.4-60 | BT40-SCA25.4-75/120 | BT50-SCA25.4-90/135  |
| 100-04~10   | -               | BT40-SCA31.75-105   | BT50-SCA31.75-90/135 |
| 125-04~09   | -               | -                   | BT50-SCA38.1-90/135  |
| 160-04~14   | -               | -                   | BT50-SCA38.1-90/135  |
| 200-06~14   | -               | -                   | -                    |
| <b>SPPM</b> |                 |                     |                      |
| 080-04~06   | -               | BT40-SCA27-75/120   | BT50-SCA27-90/135    |
| 100-04~10   | -               | BT40-SCA32-105      | BT50-SCA32-90/135    |
| 125-04~09   | -               | -                   | BT50-SCA40-90/135    |
| 160-04~14   | -               | -                   | BT50-SCA40-90/135    |
| 200-06~14   | -               | -                   | -                    |

## Condiciones de corte recomendadas

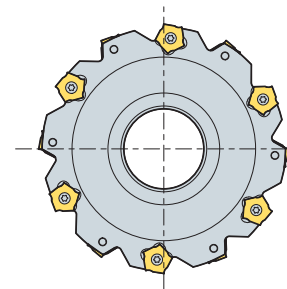
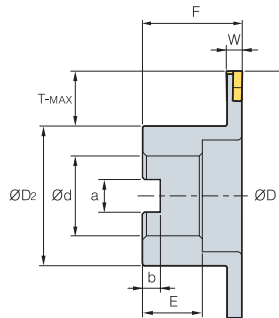
| Pieza Trabajo | Condicion de Corte           |                                     | Calidades                                      |
|---------------|------------------------------|-------------------------------------|--|
|               | vc (m/min)                   | fz (mm/diente)                      |  |
| <b>P</b>      | 190~310<br>160~270<br>60~100 | 0.10~0.25<br>0.10~0.30<br>0.10~0.25 | <b>NCM325</b><br><b>PC3700</b><br><b>ST30A</b> |
| <b>M</b>      | 90~150<br>80~150             | 0.10~0.25<br>0.10~0.30              | <b>PC9530</b><br><b>ST30A</b>                  |
| <b>K</b>      | 140~230<br>50~90             | 0.10~0.35<br>0.10~0.40              | <b>PC6510</b><br><b>G10</b>                    |

## Sistema codificación



Insertos disponibles E15 Detalles del cortador E400~E402

## SPB(M)



•AR: -2°  
•RR: 28°

(mm)

| Codigo     | ØD        | W   | T-MAX | ØD2 | Ød | a         | b           | F           | E       | Insertos | Tornillo                  | Llave                     |
|------------|-----------|-----|-------|-----|----|-----------|-------------|-------------|---------|----------|---------------------------|---------------------------|
| SPB (SPBM) | 080-04R/L | 8   | 80    | 4   | 18 | 40        | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 50       | 25 (22)                   | PNEJ1223N PTMA0403F TW15S |
|            | 080-05R/L | 8   | 80    | 5   | 18 | 40        | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 50       | 25 (22)                   | PNEJ1230N PTMA0404F TW15S |
|            | 080-06R/L | 8   | 80    | 6   | 18 | 40        | 25.4 (27)   | 9.5 (12.4)  | 6 (7)   | 50       | 25 (22)                   | PNEJ1235N PTMA0405F TW15S |
|            | 100-04R/L | 10  | 100   | 4   | 21 | 54        | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 50       | 32 (28)                   | PNEJ1223N PTMA0403F TW15S |
|            | 100-05R/L | 10  | 100   | 5   | 21 | 54        | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 50       | 32 (28)                   | PNEJ1230N PTMA0404F TW15S |
|            | 100-06R/L | 10  | 100   | 6   | 21 | 54        | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 50       | 32 (28)                   | PNEJ1235N PTMA0405F TW15S |
|            | 100-07R/L | 10  | 100   | 7   | 21 | 54        | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 50       | 32 (28)                   | PNEJ1240N PTMA0406F TW15S |
|            | 100-08R/L | 10  | 100   | 8   | 21 | 54        | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 50       | 32 (28)                   | PNEJ1245N PTMA0407F TW15S |
|            | 100-09R/L | 10  | 100   | 9   | 21 | 54        | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 50       | 32 (28)                   | PNEJ1250N PTMA0408F TW15S |
|            | 100-10R/L | 10  | 100   | 10  | 21 | 54        | 31.75 (32)  | 12.7 (14.4) | 8 (8)   | 50       | 32 (28)                   | PNEJ1255N PTMA0409F TW15S |
| 125-04R/L  | 12        | 125 | 4     | 25  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1223N PTMA0403F TW15S |                           |
| 125-05R/L  | 12        | 125 | 5     | 25  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1230N PTMA0404F TW15S |                           |
| 125-06R/L  | 12        | 125 | 6     | 25  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1235N PTMA0405F TW15S |                           |
| 125-07R/L  | 12        | 125 | 7     | 25  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1240N PTMA0406F TW15S |                           |
| 125-08R/L  | 12        | 125 | 8     | 25  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1245N PTMA0407F TW15S |                           |
| 125-09R/L  | 12        | 125 | 9     | 25  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1250N PTMA0408F TW15S |                           |
| 125-10R/L  | 12        | 125 | 10    | 25  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1255N PTMA0409F TW15S |                           |
| 160-04R/L  | 16        | 160 | 4     | 43  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1223N PTMA0403F TW15S |                           |
| 160-05R/L  | 16        | 160 | 5     | 43  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1230N PTMA0404F TW15S |                           |
| 160-06R/L  | 16        | 160 | 6     | 43  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1235N PTMA0405F TW15S |                           |
| 160-07R/L  | 16        | 160 | 7     | 43  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1240N PTMA0406F TW15S |                           |
| 160-08R/L  | 16        | 160 | 8     | 43  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1245N PTMA0407F TW15S |                           |
| 160-09R/L  | 16        | 160 | 9     | 43  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1250N PTMA0408F TW15S |                           |
| 160-10R/L  | 16        | 160 | 10    | 43  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1255N PTMA0409F TW15S |                           |
| 160-11R/L  | 16        | 160 | 11    | 43  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1260N PTMA0410F TW15S |                           |
| 160-12R/L  | 16        | 160 | 12    | 43  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1265N PTMA0411F TW15S |                           |
| 160-13R/L  | 16        | 160 | 13    | 43  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1270N PTMA0412F TW15S |                           |
| 160-14R/L  | 16        | 160 | 14    | 43  | 70 | 38.1 (40) | 15.9 (16.4) | 10 (9)      | 60 (50) | 38 (30)  | PNEJ1275N PTMA0413F TW15S |                           |
| 200-06R/L  | 18        | 200 | 6     | 53  | 90 | 50.8 (40) | 19 (16.4)   | 11 (9)      | 65      | 38 (30)  | PNEJ1235N PTMA0405F TW15S |                           |
| 200-07R/L  | 18        | 200 | 7     | 53  | 90 | 50.8 (40) | 19 (16.4)   | 11 (9)      | 65      | 38 (30)  | PNEJ1240N PTMA0406F TW15S |                           |
| 200-08R/L  | 18        | 200 | 8     | 53  | 90 | 50.8 (40) | 19 (16.4)   | 11 (9)      | 65      | 38 (30)  | PNEJ1245N PTMA0407F TW15S |                           |
| 200-09R/L  | 18        | 200 | 9     | 53  | 90 | 50.8 (40) | 19 (16.4)   | 11 (9)      | 65      | 38 (30)  | PNEJ1250N PTMA0408F TW15S |                           |
| 200-10R/L  | 18        | 200 | 10    | 53  | 90 | 50.8 (40) | 19 (16.4)   | 11 (9)      | 65      | 38 (30)  | PNEJ1255N PTMA0409F TW15S |                           |
| 200-11R/L  | 18        | 200 | 11    | 53  | 90 | 50.8 (40) | 19 (16.4)   | 11 (9)      | 65      | 38 (30)  | PNEJ1260N PTMA0410F TW15S |                           |
| 200-12R/L  | 18        | 200 | 12    | 53  | 90 | 50.8 (40) | 19 (16.4)   | 11 (9)      | 65      | 38 (30)  | PNEJ1265N PTMA0411F TW15S |                           |
| 200-13R/L  | 18        | 200 | 13    | 53  | 90 | 50.8 (40) | 19 (16.4)   | 11 (9)      | 65      | 38 (30)  | PNEJ1270N PTMA0412F TW15S |                           |
| 200-14R/L  | 18        | 200 | 14    | 53  | 90 | 50.8 (40) | 19 (16.4)   | 11 (9)      | 65      | 38 (30)  | PNEJ1275N PTMA0413F TW15S |                           |

( ) Tamaño métrico

### Nota (Al montar los Insertos)

- Las Rompevirutas de los insertos deben ser enfrentados en la cavidad corte
- Apriete el tornillo del inserto después de colocarlo en esta parte del asiento del cortador
- Si existe un espacio entre el inserto y el asiento en el cortador después del P montaje, puede causar problemas con la herramienta.

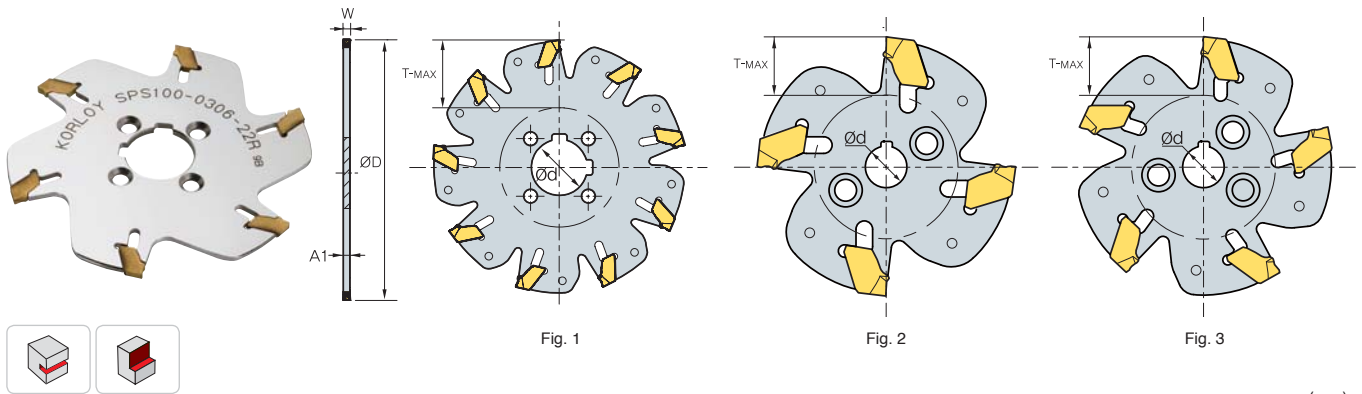
### Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                        | Calidades                 |
|---------------|--------------------|------------------------|---------------------------|
|               | vc (m/min)         | fz (mm/diente)         |                           |
| P             | 190~310            | 0.10~0.25              | NCM325<br>PC3700<br>ST30A |
|               | 160~270            | 0.10~0.30              |                           |
|               | 60~100             | 0.10~0.25              |                           |
| M             | 90~150             | 0.10~0.25              | PC9530<br>ST30A           |
|               | 80~150             | 0.10~0.30              |                           |
| K             | 140~230            | 0.10~0.35<br>0.10~0.40 | PC6510<br>G10             |

Insertos disponibles E15 Detalles del cortador E400~E402



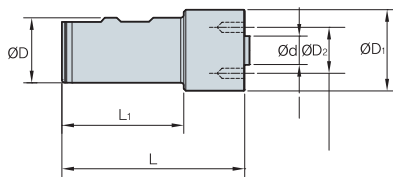
# SPS



| Codigo         | ØD  | W   | T-MAX   | Ød | A1   | Fig. | Inserto            | sistema de anclaje |         | Llave                            |
|----------------|-----|-----|---------|----|------|------|--------------------|--------------------|---------|----------------------------------|
|                |     |     |         |    |      |      |                    | WS                 | DF      |                                  |
| <b>SPS</b>     |     |     |         |    |      |      |                    |                    |         |                                  |
| 050-0204-08R   | 50  | 2.2 | 11      | 8  | 1.8  | 2    | SPFN<br>200<br>( ) | WS2528-M4          | -       | SW17P<br>(encargar por separado) |
| 063-0205-10R   | 63  | 2.2 | 15.5    | 10 | 1.8  | 3    |                    | WS2532-M5          | -       |                                  |
| 080-0207-22R/F | 80  | 2.2 | 20 (17) | 22 | 1.8  | 1    |                    | WS3240-M5          | DF22-46 |                                  |
| 100-0209-22R/F | 100 | 2.2 | 30 (27) | 22 | 1.8  | 1    |                    | WS3240-M5          | DF22-46 |                                  |
| 125-0211-32F   | 125 | 2.2 | 35      | 32 | 1.8  | 1    |                    | -                  | DF32-55 |                                  |
| 160-0214-32F   | 160 | 2.2 | 52.5    | 32 | 1.8  | 3    | -                  | DF32-55            |         |                                  |
| 063-0305-10R   | 63  | 3   | 15.5    | 10 | 2.55 | 1    | SPFN<br>300<br>( ) | WS2532-M5          | -       |                                  |
| 080-0307-22R/F | 80  | 3   | 20 (17) | 22 | 2.55 | 1    |                    | WS3240-M5          | DF22-46 |                                  |
| 100-0309-22R/F | 100 | 3   | 30 (27) | 22 | 2.55 | 1    |                    | WS3240-M5          | DF22-46 |                                  |
| 125-0311-32F   | 125 | 3   | 35      | 32 | 2.55 | 1    |                    | -                  | DF32-55 |                                  |
| 160-0314-32F   | 160 | 3   | 52.5    | 32 | 2.55 | 1    |                    | -                  | DF32-55 |                                  |
| 200-0318-40F   | 200 | 3   | 60      | 40 | 2.55 | 1    | SPFN<br>400<br>( ) | -                  | DF40-80 |                                  |
| 080-0406-22R/F | 80  | 4   | 20 (17) | 22 | 3.4  | 1    |                    | WS3240-M5          | DF22-46 |                                  |
| 100-0408-22R/F | 100 | 4   | 30 (27) | 22 | 3.4  | 1    |                    | WS3240-M5          | DF22-46 |                                  |
| 125-0410-32F   | 125 | 4   | 35      | 32 | 3.4  | 1    |                    | -                  | DF32-55 |                                  |
| 160-0413-32F   | 160 | 4   | 52.5    | 32 | 3.4  | 1    |                    | -                  | DF32-55 |                                  |
| 200-0417-40F   | 200 | 4   | 60      | 40 | 3.4  | 1    | -                  | DF40-80            |         |                                  |

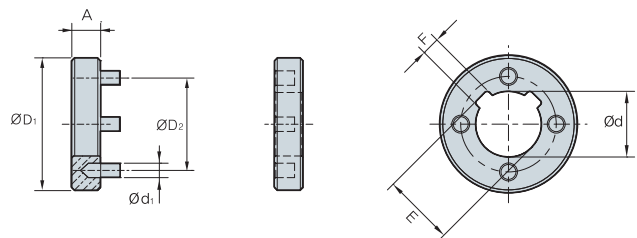
( ) Tamaño métrico

## WS( )-( ) (Zanco para Cono)



| Codigo    | L   | L1 | D  | D1 | D2 | d  | Tornillo |
|-----------|-----|----|----|----|----|----|----------|
| WS2528-M4 | 110 | 85 | 25 | 28 | 18 | 8  | PTKA0408 |
| WS2532-M5 | 110 | 85 | 25 | 32 | 22 | 10 | PTKA0515 |
| WS3240-M5 | 120 | 90 | 32 | 40 | 32 | 22 | PTKA0515 |

## DF( )-( ) (Brida)



| Codigo   | D1  | D2 | d  | d1 | A  | E    | F  |
|----------|-----|----|----|----|----|------|----|
| DF22-46  | 46  | 32 | 22 | 5  | 10 | 24.1 | 6  |
| DF32-55  | 55  | 45 | 32 | 6  | 10 | 34.8 | 8  |
| DF40-80  | 80  | 63 | 40 | 11 | 12 | 43.5 | 10 |
| DF50-110 | 110 | 80 | 50 | 14 | 14 | 53.6 | 12 |

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades |
|---------------|--------------------|----------------|-----------|
|               | vc (m/min)         | fz (mm/diente) |           |
| <b>P</b>      | 160~270            | 0.13~0.25      | PC3700    |
| <b>M</b>      | 90~150             | 0.10~0.22      | PC5300    |
| <b>K</b>      | 110~180            | 0.10~0.25      | PC6510    |

Insertos disponibles E25 Detalles del cortador E400~E402

# E Información técnica Wind Mill

Para ranurado de piezas con radios de punta de diverso tamaño y anchura.

## Wind Mill

- Mecanizado óptimo para aplicaciones de ranurado
- Filo de corte secundario con un diseño de ranura único que reduce la carga de corte y alarga la vida útil de la herramienta
- Sistema de fijación especial que impide la sujeción incorrecta y la fractura

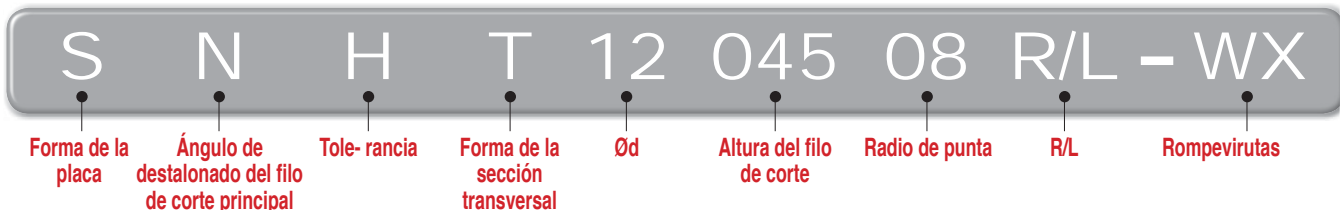
### Descripción producto



### Sistema de códigos de fresas

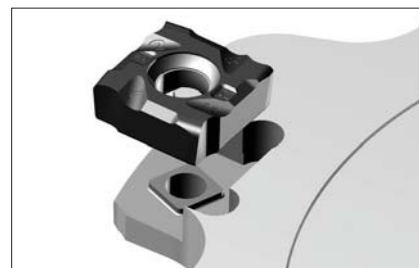
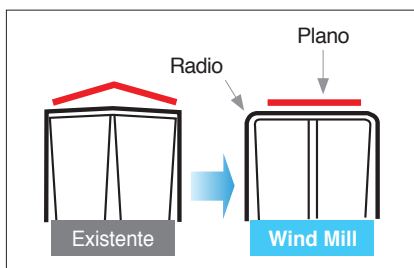


### Sistema de códigos de placas

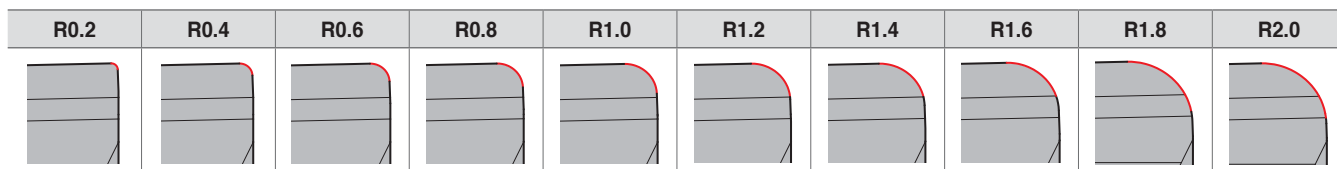


### Características

- Geometría ideal para obtener una rugosidad superficial superior y una mayor vida útil de la herramienta
- Ranura perpendicular
- La parte sobresaliente del asiento de la punta evita la mala sujeción y las roturas



- Piezas con radios de punta de diverso tamaño y anchura (R0.2~R2.0)





**Ejemplo de aplicación**

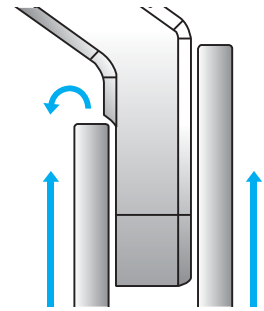
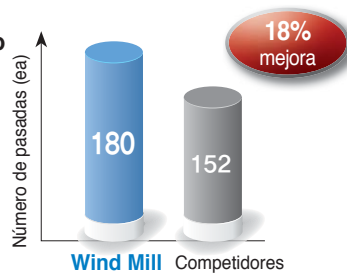
■ **Uso** Chasis vehículos de motos

■ **Pieza Trabajo** FCD500K

■ **Condiciones conditions**  
 vc (m/min) = 200  
 fz (mm/diente) = 0.2  
 vf (mm/min) = 600  
 ap (mm) = 2~3

■ **Herramientas** KSF140R-T14-HM-2  
 SNHT1205408R/L-WX (PC5300)

■ **Resultado prueba**



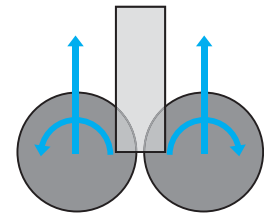
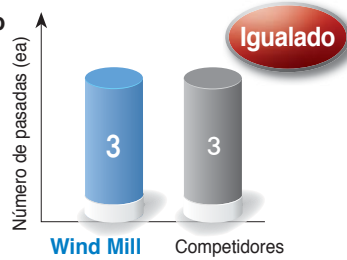
■ **Uso** Agarradera para embarcación

■ **Pieza Trabajo** Acero Suave

■ **Condiciones conditions**  
 vc (m/min) = 560  
 fz (mm/diente) = 0.09  
 vf (mm/min) = 750  
 ap (mm) = 6

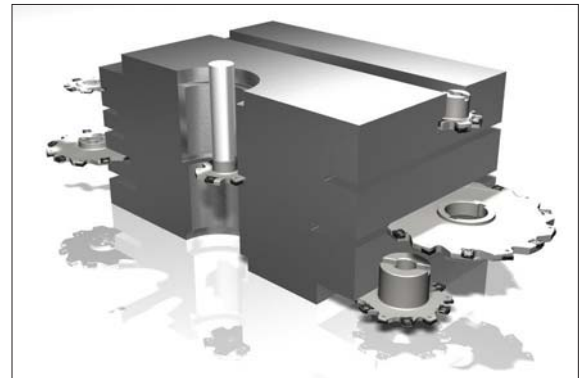
■ **Herramientas** WFSP178R/L-T06  
 SNHT1203508R/L-WX (PC5300)

■ **Resultado prueba**



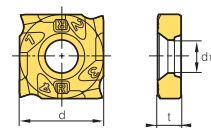
**Condiciones de corte recomendadas**

| Pieza Trabajo | Condicion de Cortes |                | Calidades     |
|---------------|---------------------|----------------|---------------|
|               | vc (m/min)          | fz (mm/diente) |               |
| <b>P</b>      | 150~250             | 0.10~0.25      | <b>PC5300</b> |
| <b>M</b>      | 120~200             | 0.10~0.30      | <b>PC5300</b> |
| <b>K</b>      | 100~150             | 0.10~0.30      | <b>PC5300</b> |



**Lista de insertos**

| Codigo | Recubierto    | Dimensiones (mm) |                 |   |      | Radio de punta | Forma                                       |
|--------|---------------|------------------|-----------------|---|------|----------------|---|
|        | PC5300        | Ød               | Ød <sub>1</sub> | t | W    |                |   |
| SNHT   | 1102308R/L-WX | ●                | 11.0            | 4 | 2.30 | 4.0            | 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6      |
|        | 110308R/L-WX  | ●                | 11.0            | 4 | 3.00 | 5.0            | 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6      |
|        | 120308R/L-WX  |                  | 12.7            | 5 | 3.25 | 5.5            | 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0 |
|        | 1203508R/L-WX | ●                | 12.7            | 5 | 3.54 | 6.0            | 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0 |
|        | 120408R/L-WX  |                  | 12.7            | 5 | 4.00 | 7.0            | 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0 |
|        | 1204508R/L-WX | ●                | 12.7            | 5 | 4.54 | 8.0            | 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0 |
|        | 120508R/L-WX  | ●                | 12.7            | 5 | 5.00 | 9.0            | 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0 |
|        | 1205408R/L-WX | ●                | 12.7            | 5 | 5.47 | 10.0           | 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0 |
|        | 120608R/L-WX  |                  | 12.7            | 5 | 6.00 | 11.0           | 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0 |
|        | 1206508R/L-WX |                  | 12.7            | 5 | 6.50 | 12.0           | 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0 |
|        | 120708R/L-WX  |                  | 12.7            | 5 | 7.00 | 13.0           | 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0 |
|        | 1207508R/L-WX |                  | 12.7            | 5 | 7.50 | 14.0           | 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 2.0 |



• El cortador disponible debe pedirse por separado

## WFSB(M) (Boss tipo)

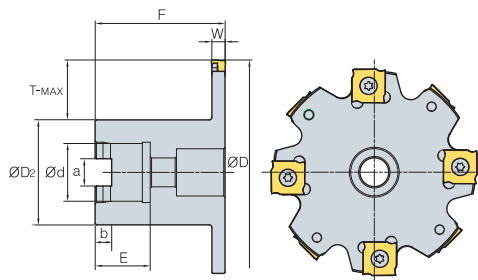


Fig. 1

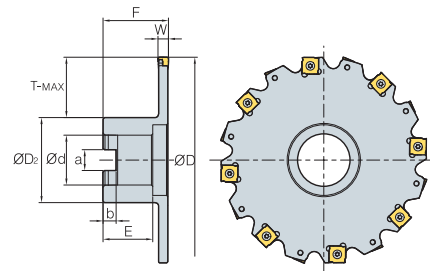


Fig. 2



•AR: -2°  
•RR: -12°

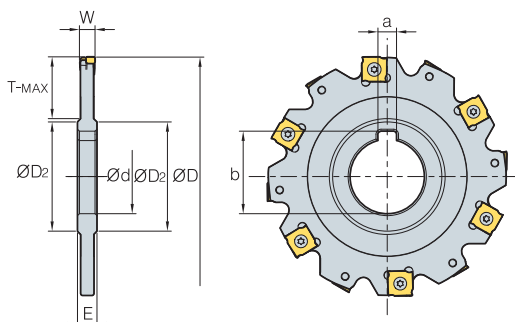
(mm)

| Codigo                         | ØD  | W  | T-MAX   | ØD <sub>2</sub> | Ød         | a           | b      | F  | E       | Insertos        | Tornillo   | Llave |
|--------------------------------|-----|----|---------|-----------------|------------|-------------|--------|----|---------|-----------------|------------|-------|
| <b>WFSBM</b> 080R/L-T04        | 80  | 4  | 17      | 40              | 22         | 10.4        | 6.3    | 50 | 21      | SNHT11023R/L-WX | PTMA03503  | TW09S |
| 080R/L-T05                     | 80  | 5  | 17      | 40              | 22         | 10.4        | 6.3    | 50 | 21      | SNHT1103R/L-WX  | PTMA03504  | TW09S |
| 080R/L-T06                     | 80  | 6  | 17      | 40              | 22         | 10.4        | 6.3    | 50 | 21      | SNHT12035R/L-WX | PTMA04045F | TW15S |
| <b>WFSB (WFSBM)</b> 100R/L-T04 | 100 | 4  | 21      | 50 (48)         | 25.4 (27)  | 9.5 (12.4)  | 6 (7)  | 50 | 25      | SNHT11023R/L-WX | PTMA03503  | TW09S |
| 100R/L-T05                     | 100 | 5  | 21      | 50 (48)         | 25.4 (27)  | 9.5 (12.4)  | 6 (7)  | 50 | 25      | SNHT1103R/L-WX  | PTMA03504  | TW09S |
| 100R/L-T06                     | 100 | 6  | 21      | 50 (48)         | 25.4 (27)  | 9.5 (12.4)  | 6 (7)  | 50 | 25      | SNHT12035R/L-WX | PTMA04045F | TW15S |
| 100R/L-T07                     | 100 | 7  | 21      | 50 (48)         | 25.4 (27)  | 9.5 (12.4)  | 6 (7)  | 50 | 25      | SNHT1204R/L-WX  | PTMA0405F  | TW15S |
| 100R/L-T08                     | 100 | 8  | 21      | 50 (48)         | 25.4 (27)  | 9.5 (12.4)  | 6 (7)  | 50 | 25      | SNHT12045R/L-WX | PTMA0406F  | TW15S |
| 100R/L-T09                     | 100 | 9  | 21      | 50 (48)         | 25.4 (27)  | 9.5 (12.4)  | 6 (7)  | 50 | 25      | SNHT1205R/L-WX  | PTMA0407F  | TW15S |
| 100R/L-T10                     | 100 | 10 | 21      | 50 (48)         | 25.4 (27)  | 9.5 (12.4)  | 6 (7)  | 50 | 25      | SNHT12054R/L-WX | PTMA0408F  | TW15S |
| 125R/L-T04                     | 125 | 4  | 30      | 60 (58)         | 31.75 (32) | 12.7 (14.4) | 8      | 50 | 32 (30) | SNHT11023R/L-WX | PTMA03503  | TW09S |
| 125R/L-T05                     | 125 | 5  | 30      | 60 (58)         | 31.75 (32) | 12.7 (14.4) | 8      | 50 | 32 (30) | SNHT1103R/L-WX  | PTMA03504  | TW09S |
| 125R/L-T06                     | 125 | 6  | 30      | 60 (58)         | 31.75 (32) | 12.7 (14.4) | 8      | 50 | 32 (30) | SNHT12035R/L-WX | PTMA04045F | TW15S |
| 125R/L-T07                     | 125 | 7  | 30      | 60 (58)         | 31.75 (32) | 12.7 (14.4) | 8      | 50 | 32 (30) | SNHT1204R/L-WX  | PTMA0405F  | TW15S |
| 125R/L-T08                     | 125 | 8  | 30      | 60 (58)         | 31.75 (32) | 12.7 (14.4) | 8      | 50 | 32 (30) | SNHT12045R/L-WX | PTMA0406F  | TW15S |
| 125R/L-T09                     | 125 | 9  | 30      | 60 (58)         | 31.75 (32) | 12.7 (14.4) | 8      | 50 | 32 (30) | SNHT1205R/L-WX  | PTMA0407F  | TW15S |
| 125R/L-T10                     | 125 | 10 | 30      | 60 (58)         | 31.75 (32) | 12.7 (14.4) | 8      | 50 | 32 (30) | SNHT12054R/L-WX | PTMA0408F  | TW15S |
| 160R/L-T04                     | 160 | 4  | 43      | 70              | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 60 | 38 (32) | SNHT11023R/L-WX | PTMA03503  | TW09S |
| 160R/L-T05                     | 160 | 5  | 43      | 70              | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 60 | 38 (32) | SNHT1103R/L-WX  | PTMA03504  | TW09S |
| 160R/L-T06                     | 160 | 6  | 43      | 70              | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 60 | 38 (32) | SNHT12035R/L-WX | PTMA04045F | TW15S |
| 160R/L-T07                     | 160 | 7  | 43      | 70              | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 60 | 38 (32) | SNHT1204R/L-WX  | PTMA0405F  | TW15S |
| 160R/L-T08                     | 160 | 8  | 43      | 70              | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 60 | 38 (32) | SNHT12045R/L-WX | PTMA0406F  | TW15S |
| 160R/L-T09                     | 160 | 9  | 43      | 70              | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 60 | 38 (32) | SNHT1205R/L-WX  | PTMA0407F  | TW15S |
| 160R/L-T10                     | 160 | 10 | 43      | 70              | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 60 | 38 (32) | SNHT12054R/L-WX | PTMA0408F  | TW15S |
| 160R/L-T11                     | 160 | 11 | 43      | 70              | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 60 | 38 (32) | SNHT1206R/L-WX  | PTKA0409F  | TW15S |
| 160R/L-T12                     | 160 | 12 | 43      | 70              | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 60 | 38 (32) | SNHT12065R/L-WX | PTKA0410F  | TW15S |
| 160R/L-T13                     | 160 | 13 | 43      | 70              | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 60 | 38 (32) | SNHT1207R/L-WX  | PTKA0411F  | TW15S |
| 160R/L-T14                     | 160 | 14 | 43      | 70              | 38.1 (40)  | 15.9 (16.4) | 10 (9) | 60 | 38 (32) | SNHT12075R/L-WX | PTKA0412F  | TW15S |
| 200R/L-T06                     | 200 | 6  | 53      | 90              | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT12035R/L-WX | PTMA04045F | TW15S |
| 200R/L-T07                     | 200 | 7  | 53      | 90              | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT1204R/L-WX  | PTMA0405F  | TW15S |
| 200R/L-T08                     | 200 | 8  | 53      | 90              | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT12045R/L-WX | PTMA0406F  | TW15S |
| 200R/L-T09                     | 200 | 9  | 53      | 90              | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT1205R/L-WX  | PTMA0407F  | TW15S |
| 200R/L-T10                     | 200 | 10 | 53      | 90              | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT12054R/L-WX | PTMA0408F  | TW15S |
| 200R/L-T11                     | 200 | 11 | 53      | 90              | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT1206R/L-WX  | PTKA0409F  | TW15S |
| 200R/L-T12                     | 200 | 12 | 53      | 90              | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT12065R/L-WX | PTKA0410F  | TW15S |
| 200R/L-T13                     | 200 | 13 | 53      | 90              | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT1207R/L-WX  | PTKA0411F  | TW15S |
| 200R/L-T14                     | 200 | 14 | 53      | 90              | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT12075R/L-WX | PTKA0412F  | TW15S |
| 250R/L-T06                     | 250 | 6  | 73 (78) | 100 (90)        | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT12035R/L-WX | PTMA04045F | TW15S |
| 250R/L-T07                     | 250 | 7  | 73 (78) | 100 (90)        | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT1204R/L-WX  | PTMA0405F  | TW15S |
| 250R/L-T08                     | 250 | 8  | 73 (78) | 100 (90)        | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT12045R/L-WX | PTMA0406F  | TW15S |
| 250R/L-T09                     | 250 | 9  | 73 (78) | 100 (90)        | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT1205R/L-WX  | PTMA0407F  | TW15S |
| 250R/L-T10                     | 250 | 10 | 73 (78) | 100 (90)        | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT12054R/L-WX | PTMA0408F  | TW15S |
| 250R/L-T11                     | 250 | 11 | 73 (78) | 100 (90)        | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT1206R/L-WX  | PTKA0409F  | TW15S |
| 250R/L-T12                     | 250 | 12 | 73 (78) | 100 (90)        | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT12065R/L-WX | PTKA0410F  | TW15S |
| 250R/L-T13                     | 250 | 13 | 73 (78) | 100 (90)        | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT1207R/L-WX  | PTKA0411F  | TW15S |
| 250R/L-T14                     | 250 | 14 | 73 (78) | 100 (90)        | 50.8 (40)  | 19.1 (16.4) | 11 (9) | 65 | 38 (32) | SNHT12075R/L-WX | PTKA0412F  | TW15S |

• Ø80: Fig.1, Ø100~Ø250: Fig.2 ( ) Tamaño métrico ( ) Insertos disponibles E23



# WFSP(M) (Plane tipo)



•AR: -2°  
•RR:-12°

(mm)

| Codigo              |                | ØD  | W   | T-MAX | ØD <sub>2</sub> | Ød        | a          | b           | E           | Insertos        | Tornillo        | Llave      |       |
|---------------------|----------------|-----|-----|-------|-----------------|-----------|------------|-------------|-------------|-----------------|-----------------|------------|-------|
| <b>WFSP (WFSBM)</b> | <b>080-T04</b> | 8   | 80  | 4     | 20              | 40        | 25.4 (27)  | 6.35 (7)    | 28 (29.8)   | 8               | SNHT11023R/L-WX | PTMA03503  | TW09S |
|                     | <b>080-T05</b> | 8   | 80  | 5     | 20              | 40        | 25.4 (27)  | 6.35 (7)    | 28 (29.8)   | 8               | SNHT1103R/L-WX  | PTMA03504  | TW09S |
|                     | <b>080-T06</b> | 8   | 80  | 6     | 20              | 40        | 25.4 (27)  | 6.35 (7)    | 28 (29.8)   | 8               | SNHT12035R/L-WX | PTMA04045F | TW15S |
|                     | <b>100-T04</b> | 10  | 100 | 4     | 24              | 47        | 31.75 (32) | 7.92 (8)    | 35.2 (34.8) | 8               | SNHT11023R/L-WX | PTMA03503  | TW09S |
|                     | <b>100-T05</b> | 10  | 100 | 5     | 24              | 47        | 31.75 (32) | 7.92 (8)    | 35.2 (34.8) | 8               | SNHT1103R/L-WX  | PTMA03504  | TW09S |
|                     | <b>100-T06</b> | 10  | 100 | 6     | 24              | 47        | 31.75 (32) | 7.92 (8)    | 35.2 (34.8) | 8               | SNHT12035R/L-WX | PTMA04045F | TW15S |
|                     | <b>100-T07</b> | 10  | 100 | 7     | 24              | 47        | 31.75 (32) | 7.92 (8)    | 35.2 (34.8) | 10              | SNHT1204R/L-WX  | PTMA0405F  | TW15S |
|                     | <b>100-T08</b> | 10  | 100 | 8     | 24              | 47        | 31.75 (32) | 7.92 (8)    | 35.2 (34.8) | 10              | SNHT12045R/L-WX | PTMA0406F  | TW15S |
|                     | <b>100-T09</b> | 10  | 100 | 9     | 24              | 47        | 31.75 (32) | 7.92 (8)    | 35.2 (34.8) | 12              | SNHT1205R/L-WX  | PTMA0407F  | TW15S |
|                     | <b>100-T10</b> | 10  | 100 | 10    | 24              | 47        | 31.75 (32) | 7.92 (8)    | 35.2 (34.8) | 12              | SNHT12054R/L-WX | PTMA0408F  | TW15S |
|                     | <b>125-T04</b> | 12  | 125 | 4     | 32              | 56        | 38.1 (40)  | 9.52 (10)   | 42.3 (43.5) | 8               | SNHT11023R/L-WX | PTMA03503  | TW09S |
|                     | <b>125-T05</b> | 12  | 125 | 5     | 32              | 56        | 38.1 (40)  | 9.52 (10)   | 42.3 (43.5) | 8               | SNHT1103R/L-WX  | PTMA03504  | TW09S |
|                     | <b>125-T06</b> | 12  | 125 | 6     | 32              | 56        | 38.1 (40)  | 9.52 (10)   | 42.3 (43.5) | 8               | SNHT12035R/L-WX | PTMA04045F | TW15S |
|                     | <b>125-T07</b> | 12  | 125 | 7     | 32              | 56        | 38.1 (40)  | 9.52 (10)   | 42.3 (43.5) | 10              | SNHT1204R/L-WX  | PTMA0405F  | TW15S |
|                     | <b>125-T08</b> | 12  | 125 | 8     | 32              | 56        | 38.1 (40)  | 9.52 (10)   | 42.3 (43.5) | 10              | SNHT12045R/L-WX | PTMA0406F  | TW15S |
|                     | <b>125-T09</b> | 12  | 125 | 9     | 32              | 56        | 38.1 (40)  | 9.52 (10)   | 42.3 (43.5) | 12              | SNHT1205R/L-WX  | PTMA0407F  | TW15S |
|                     | <b>125-T10</b> | 12  | 125 | 10    | 32              | 56        | 38.1 (40)  | 9.52 (10)   | 42.3 (43.5) | 12              | SNHT12054R/L-WX | PTMA0408F  | TW15S |
|                     | <b>160-T04</b> | 16  | 160 | 4     | 45              | 66        | 38.1 (40)  | 9.52 (10)   | 42.3 (43.5) | 8               | SNHT11023R/L-WX | PTMA03503  | TW09S |
|                     | <b>160-T05</b> | 16  | 160 | 5     | 45              | 66        | 38.1 (40)  | 9.52 (10)   | 42.3 (43.5) | 8               | SNHT1103R/L-WX  | PTMA03504  | TW09S |
|                     | <b>160-T06</b> | 16  | 160 | 6     | 45              | 66        | 38.1 (40)  | 9.52 (10)   | 42.3 (43.5) | 8               | SNHT12035R/L-WX | PTMA04045F | TW15S |
|                     | <b>160-T07</b> | 16  | 160 | 7     | 45              | 66        | 38.1 (40)  | 9.52 (10)   | 42.3 (43.5) | 10              | SNHT1204R/L-WX  | PTMA0405F  | TW15S |
|                     | <b>160-T08</b> | 16  | 160 | 8     | 45              | 66        | 38.1 (40)  | 9.52 (10)   | 42.3 (43.5) | 10              | SNHT12045R/L-WX | PTMA0406F  | TW15S |
| <b>160-T09</b>      | 16             | 160 | 9   | 45    | 66              | 38.1 (40) | 9.52 (10)  | 42.3 (43.5) | 12          | SNHT1205R/L-WX  | PTMA0407F       | TW15S      |       |
| <b>160-T10</b>      | 16             | 160 | 10  | 45    | 66              | 38.1 (40) | 9.52 (10)  | 42.3 (43.5) | 12          | SNHT12054R/L-WX | PTMA0408F       | TW15S      |       |
| <b>160-T11</b>      | 16             | 160 | 11  | 45    | 66              | 38.1 (40) | 9.52 (10)  | 42.3 (43.5) | 14          | SNHT1206R/L-WX  | PTKA0409F       | TW15S      |       |
| <b>160-T12</b>      | 16             | 160 | 12  | 45    | 66              | 38.1 (40) | 9.52 (10)  | 42.3 (43.5) | 14          | SNHT12065R/L-WX | PTKA0410F       | TW15S      |       |
| <b>160-T13</b>      | 16             | 160 | 13  | 45    | 66              | 38.1 (40) | 9.52 (10)  | 42.3 (43.5) | 16          | SNHT1207R/L-WX  | PTKA0411F       | TW15S      |       |
| <b>160-T14</b>      | 16             | 160 | 14  | 45    | 66              | 38.1 (40) | 9.52 (10)  | 42.3 (43.5) | 16          | SNHT12075R/L-WX | PTKA0412F       | TW15S      |       |
| <b>200-T06</b>      | 18             | 200 | 6   | 60    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 8           | SNHT12035R/L-WX | PTMA04045F      | TW15S      |       |
| <b>200-T07</b>      | 18             | 200 | 7   | 60    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 10          | SNHT1204R/L-WX  | PTMA0405F       | TW15S      |       |
| <b>200-T08</b>      | 18             | 200 | 8   | 60    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 10          | SNHT12045R/L-WX | PTMA0406F       | TW15S      |       |
| <b>200-T09</b>      | 18             | 200 | 9   | 60    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 12          | SNHT1205R/L-WX  | PTMA0407F       | TW15S      |       |
| <b>200-T10</b>      | 18             | 200 | 10  | 60    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 12          | SNHT12054R/L-WX | PTMA0408F       | TW15S      |       |
| <b>200-T11</b>      | 18             | 200 | 11  | 60    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 14          | SNHT1206R/L-WX  | PTKA0409F       | TW15S      |       |
| <b>200-T12</b>      | 18             | 200 | 12  | 60    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 14          | SNHT12065R/L-WX | PTKA0410F       | TW15S      |       |
| <b>200-T13</b>      | 18             | 200 | 13  | 60    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 16          | SNHT1207R/L-WX  | PTKA0411F       | TW15S      |       |
| <b>200-T14</b>      | 18             | 200 | 14  | 60    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 16          | SNHT12075R/L-WX | PTKA0412F       | TW15S      |       |
| <b>250-T06</b>      | 20             | 250 | 6   | 88    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 8           | SNHT12035R/L-WX | PTMA04045F      | TW15S      |       |
| <b>250-T07</b>      | 20             | 250 | 7   | 88    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 10          | SNHT1204R/L-WX  | PTMA0405F       | TW15S      |       |
| <b>250-T08</b>      | 20             | 250 | 8   | 88    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 10          | SNHT12045R/L-WX | PTMA0406F       | TW15S      |       |
| <b>250-T09</b>      | 20             | 250 | 9   | 88    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 12          | SNHT1205R/L-WX  | PTMA0407F       | TW15S      |       |
| <b>250-T10</b>      | 20             | 250 | 10  | 88    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 12          | SNHT12054R/L-WX | PTMA0408F       | TW15S      |       |
| <b>250-T11</b>      | 20             | 250 | 11  | 88    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 14          | SNHT1206R/L-WX  | PTKA0409F       | TW15S      |       |
| <b>250-T12</b>      | 20             | 250 | 12  | 88    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 14          | SNHT12065R/L-WX | PTKA0410F       | TW15S      |       |
| <b>250-T13</b>      | 20             | 250 | 13  | 88    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 16          | SNHT1207R/L-WX  | PTKA0411F       | TW15S      |       |
| <b>250-T14</b>      | 20             | 250 | 14  | 88    | 70              | 50.8 (50) | 12.7 (12)  | 55.8 (53.5) | 16          | SNHT12075R/L-WX | PTKA0412F       | TW15S      |       |

Insertos disponibles E23

( ) Tamaño métrico



# E Fresado de alto avance de fundición

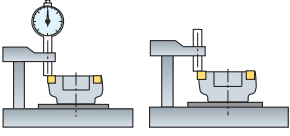
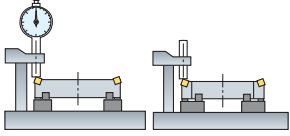
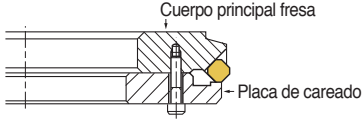
Son empleados para Fundición y aleaciones ligeras en acero

## Cortador de Alto Avance

- Son empleados para Fundición y aleaciones ligeras en acero
- De rápido cambio para la reducción de tiempo en cambio de cuchillas
- Filo de Corte exelente
- Rápida cambio para el tamaño de corte en  $\varnothing 160$ , dos tipos de piezas para el tamaño de cortador  $\varnothing 200$

### Guía de Ajuste del inserto

- El equipo especial tiene que ser utilizado para el funcionamiento exacto con el alto cortador de la alimentación

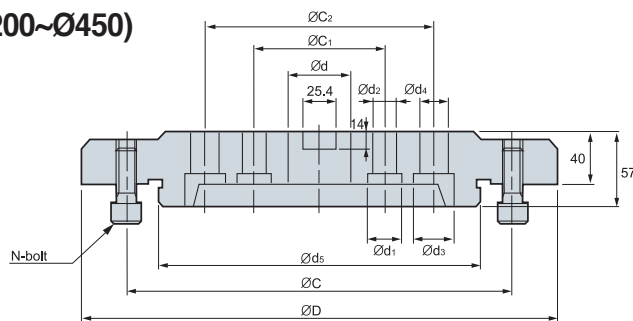
| Adaptador tipo   | Roller tipo  | Plate tipo  |
|--|--|---|
|   |   |    |
| <ul style="list-style-type: none"> <li>- Principalmente debajo de <math>\varnothing 160</math> el diámetro se utiliza en tipo de 1 pedazo</li> <li>- Disponible para de tamaño fijo del cortador y de la junta y de la comprobación puede ser hecho al mismo tiempo</li> </ul> | <ul style="list-style-type: none"> <li>- Principalmente sobre <math>\varnothing 200</math> el diámetro se utiliza en el tipo 2piece</li> <li>- Debido al rodillo de guía ajustable 3, tamaño de la variedad de cortador puede ser montado</li> </ul> | <ul style="list-style-type: none"> <li>- Conveniente para el cortador tamaño pequeño debido al tructure simple</li> <li>- Es innecesario unclamp el cortador de la máquina, él es posible volver a montar el cortador como él montón en la máquina</li> </ul> |

### Guía del ajuste del Inserto en adaptador/ rodillo

- 1 Limpie el cortador y el equipo.
- 2 El indicador se debe montar con la misma altura con el cortador.
- 3 Muvase a cada parte movable en asiento de la extremidad al extremo del indicador y apriete (cua del esfuerzo de torsin 2N.m).
- 4 Intercambie el indicador para marcar el calibrador.
- 5 Measure el agotamiento totalmente.
- 6 Cuando un parte movable sobre agotamiento, afloja la cua y ajusta agotamiento. (para el desbaste 10~20 $\mu$ , para el acabamiento 5~10 $\mu$ )
- 7 Apriete (cua del esfuerzo de torsin 7-8N.m).
- 8 Mida el agotamiento final por el calibrador del dial.

- Nota)** - Cuando usted afianza la cuña con abrazadera también apriete, agotamiento está consiguiendo peor a la distorsión del cortador  
 - Cuando usted afianza la cuña con abrazadera, usted debe utilizar la llave de esfuerzo de torsión para fijar más exacto.

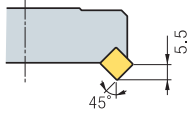
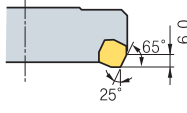
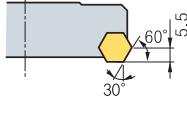
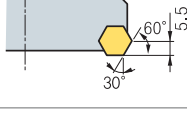


### Sistema de anclaje ( $\varnothing 200 \sim \varnothing 450$ )



| Codigo  | ØD  | Ød     | Ød <sub>1</sub> | Ød <sub>2</sub> | Ød <sub>3</sub> | Ød <sub>4</sub> | Ød <sub>5</sub> | ØC  | ØC <sub>1</sub> | ØC <sub>2</sub> | N | Corador |
|---------|-----|--------|-----------------|-----------------|-----------------|-----------------|-----------------|-----|-----------------|-----------------|---|---------|
| APR 200 | 180 | 47.625 | 26              | 18              | -               | -               | 80              | 120 | 101.6           | -               | 4 | Ø200    |
| 250     | 230 | 47.625 | 26              | 18              | -               | -               | 120             | 170 | 101.6           | -               | 4 | Ø250    |
| 315     | 295 | 47.625 | 26              | 18              | 32              | 22              | 180             | 230 | 101.6           | 177.8           | 6 | Ø315    |
| 355     | 335 | 63.50  | 26              | 18              | 32              | 22              | 220             | 270 | 101.6           | 177.8           | 6 | Ø355    |
| 400     | 370 | 63.50  | 26              | 18              | 32              | 22              | 250             | 300 | 101.6           | 177.8           | 8 | Ø400    |
| 450     | 420 | 63.50  | 26              | 18              | 32              | 22              | 300             | 350 | 101.6           | 177.8           | 8 | Ø450    |



Tipos de Cortadores y Características

| Codigo                           | Cortador<br>Diámetro | Pieza Trabajo,<br>gama de<br>aplicaciones | Min. rugosidad<br>superficial | Ángulo de Aproximación y Max.<br>profundidad de corte Tipo 5000                     | Rango<br>Ángulo Axial | Rango<br>Ángulo Radial | Insertos<br>Disponibles     |
|----------------------------------|----------------------|---|-------------------------------|---|-----------------------|------------------------|-----------------------------|
| <b>ANH4000</b><br><b>ANH5000</b> | Ø100~Ø450            | Fundición<br>Desbaste.                    | 25Z                           |    | -5°                   | -6°                    | SNCN1204ENN<br>SNCN1504ENN  |
| <b>CDH4000</b><br><b>CDH5000</b> | Ø100~Ø450            | Fundición<br>Desbaste.<br>Acabado         | 18Z                           |    | +10°                  | +5°                    | SDCN42R<br>SDCN53R          |
| <b>DEH5000</b>                   | Ø100~Ø450            | Aleación<br>Aluminio<br>Desbaste          | 20Z                           |    | +14°                  | +6°                    | HECN090408FN                |
| <b>DPH5000</b>                   | Ø100~Ø450            | Fundición<br>Desbaste.<br>Acabado         | 12Z                           |    | +5°                   | -3°                    | HPEN090408<br>HPEN090408-WC |
| <b>PNH4000</b><br><b>PNH5000</b> | Ø125~Ø450            | Fundición<br>Acabado                      | 12Z                           |   | -5°                   | -6°                    | SNEF435<br>SNEF535          |
| <b>PPH4000</b>                   | Ø125~Ø450            | Fundición<br>Acabado                      | 12Z                           |  | +5°                   | -5°                    | SPEN120416-WC               |

Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades       | Obeservaciones |
|---------------|--------------------|----------------|-----------------|----------------|
|               | vc (m/min)         | fz (mm/diente) |                 |                |
| Fundición     | 100~230            | 0.05~0.20      | <b>PC6510</b>   | PVD Recubierto |
|               | 80~150             | 0.05~0.20      | <b>H01, G10</b> | Sin Rec.       |
| Al aleado     | 400                | 0.10~0.30      | <b>PC6510</b>   | PVD Recubierto |
|               | 400                | 0.05~0.20      | <b>H01, G10</b> | Sin Rec.       |

# E Información técnica Cube Mill

## Cortador Korloy especial para el desbaste en fundición

# Cube Mill

- KORLOY Cortador especial para el desbaste de fundición
- 8 esquina de filo del inserto (16 filos disponible con 2 cortadores, cortador Der/Izq)
- Funcionamiento excelente de corte debido al ángulo de incidencia positivo hecho por el rompeviruta 3dimensional
- Vida excelente de la herramienta por la combinación de variedad de grados y de rompevirutas según condiciones de trabajo
- 2 tipos diferentes de insertos (Chaflán / Radio) y pueden ser montados en el mismo cortador



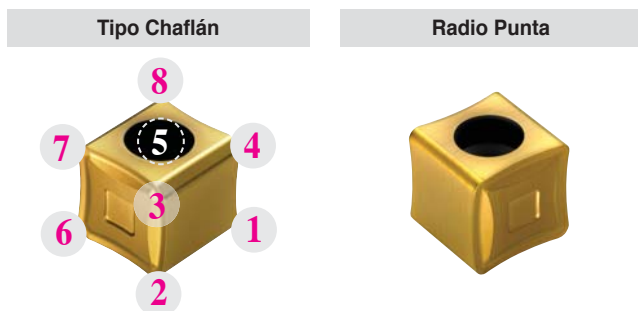
Desbaste en Fundición

### ➤ Sistema codificación

|                                   |  |  |                                     |   |  |                             |
|-----------------------------------|--|--|-------------------------------------|---|--|-----------------------------|
| <b>CBM</b>                        | <b>E</b>   | <b>3</b>                                 | <b>250</b>                          | <b>R</b>  | <b>(2)</b>   | <b>28Z</b>                  |
| <b>Cortador</b><br>CBM: CUBE MILL | <b>Angulo Aprox.</b><br>Q: 88°<br>C: 65°<br>F: 85°<br>A: 45°<br>E: 75° | <b>Insert I/C</b><br>3: 9.525<br>4: 12.7 | <b>Diametro Cortador(Ø)</b><br>Ø250 | <b>Mano Hetta</b><br>R: derecho<br>L: izquierdo | <b>Forma del cortador</b><br>Sin marca: Tipo normal<br>2: Cambio rapido<br>(Tipo 2 piezas) | <b>Numero de dientes(Z)</b> |

• Cube Mill y Cube mill couple están disponibles bajo pedido

### ➤ Inserto (Der./Izq.)



### ➤ Cuerpo fresa

| Diametro del cortador (Ø) | Genel      | Cambio Rapido |
|---------------------------|------------|---------------|
|                           | Ø80~315 mm | Ø200~450 mm   |
| 3 1/4~12 1/2 Inch         | 8~18 Inch  |               |

AA: 88°, 85°, 75°, 65°, 45°

### ➤ Cortador



### ➤ Partes

|                       |                 |              |
|-----------------------|-----------------|--------------|
| <p>Cube Mill 3000</p> | <p>Tornillo</p> | <p>Llave</p> |
|                       | FTGA0417CBM     | TW15-100     |
|                       | ETGA0520CBM     | TW20-100     |



Ideal combinación de cuerpo de aluminio con hierro fundido

# Couple Mill

- Ideal combinación de cuerpo de aluminio con hierro fundido
- Puesto que el peso del cortador se ha reducido hasta el 50% en comparación al cortador de acero, es muy fácil de manejar
- Aplicable para Cube mill y Storm mill

## ➤ Cube-couple Sistema codificación

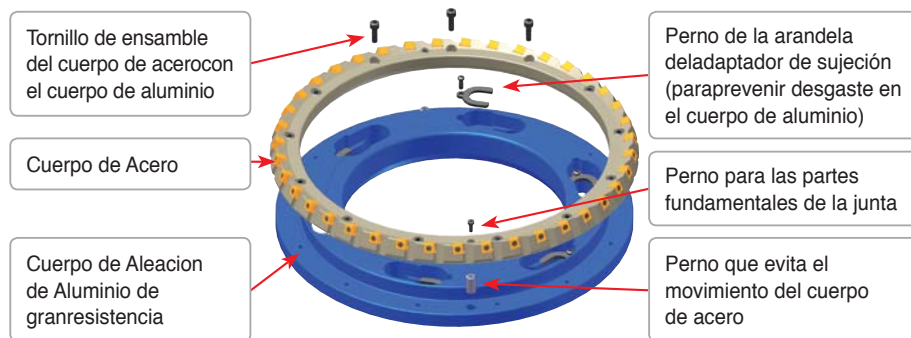
|                                   |  |   |                                     |   |  |                    |
|-----------------------------------|--|---|-------------------------------------|---|--|--------------------|
| <b>CBM</b>                        | <b>E</b>   | <b>3</b>                                | <b>355</b>                          | <b>R</b>  | <b>28Z</b>                             | <b>- CP</b>        |
| <b>Cortador</b><br>CBM: CUBE MILL | <b>Angulo Ataque</b><br>Q: 88°<br>C: 65°<br>F: 85°<br>A: 45°<br>E: 75° | <b>Placa I/C</b><br>3: 9.525<br>4: 12.7 | <b>Diametro Cortador(Ø)</b><br>Ø355 | <b>Mano Hetta</b><br>R: derecho<br>L: izquierdo | <b>Numero de dientes(Z)</b><br>28Z: 28 | <b>Couple Mill</b> |

• Cube Mill y Cube mill couple están disponibles bajo pedido

## ➤ Sistema Codificación Storm-Couple

|                                  |  |   |   |                                     |   |  |                    |
|----------------------------------|--|---|---|-------------------------------------|---|--|--------------------|
| <b>S</b>                         | <b>Q</b>   | <b>N</b>  | <b>3</b>                                | <b>355</b>                          | <b>R</b>  | <b>28Z</b>                             | <b>- CP</b>        |
| <b>Cortador</b><br>S: STORM MILL | <b>Angulo Ataque</b><br>Q: 88°<br>E: 75°<br>F: 85°<br>A: 45° | <b>Angulo Incidencia del Inserto</b><br>N: Negativo(0°) | <b>Placa I/C</b><br>3: 9.525<br>4: 12.7 | <b>Diametro Cortador(Ø)</b><br>Ø355 | <b>Mano Hetta</b><br>R: derecho<br>L: izquierdo | <b>Numero de dientes(Z)</b><br>28Z: 28 | <b>Couple Mill</b> |

## ➤ Estructura del Cortador



## ➤ Cortador body

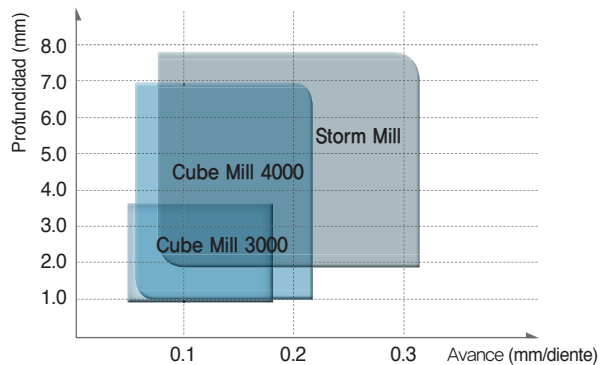
| Diametro Cortador (Ø) | Cambio rápido  |             |
|-----------------------|----------------|-------------|
|                       | Métrico        | Ø355~450 mm |
| Inch                  | 14 1/4~18 Inch |             |

## ➤ Partes

|                               |             |          |       |                      |                     |                      |
|-------------------------------|-------------|----------|-------|----------------------|---------------------|----------------------|
|                               |             |          |       |                      |                     |                      |
|                               | Tornillo    | Llave    | Llave | Tornillo de ensamble | Perno para la llave | Llave para el cuerpo |
| <b>Cube-Couple 3000 tipo</b>  | FTGA0417CBM | TW15-100 | -     | BHA0616              | MHBO410             | PN1019-DRV           |
| <b>4000 tipo</b>              | ETGA0520CBM | TW20-100 | -     | BHA0620              | -                   | -                    |
| <b>Storm-Couple 3000 tipo</b> | FTNA0513    | -        | TW15S | -                    | -                   | -                    |

# E Información técnica Couple Mill

## ➤ Rango de Aplicación Cortadores de Alto Avance P/Fundición



## ➤ Condiciones de corte recomendadas

| Cube Mill |        | Fundición Gris |                | Fundición dúctil |                |
|-----------|--------|----------------|----------------|------------------|----------------|
|           |        | vc (m/min)     | fz (mm/diente) | vc (m/min)       | fz (mm/diente) |
| PVD       | PC6510 | 150~300        | 0.08~0.18      | 100~200          | 0.08~0.18      |
| Sin Rec.  | G10    | 90~120         | 0.05~0.18      | 60~130           | 0.05~0.18      |

## ➤ Sistemas de sujeción disponibles

| Codigo        | Sistemas de sujeción disponibles |                   |                                    |        |
|---------------|----------------------------------|-------------------|------------------------------------|--------|
|               | Adaptadores                      | Adaptador general | Sistema de anclaje                 |        |
| <b>CBMQ</b>   | 3080R/L-00Z                      | BT□□-FMA25.4-□□   | NT*□□(M/U)-FMA25.4-25              |        |
| <b>(CBMF)</b> | 3100R/L-00Z                      | BT□□-FMA31.75-□□  | NT*□□(M/U)-FMA31.75-□□             |        |
| <b>(CBME)</b> | 3125R/L-00Z                      | BT□□-FMA38.1-□□   | NT*□□(M/U)-FMA38.1-□□              |        |
| <b>(CBMC)</b> | 3160R/L-00Z                      | BT□□-FMA50.8-□□   | NT*□□(M/U)-FMA50.8-□□              |        |
| <b>(CBMA)</b> | 3200R/L-00Z                      | BT□□-FMA47.625-□□ | NT*□□(M/U)-FMA47.625-25, KCP-8***  |        |
|               | 3250R/L-00Z                      | BT□□-FMA47.625-□□ | KNT*□□(M/U)-FMA47.625-25, KCP-8*** |        |
|               | 3315R/L-00Z                      |                   | KCP-8*** (Centering Plug)          |        |
|               | 3200R/L2-00Z                     |                   |                                    | APR200 |
|               | 3250R/L2-00Z                     |                   |                                    | APR250 |
|               | 3315R/L2-00Z                     |                   |                                    | APR315 |
|               | 3355R/L2-00Z                     |                   |                                    | APR355 |
|               | 3400R/L2-00Z                     |                   |                                    | APR400 |
|               | 3450R/L2-00Z                     |                   |                                    | APR450 |
| <b>SQN</b>    | 3080R/L-00Z                      | BT□□-FMA25.4-□□   | NT*□□(M/U)-FMA25.4-25              |        |
| <b>(SFN)</b>  | 3100R/L-00Z                      | BT□□-FMA31.75-□□  | NT*□□(M/U)-FMA31.75-□□             |        |
| <b>(SEN)</b>  | 3125R/L-00Z                      | BT□□-FMA38.1-□□   | NT*□□(M/U)-FMA38.1-□□              |        |
| <b>(SAN)</b>  | 3160R/L-00Z                      | BT□□-FMA50.8-□□   | NT*□□(M/U)-FMA50.8-□□              |        |
|               | 3200R/L-00Z                      | BT□□-FMA47.625-□□ | NT*□□(M/U)-FMA47.625-25, KCP-8***  |        |
|               | 3250R/L-00Z                      | BT□□-FMA47.625-□□ | NT*□□(M/U)-FMA47.625-25, KCP-8***  |        |
|               | 3315R/L-00Z                      |                   | KCP-8*** (Centering Plug)          |        |
|               | 3200R/L2-00Z                     |                   |                                    | APR200 |
|               | 3250R/L2-00Z                     |                   |                                    | APR250 |
|               | 3315R/L2-00Z                     |                   |                                    | APR315 |
|               | 3355R/L2-00Z                     |                   |                                    | APR355 |
|               | 3400R/L2-00Z                     |                   |                                    | APR400 |
|               | 3450R/L2-00Z                     |                   |                                    | APR450 |

\*\*□□-Numero NT / \*\* □□-Numero BT / \*\*\*Fresado mayor 5  
 <Arbors \*\*add>  
 ex) BT\*\* □□





La variedad de grados garantiza una excelente vida de la herramienta

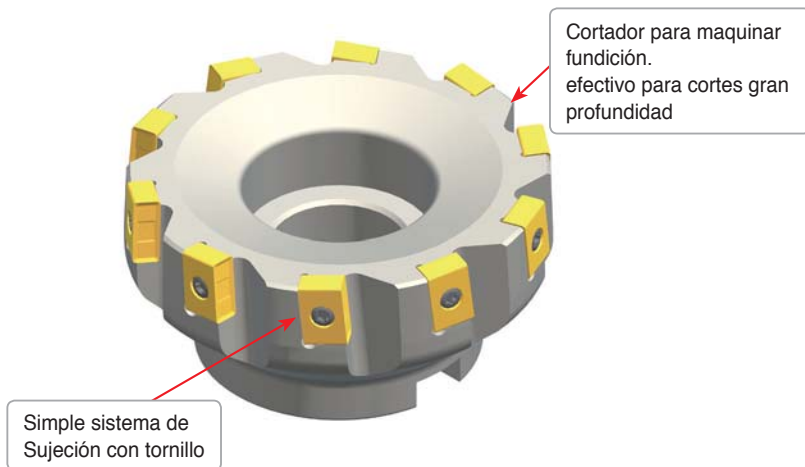
# Storm Mill

- Cortador convencional de amplia cobertura
- Utiliza los 4 filos del inserto (Maximo 8 filos disponibles para cortador Der/lzq)
- Efectivo para cortes de gran profundidad
- La variedad de grados garantiza una excelente vida de la herramienta.
- 2 diferentes tipos de insertos (Chaflán / Punta R) para un mismo cortador

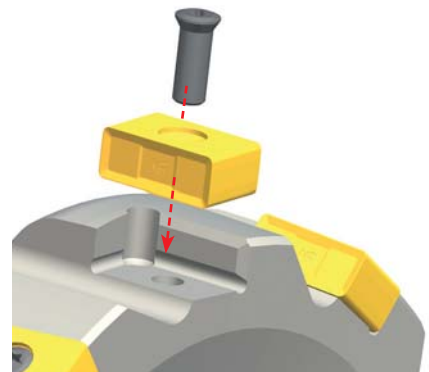
## Sistema codificación



## Características



## Sujeción del Inserto



## Condiciones de corte recomendadas

| Calidades | Codigo | Fundición Gris |                | Fundición dúctil |                |
|-----------|--------|----------------|----------------|------------------|----------------|
|           |        | GC             |                | GCD              |                |
|           |        | vc (m/min)     | fz (mm/diente) | vc (m/min)       | fz (mm/diente) |
| PC3500    |        | 150~250        | 0.08~0.28      | 100~180          | 0.08~0.28      |
| PC6510    |        | 150~300        | 0.10~0.28      | 100~200          | 0.10~0.28      |
| PC5400    |        | 150~250        | 0.08~0.22      | 100~180          | 0.08~0.22      |
| H01       |        | 100~200        | 0.08~0.22      | 70~140           | 0.08~0.22      |
| G10       |        | 90~120         | 0.08~0.28      | 60~130           | 0.08~0.28      |

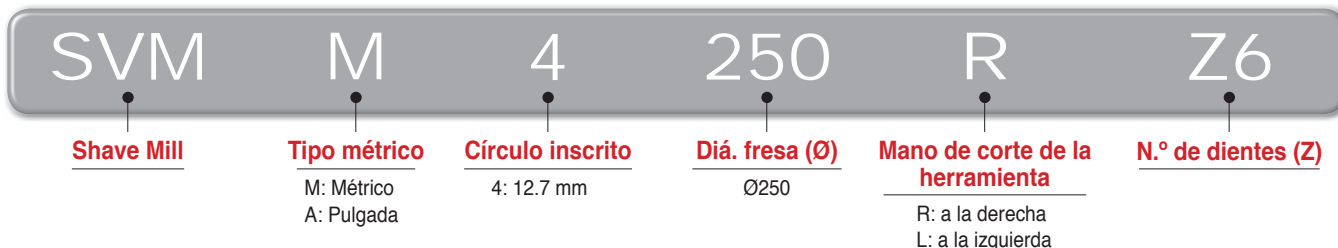
# E Información técnica Shave Mill

Fresa óptima para mecanizado de acero y fundición con fácil ajuste de la excentricidad

## Shave Mill

- Rango ajustable (Rango ajustable: 0.1 mm, Margen admisible ajustable: hasta 2  $\mu\text{m}$ )
- Placa de 8 esquinas tipo corona Wiper que reduce el coste de mecanizado y proporciona una excelente rugosidad superficial
- Calidad con alta tenacidad y resistencia al desgaste que asegura una larga vida útil de la herramienta
- La calidad cBN logra un acabado superficial superior

### ➤ Sistema de códigos de fresas



### ➤ Sistema de códigos de placas

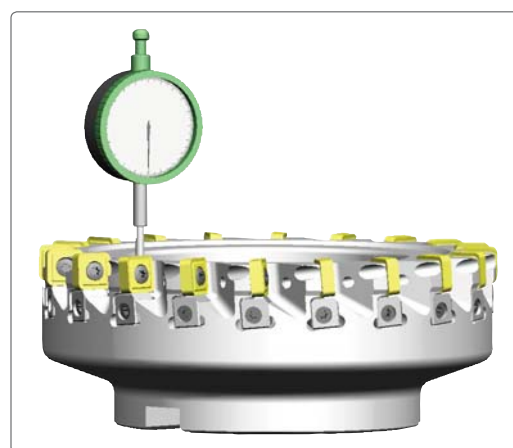
#### ■ Metal duro

|                     |                |
|---------------------|----------------|
| Tipo radio de punta | SNEU120420-MF  |
| Chamfer tipo        | SNEU1204ANN-MF |
| Tipo corte bajo     | SNEU1204-WMF   |

#### ■ cBN

|                                   |
|-----------------------------------|
| SNEU1204-TBW                      |
| T: Nagaland<br>B: cBN<br>W: Wiper |

### ➤ Características

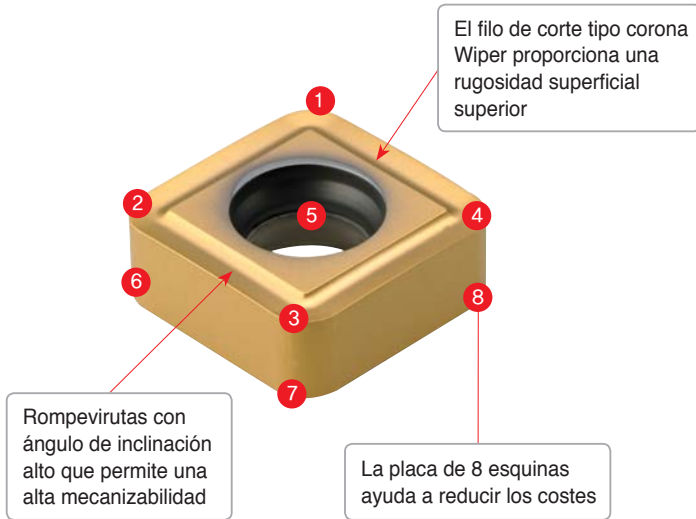


### ➤ Ajuste

- Rango ajustable: 0.1 mm
- Adaptabilidad: menos de 2  $\mu$
- Operación: fácil y simple



**Características de la placa**

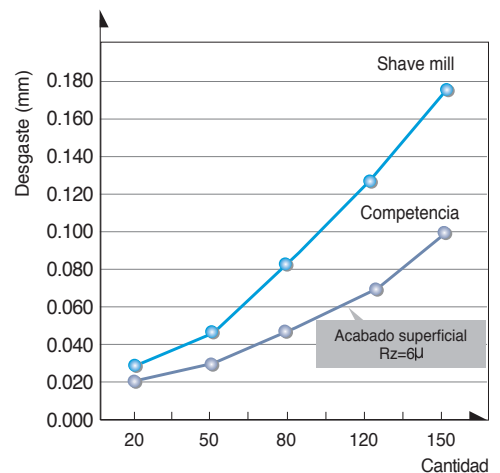


**Condición de Corte Recomendadas**

| Pieza Trabajo | Condicion de Corte |                |         | Calidades     |
|---------------|--------------------|----------------|---------|---------------|
|               | vc (m/min)         | fz (mm/diente) | ap (mm) |               |
| <b>P</b>      | 160~270            | 0.05~0.2       | ~0.5    | <b>PC3700</b> |
| <b>K</b>      | 140~230            | 0.05~0.3       | ~0.5    | <b>PC6510</b> |
|               | 600~1000           | 0.05~0.2       | ~0.5    | <b>DBN920</b> |

**Ejemplo de aplicación**

- **Pieza Trabajo** Cabeza de cilindro (refrentado)
  - **Condiciones de corte** vc = 200, fz = 0.15, ap = 0.5, En seco
  - **Herramientas** Shave Mill SVMM4250R  
Placa PC6510 SNEU120420-MF
- 
- **Pieza Trabajo** FC25(HB250) Cabeza de cilindro (refrentado)
  - **Condiciones de corte** vc = 700, fz = 0.1, ap = 0.5, Dry
  - **Herramientas** Shave Mill SVMM4160R  
Placa DBN920 SNEU1204-cBN



• Resultados

|                    | Vida útil de la herramienta | Acabado superficial | Capacidad de maquina |
|--------------------|-----------------------------|---------------------|----------------------|
| <b>Shave Mill</b>  | 250 pcs                     | Rz = 3µ             | Alto                 |
| <b>Competencia</b> | 180 pcs                     | Rz = 3.5µ           | Normal               |

• Las fresas de cepillar KORLOY garantizan el doble de mecanizabilidad, adaptabilidad y rugosidad superficial que sus competidores, así como el doble de vida útil de la herramienta.

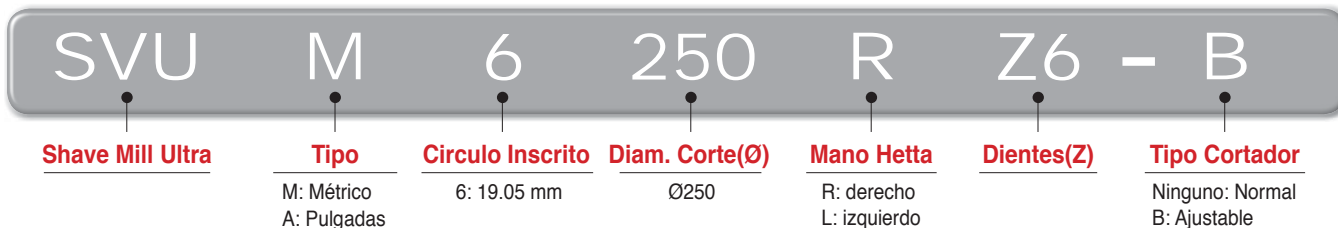
# E Información técnica Shave Mill-Ultra

La vida mejor de herramienta con especial Grado que tiene tanto la dureza y resistencia al desgaste

## Shave Mill-Ultra

- Excelente aspereza superficial para este cortador de acabado cuando aplica a trabajo de pieza pesada
- Fácil de manejar y buena rigidez con el sistema de tornillo simple
- Buena superficie de acabado debido al filo de corte de wiper crown
- La vida larga de herramienta gracias al grado especial que tiene dureza y resistencia al desgaste
- Dos tipos diferentes: Tipo económico y normal y Tipo 'B' que tiene Run-out ajustable

### ➤ Sistema Codificación



### ➤ Sistema Codificación para Insertos



### ➤ Características

**Tipo normal**

Buena rigidez y economica debido a tornillo en el tipo simple.

Mejor rugosidad de la superficie cuando se utiliza sólo una inserción, pero modifica la áp' en virtud de 0.03 mm

**Filo de Corte Ajustable (Tipo B)**

Fácil de manejar el periodo previo a cabo debido a la dureza KORLOY exclusiva de corte de alta pieza del borde especiales

Buen rendimiento de corte y flujo de la viruta debido al rompevirutas positivo ángulo de inclinación

Inserto económico de 4 filos

Excelente rugosidad de la superficie debido al filo wiper crown de vanguardia

**Rango de ajuste**

- Rango: 1.0 mm
- Previsión: En 2 μ

### ➤ Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                |         | Externo | Calidades |
|---------------|--------------------|----------------|---------|---------|-----------|
|               | vc (m/min)         | fz (mm/diente) | ap (mm) |         |           |
| P             | 160~270            | 0.05~0.20      | ~0.50   | Tam use | PC3700    |
|               | 160~270            | 2~5            | ~0.03   | 1use    |           |
| K             | 140~230            | 0.05~0.20      | ~0.50   | Tam use | PC6510    |
|               | 140~230            | 2~5            | ~0.03   | 1use    |           |



# PNH4000/5000

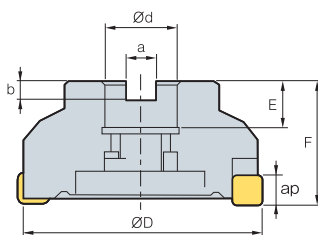


Fig. 1

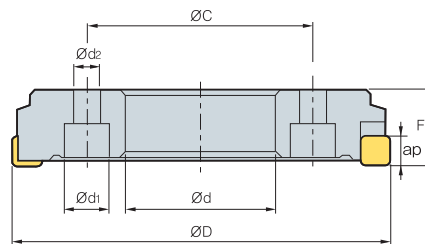


Fig. 2



AA  
90°

- AR: -5°
- RR: -6°

(mm)

| Codigo |         | $\varnothing D$ | $\varnothing d$ | $\varnothing d_1$ | $\varnothing d_2$ | a    | b  | E  | F  | $\varnothing C$ | ap      |      | Fig. |
|--------|---------|-----------------|-----------------|-------------------|-------------------|------|----|----|----|-----------------|---------|------|------|
| PNH    | 4125R/L | 10              | 125             | 38.1              | -                 | 15.9 | 10 | 27 | 63 | -               | Max 0.5 | 3.4  | 1    |
|        | 4160R/L | 14              | 160             | 50.8              | -                 | 19.0 | 11 | 27 | 63 | -               | Max 0.5 | 5.5  | 1    |
|        | 4200R/L | 18              | 200             | 80                | 24                | 14   | -  | -  | 40 | 120             | Max 0.5 | 5.5  | 2    |
|        | 4250R/L | 24              | 250             | 120               | 30                | 18   | -  | -  | 40 | 170             | Max 0.5 | 7.7  | 2    |
|        | 4315R/L | 30              | 315             | 180               | 30                | 18   | -  | -  | 40 | 230             | Max 0.5 | 10.5 | 2    |
|        | 4355R/L | 34              | 355             | 220               | 30                | 18   | -  | -  | 40 | 270             | Max 0.5 | 12.9 | 2    |
|        | 4400R/L | 38              | 400             | 250               | 30                | 18   | -  | -  | 40 | 300             | Max 0.5 | 16.1 | 2    |
|        | 4450R/L | 44              | 450             | 300               | 30                | 18   | -  | -  | 40 | 350             | Max 0.5 | 19.1 | 2    |
| PNH    | 5125R/L | 10              | 125             | 38.1              | -                 | 15.9 | 10 | 27 | 63 | -               | Max 0.5 | 3.4  | 1    |
|        | 5160R/L | 14              | 160             | 50.8              | -                 | 19.0 | 11 | 27 | 63 | -               | Max 0.5 | 5.3  | 1    |
|        | 5200R/L | 18              | 200             | 80                | 24                | 14   | -  | -  | 40 | 120             | Max 0.5 | 5.4  | 2    |
|        | 5250R/L | 24              | 250             | 120               | 30                | 18   | -  | -  | 40 | 170             | Max 0.5 | 7.6  | 2    |
|        | 5315R/L | 30              | 315             | 180               | 30                | 18   | -  | -  | 40 | 230             | Max 0.5 | 10.4 | 2    |
|        | 5355R/L | 34              | 355             | 220               | 30                | 18   | -  | -  | 40 | 270             | Max 0.5 | 12.8 | 2    |
|        | 5400R/L | 38              | 400             | 250               | 30                | 18   | -  | -  | 40 | 300             | Max 0.5 | 15.9 | 2    |
|        | 5450R/L | 44              | 450             | 300               | 30                | 18   | -  | -  | 40 | 350             | Max 0.5 | 18.9 | 2    |

## Insertos disponibles

SNEF



| Codigo | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000 | CN30 | NCM325     | NC5330 | NCM635 | NCM645 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| SNEF   | 435    |      |            |        |        |        |        |        |        |        | ●      |        |          |        |        |      |       |     | E21 |

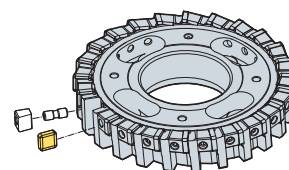
## Adaptadores disponibles

| Codigo     | Adaptadores NC          |
|------------|-------------------------|
| PNH 125R/L | NT*□□(M/U)-FMA38.1-□□ - |
| PNH 160R/L | NT*□□(M/U)-FMA50.8-□□ - |
| PNH 200R/L | - APR200                |
| PNH 250R/L | - APR250                |
| PNH 315R/L | - APR315                |
| PNH 355R/L | - APR355                |
| PNH 400R/L | - APR400                |
| PNH 450R/L | - APR450                |

## Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades     |
|---------------|--------------------|----------------|---------------|
|               | vc (m/min)         | fz (mm/diente) |               |
| <b>K</b>      | 140~230            | 0.05~0.30      | <b>PC6510</b> |
|               | 135~220            | 0.10~0.30      | <b>H01</b>    |
|               | 50~90              | 0.10~0.30      | <b>G10</b>    |

Ensamblado



## Partes

| Especificaciones                     |        |          |      |  |
|--------------------------------------|--------|----------|------|--|
| $\varnothing 125\sim\varnothing 450$ | WPNH4N | DHA0821F | HW40 |  |
| $\varnothing 125\sim\varnothing 450$ | WPNH5N |          |      |  |

Insertos disponibles E21 Detalles del cortador E400~E402

## PPH4000

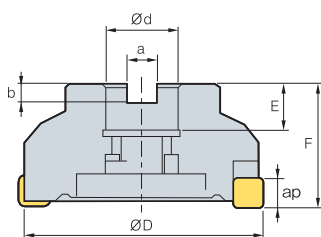


Fig. 1

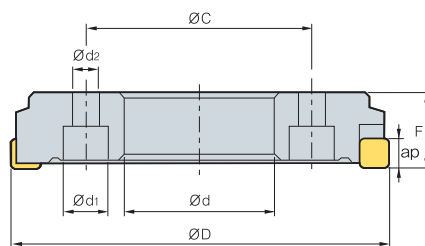


Fig. 2



AA  
90°

• AR: 5°  
• RR: -6°

(mm)

| Codigo      | ØD | Ød  | Ød1  | Ød2 | a  | b    | E  | F  | ØC | ap  | Fig.    |      |   |
|-------------|----|-----|------|-----|----|------|----|----|----|-----|---------|------|---|
| PPH 4125R/L | 10 | 125 | 38.1 | -   | -  | 15.9 | 10 | 27 | 63 | -   | Max 0.5 | 3.4  | 1 |
| 4160R/L     | 14 | 160 | 50.8 | -   | -  | 19.0 | 11 | 27 | 63 | -   | Max 0.5 | 5.3  | 1 |
| 4200R/L     | 18 | 200 | 80   | 24  | 14 | -    | -  | -  | 40 | 120 | Max 0.5 | 5.5  | 2 |
| 4250R/L     | 24 | 250 | 120  | 24  | 14 | -    | -  | -  | 40 | 170 | Max 0.5 | 7.7  | 2 |
| 4315R/L     | 30 | 315 | 180  | 30  | 18 | -    | -  | -  | 40 | 230 | Max 0.5 | 10.5 | 2 |
| 4355R/L     | 34 | 355 | 220  | 30  | 18 | -    | -  | -  | 40 | 270 | Max 0.5 | 13   | 2 |
| 4400R/L     | 38 | 400 | 250  | 30  | 18 | -    | -  | -  | 40 | 300 | Max 0.5 | 16   | 2 |
| 4450R/L     | 44 | 450 | 300  | 30  | 18 | -    | -  | -  | 40 | 350 | Max 0.5 | 19   | 2 |

### Insertos disponibles

SPEN-WC



| Codigo         | Cermet |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|----------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|                | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| SPEN 120416-WC |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | E24 |

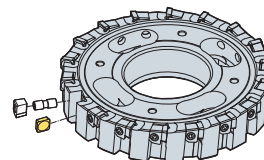
### Adaptadores disponibles

| Codigo      | Adaptadores NC          |
|-------------|-------------------------|
| PPH 4125R/L | NT*□□(M/U)-FMA38.1-□□ - |
| 4160R/L     | NT*□□(M/U)-FMA50.8-□□ - |
| 4200R/L     | - APR200                |
| 4250R/L     | - APR250                |
| 4315R/L     | - APR315                |
| 4355R/L     | - APR355                |
| 4400R/L     | - APR400                |
| 4450R/L     | - APR450                |

### Condiciones de corte recomendadas

| Pieza Trabajo | Condicion de Corte |                | Calidades |
|---------------|--------------------|----------------|-----------|
|               | vc (m/min)         | fz (mm/diente) |           |
| K             | 140~230            | 0.05~0.30      | PC6510    |
|               | 135~220            | 0.10~0.30      | H01       |
|               | 50~90              | 0.10~0.30      | G10       |

Ensamblado



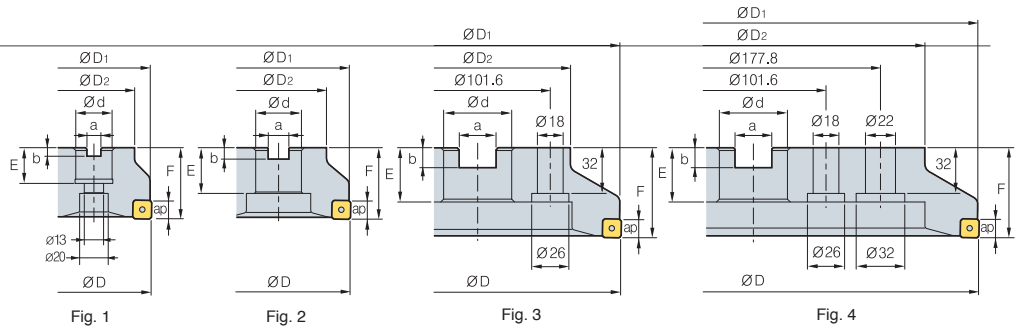
### Partes

| Especificaciones | Cuña     | Tomillo cuña | Llave |
|------------------|----------|--------------|-------|
| Ø125~Ø450        | WPPH4R/L | DHA0821F     | HW40  |

Insertos disponibles E24    Detalles del cortador E400~E402



# SVM(M)4000



(mm)

| Codigo      | ØD  | ØD <sub>1</sub> | ØD <sub>2</sub> | Ød     | a    | b  | E  | F  | ap  | kg   | Fig. |
|-------------|-----|-----------------|-----------------|--------|------|----|----|----|-----|------|------|
| <b>SVM</b>  |     |                 |                 |        |      |    |    |    |     |      |      |
| 4080R/L-Z8  | 80  | 79              | 57              | 25.4   | 12.4 | 6  | 25 | 50 | 1.0 | 1.2  | 1    |
| 4100R/L-Z12 | 100 | 99              | 67              | 31.75  | 14.4 | 8  | 32 | 63 | 1.0 | 2.3  | 1    |
| 4125R/L-Z16 | 125 | 124             | 87              | 38.1   | 16.4 | 10 | 38 | 63 | 1.0 | 3.5  | 2    |
| 4160R/L-Z20 | 160 | 159             | 107             | 50.8   | 16.4 | 11 | 38 | 63 | 1.0 | 5    | 2    |
| 4200R/L-Z24 | 200 | 199             | 130             | 47.625 | 25.7 | 14 | 38 | 63 | 1.0 | 7.2  | 3    |
| 4250R/L-Z30 | 250 | 249             | 180             | 47.625 | 25.7 | 14 | 38 | 63 | 1.0 | 12   | 3    |
| 4315R/L-Z36 | 315 | 314             | 240             | 47.625 | 25.7 | 14 | 38 | 63 | 1.0 | 19.5 | 4    |
| <b>SVMM</b> |     |                 |                 |        |      |    |    |    |     |      |      |
| 4080R/L-Z8  | 80  | 79              | 57              | 27     | 12.4 | 7  | 22 | 50 | 1.0 | 1.2  | 1    |
| 4100R/L-Z12 | 100 | 99              | 67              | 32     | 14.4 | 8  | 28 | 63 | 1.0 | 2.3  | 1    |
| 4125R/L-Z16 | 125 | 124             | 87              | 40     | 16.4 | 9  | 30 | 63 | 1.0 | 3.5  | 2    |
| 4160R/L-Z20 | 160 | 159             | 107             | 40     | 16.4 | 9  | 30 | 63 | 1.0 | 5    | 3    |
| 4200R/L-Z24 | 200 | 199             | 130             | 60     | 25.7 | 14 | 38 | 63 | 1.0 | 7.2  | 3    |
| 4250R/L-Z30 | 250 | 249             | 180             | 60     | 25.7 | 14 | 38 | 63 | 1.0 | 12   | 3    |
| 4315R/L-Z36 | 315 | 314             | 240             | 60     | 25.7 | 14 | 38 | 63 | 1.0 | 19.5 | 4    |

## Insertos disponibles

SNEU-MF SNEU1204ANN-MF SNEU-WMF SNEU-TBW



| Codigo      | Cermet |      | Recubierta |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        | pag. |       |     |
|-------------|--------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|------|-------|-----|
|             | CN2000 | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 |      | ST30A | H01 |
| <b>SNEU</b> |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
| 120420-MF   |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
| 1204ANN-MF  |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
| 1204R-WMF   |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |
| 1204-TBW    |        |      |            |        |        |        |        |        |        |        |        |        |        |          |        |      |       |     |

## Partes

| Especificaciones |       |         |          |          |
|------------------|-------|---------|----------|----------|
| Ø80-Ø315         | WKAJ3 | DTA0619 | XTKA0412 | TW15-100 |

Insertos disponibles E21, E22

## SVUM6000

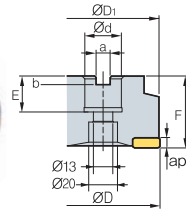


Fig. 1

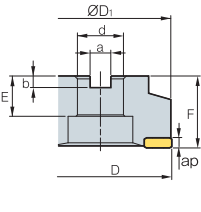


Fig. 2

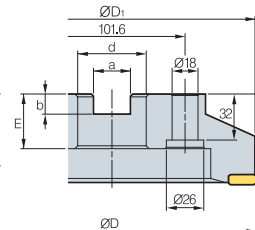


Fig. 3

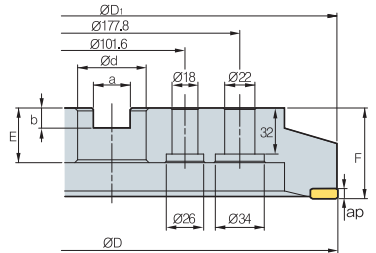


Fig. 4

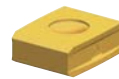
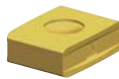
(mm)

| Codigo | ØD         | ØD1 | ØD2 | Ød  | a   | b  | E    | F  | ap | kg | Fig. |      |   |
|--------|------------|-----|-----|-----|-----|----|------|----|----|----|------|------|---|
| SVUM   | 6080R/L-Z4 | 4   | 80  | 79  | 57  | 27 | 12.4 | 7  | 22 | 50 | 0.5  | 1.2  | 1 |
|        | 6100R/L-Z4 | 4   | 100 | 100 | 67  | 32 | 14.4 | 8  | 28 | 63 | 0.5  | 2.3  | 1 |
|        | 6125R/L-Z4 | 4   | 125 | 125 | 87  | 40 | 16.4 | 9  | 30 | 63 | 0.5  | 3.5  | 2 |
|        | 6160R/L-Z4 | 4   | 160 | 160 | 107 | 40 | 16.4 | 9  | 30 | 63 | 0.5  | 5    | 3 |
|        | 6200R/L-Z6 | 6   | 200 | 200 | 130 | 60 | 25.7 | 14 | 38 | 63 | 0.5  | 7.2  | 3 |
|        | 6250R/L-Z6 | 6   | 250 | 250 | 180 | 60 | 25.7 | 14 | 38 | 63 | 0.5  | 12   | 3 |
|        | 6315R/L-Z8 | 8   | 315 | 315 | 240 | 60 | 25.7 | 14 | 38 | 63 | 0.5  | 19.5 | 4 |

### Insertos disponibles

LNCS (R3.0)

LNCS (C1.5)



| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        | Sin Rec. |        |        | pag. |       |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|------|-------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540   | PC5300 | PC5400 |      | ST30A | G10 | H01 |
| LNCS   | 1907-R3.0-WC |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     | E10 |
|        | 1907-C1.5-WC |      |            |        |        |        |        |        |        |        |        |        |          |        |        |      |       |     |     |

### Partes

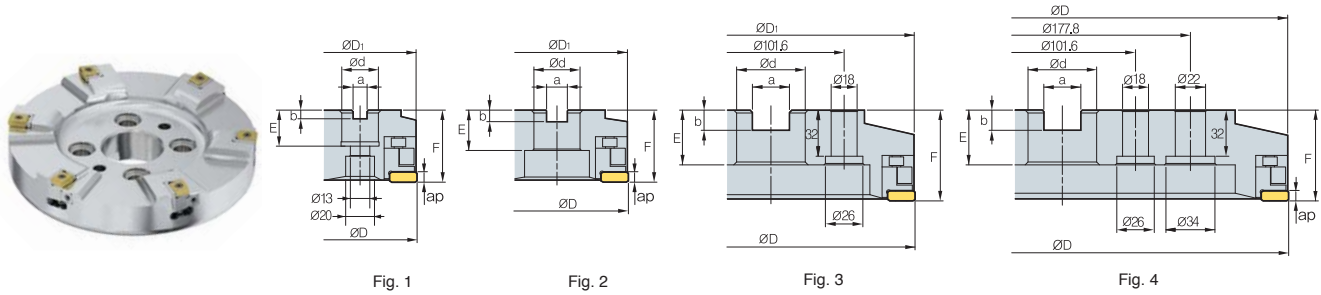
| Especificaciones | Tornillo | Llave    |
|------------------|----------|----------|
| Ø80~Ø315         | FTNA0513 | TW20-100 |

Insertos disponibles E10





# SVUM6000-B



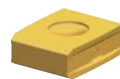
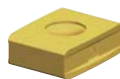
(mm)

| Codigo |              | ØD | ØD1 | ØD2 | Ød  | a  | b    | E  | F  | ap |     | Fig. |   |
|--------|--------------|----|-----|-----|-----|----|------|----|----|----|-----|------|---|
| SVUM   | 6080R/L-Z4-B | 4  | 80  | 79  | 57  | 27 | 12.4 | 7  | 22 | 50 | 0.5 | 1.2  | 1 |
|        | 6100R/L-Z4-B | 4  | 100 | 99  | 67  | 32 | 14.4 | 8  | 28 | 63 | 0.5 | 2.3  | 1 |
|        | 6125R/L-Z4-B | 4  | 125 | 124 | 87  | 40 | 16.4 | 9  | 30 | 63 | 0.5 | 3.5  | 2 |
|        | 6160R/L-Z4-B | 4  | 160 | 160 | 107 | 40 | 16.4 | 9  | 30 | 63 | 0.5 | 5    | 3 |
|        | 6200R/L-Z6-B | 6  | 200 | 200 | 130 | 60 | 25.7 | 14 | 38 | 63 | 0.5 | 7.2  | 3 |
|        | 6250R/L-Z6-B | 6  | 250 | 250 | 180 | 60 | 25.7 | 14 | 38 | 63 | 0.5 | 12   | 3 |
|        | 6315R/L-Z8-B | 8  | 315 | 315 | 240 | 60 | 25.7 | 14 | 38 | 63 | 0.5 | 19.5 | 4 |

## Insertos disponibles

LNCS(R3.0)

LNCS(C1.5)



| Codigo | Cermet       |      | Recubierto |        |        |        |        |        |        |        |        |        |        | Sin Rec. |        |       | pag. |     |     |
|--------|--------------|------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|-------|------|-----|-----|
|        | CN2000       | CN30 | NCM325     | NC5330 | NCM535 | NCM545 | PC2505 | PC2010 | PC3600 | PC3700 | PC6510 | PC9530 | PC9540 | PC5300   | PC5400 | ST30A |      | G10 | H01 |
| LNCS   | 1907-R3.0-WC |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     | E10 |
|        | 1907-C1.5-WC |      |            |        |        |        |        |        |        |        |        |        |        |          |        |       |      |     |     |

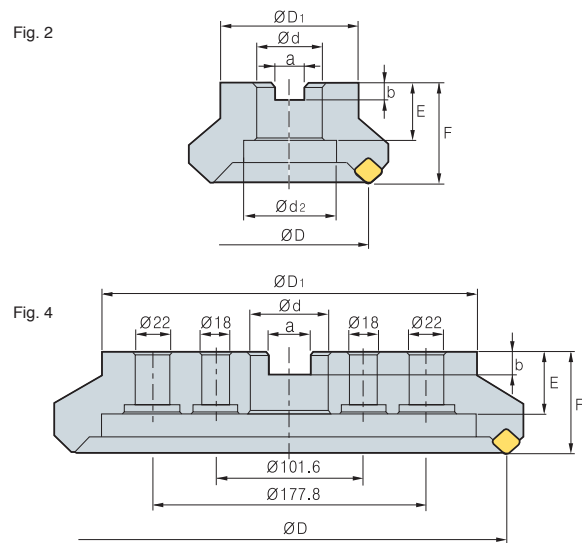
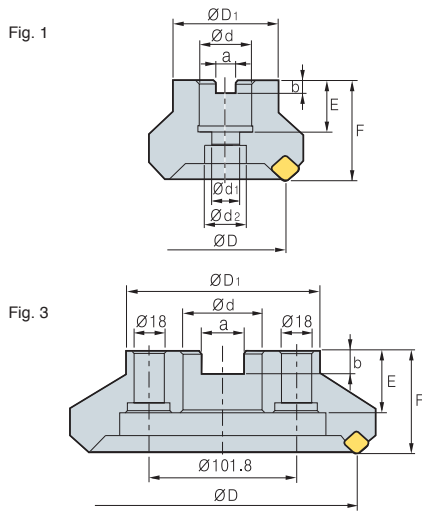
## Partes

| Especificaciones |       |      |          |           |          |          |
|------------------|-------|------|----------|-----------|----------|----------|
| Ø80-Ø315         | LSH4R | WSH4 | DHA0724F | AZ0619F-D | FTNA0512 | TW20-100 |

Insertos disponibles E10

## Inch

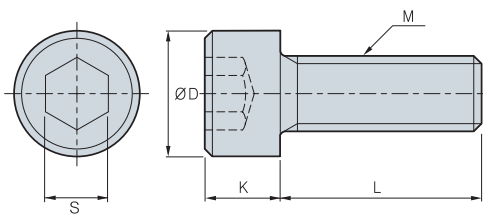
### Especificaciones para Cortadores



### Tipo inch

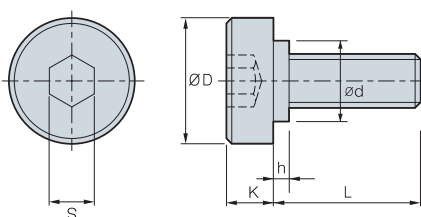
| ØD  | Dimensiones (mm) |      |     |    |    | Fig. | Adaptadores disponibles |
|-----|------------------|------|-----|----|----|------|-------------------------|
|     | Ød               | a    | b   | E  | F  |      |                         |
| 40  | 16               | 8.4  | 5.6 | 18 | 40 | 1    | FMC16, SMA16            |
| 50  | 22               | 10.4 | 6.3 | 20 | 40 | 1    | FMC22                   |
| 63  | 22               | 10.4 | 6.3 | 20 | 40 | 1    | FMC22                   |
| 80  | 25.4             | 9.5  | 6   | 25 | 50 | 1    | FMA25.4                 |
| 100 | 31.75            | 12.7 | 8   | 32 | 50 | 2    | FMA31.75, SMB31.75      |
| 125 | 38.1             | 15.9 | 10  | 38 | 63 | 2    | FMA38.1                 |
| 160 | 50.8             | 19   | 11  | 38 | 63 | 2    | FMA50.8                 |
| 200 | 47.625           | 25.4 | 14  | 38 | 63 | 3    | FMA47.625               |
| 250 | 47.625           | 25.4 | 14  | 38 | 63 | 3    | FMA47.625               |
| 315 | 47.625           | 25.4 | 14  | 38 | 63 | 4    | -                       |

### Perno de Sujeción



| Codigo | ØD | S  | K  | L  | M        | Tamaño Cortador |
|--------|----|----|----|----|----------|-----------------|
| SB0825 | 13 | 6  | 8  | 25 | M08x1.25 | Ø40             |
| SB1025 | 16 | 8  | 10 | 25 | M10x1.50 | Ø50, Ø63        |
| SB1035 | 16 | 8  | 10 | 35 | M10x1.50 | Ø50, Ø63 (HRM)  |
| SB1230 | 18 | 10 | 12 | 30 | M12x1.75 | Ø80             |
| SB1630 | 24 | 14 | 16 | 30 | M16x2.0  | Ø100            |
| SB1645 | 24 | 14 | 16 | 45 | M16x2.0  | Ø80, Ø100 (HRM) |
| SB2040 | 30 | 17 | 20 | 40 | M20x2.5  | Ø125            |

### Tornillo de Sujeción

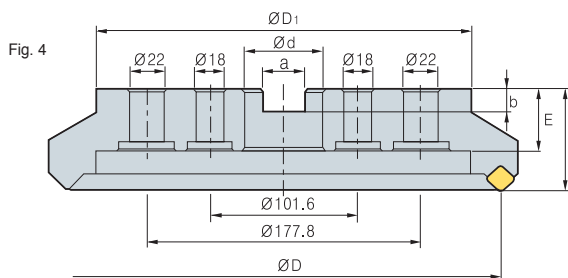
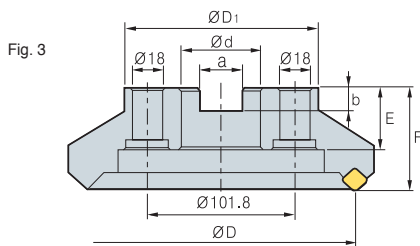
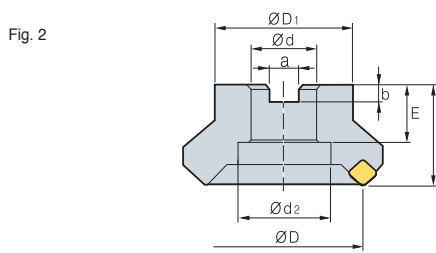
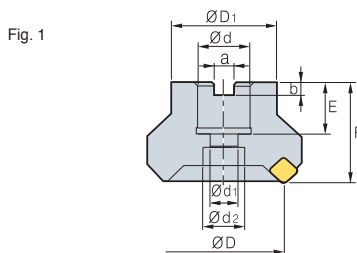


| Codigo   | Dimensiones (mm) |    |    |    |   |    | Tamaño Cortador |
|----------|------------------|----|----|----|---|----|-----------------|
|          | D                | L  | K  | S  | h | d  |                 |
| M8x1.25  | 20               | 20 | 7  | 6  | - | -  | Ø40             |
| M10x1.5  | 28               | 24 | 9  | 8  | - | -  | Ø50, Ø63        |
| M12x1.75 | 33               | 28 | 10 | 10 | 2 | 23 | Ø80             |
| M16x2    | 40               | 32 | 10 | 14 | 5 | 23 | Ø100            |
| M20x2.5  | 50               | 40 | 14 | 17 | 5 | 27 | Ø125            |
| M24x3    | 64               | 46 | 14 | 19 | 9 | 37 | Ø160            |



**Métrico - ISO6462, DIN138**

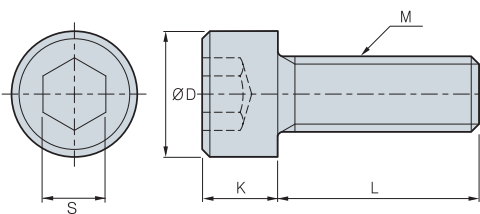
**Especificación de Cortadores**



**Tipo métrico**

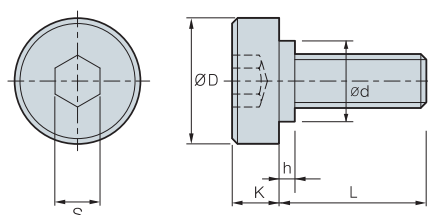
| Dimensiones (mm) |    |      |     |    |    | Fig. | Adaptadores disponibles |    |   |              |
|------------------|----|------|-----|----|----|------|-------------------------|----|---|--------------|
| ØD               | Ød | a    | b   | E  | F  |      |                         |    |   |              |
| 40               | 16 | 8.4  | 5.6 | 18 | 40 | 34   | 9                       | 14 | 1 | FMC16, SMA16 |
| 50               | 22 | 10.4 | 6.3 | 20 | 40 | 42   | 11                      | 18 | 1 | FMC22        |
| 63               | 22 | 10.4 | 6.3 | 20 | 40 | 49   | 11                      | 18 | 1 | FMC22        |
| 80               | 27 | 12.4 | 7   | 22 | 50 | 57   | 14                      | 20 | 1 | FMC27        |
| 100              | 32 | 14.4 | 8   | 28 | 50 | 67   | -                       | 45 | 2 | FMC32        |
| 125              | 40 | 16.4 | 9   | 32 | 63 | 87   | -                       | 56 | 2 | FMB40        |
| 160              | 40 | 16.4 | 9   | 32 | 63 | 107  | -                       | -  | 2 | FMB40        |
| 200              | 60 | 25.7 | 14  | 38 | 63 | 130  | -                       | -  | 3 | FMB60        |
| 250              | 60 | 25.7 | 14  | 38 | 63 | 180  | -                       | -  | 3 | FMB60        |
| 315              | 60 | 25.7 | 14  | 38 | 63 | 240  | -                       | -  | 4 | -            |

**Perno de Sujeción**



| Codigo | ØD | S  | K  | L  | M        | Tamaño Cortador |
|--------|----|----|----|----|----------|-----------------|
| SB0825 | 13 | 6  | 8  | 25 | M08x1.25 | Ø40             |
| SB1025 | 16 | 8  | 10 | 25 | M10x1.50 | Ø50, Ø63        |
| SB1035 | 16 | 8  | 10 | 35 | M10x1.50 | Ø50, Ø63 (HRM)  |
| SB1230 | 18 | 10 | 12 | 30 | M12x1.75 | Ø80             |
| SB1245 | 18 | 10 | 12 | 45 | M12x1.75 | Ø80 (HRM)       |
| SB1630 | 24 | 14 | 16 | 30 | M16x2.0  | Ø100            |
| SB1645 | 24 | 14 | 16 | 45 | M16x2.0  | Ø100 (HRM)      |
| SB2040 | 30 | 17 | 20 | 40 | M20x2.5  | Ø125            |

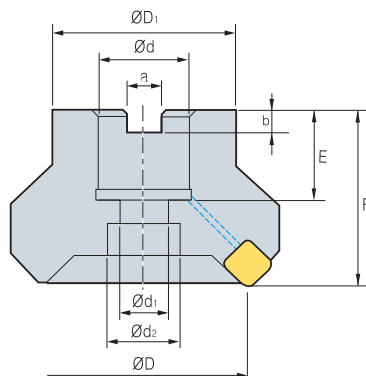
**Tornillo de Sujeción**



| Codigo   | Dimensiones (mm) |    |    |    |   |    | Tamaño Cortador |
|----------|------------------|----|----|----|---|----|-----------------|
|          | D                | L  | K  | S  | h | d  |                 |
| M12x1.75 | 33               | 28 | 10 | 10 | 2 | 23 | Ø80             |
| M16x2    | 40               | 32 | 10 | 14 | 5 | 23 | Ø100            |
| M20x2.5  | 50               | 40 | 14 | 17 | 5 | 27 | Ø125, Ø160      |

## Fijación de la pieza con perno (Línea de refrigerante)

### ➤ Especificación de Cortadores



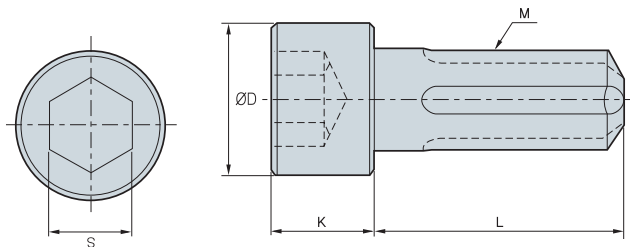
### ➤ Tipo Inch

| Dimensiones (mm) |       |      |     |    |    |     |     |     | Adaptadores disponibles   |
|------------------|-------|------|-----|----|----|-----|-----|-----|---------------------------|
| ØD               | Ød    | a    | b   | E  | F  | ØD1 | Ød1 | Ød2 |                           |
| 40               | 16    | 8.4  | 5.6 | 19 | 40 | 34  | 9   | 14  | FMC16, SMA16              |
| 50               | 22    | 10.4 | 6.3 | 21 | 40 | 42  | 11  | 18  | FMC22                     |
| 63               | 22    | 10.4 | 6.3 | 21 | 40 | 49  | 11  | 18  | FMC22                     |
| 80               | 25.4  | 9.5  | 6   | 24 | 50 | 57  | 14  | 20  | FMA25.4, FMB25.4          |
| 100              | 31.75 | 12.7 | 8   | 32 | 63 | 67  | 18  | 26  | FMA31.75, SMB31.75        |
| 125              | 38.1  | 15.9 | 10  | 35 | 63 | 87  | 22  | 32  | FMA38.1, FMB38.1, FMC38.1 |

### ➤ Tipo métrico

| Dimensiones (mm) |    |      |     |    |    |     |     |     | Adaptadores disponibles |
|------------------|----|------|-----|----|----|-----|-----|-----|-------------------------|
| ØD               | Ød | a    | b   | E  | F  | ØD1 | Ød1 | Ød2 |                         |
| 40               | 16 | 8.4  | 5.6 | 19 | 40 | 34  | 9   | 14  | FMC16, SMA16            |
| 50               | 22 | 10.4 | 6.3 | 21 | 40 | 42  | 11  | 18  | FMC22                   |
| 63               | 22 | 10.4 | 6.3 | 21 | 40 | 49  | 11  | 18  | FMC22                   |
| 80               | 27 | 12.4 | 7.0 | 23 | 50 | 57  | 14  | 20  | FMC27                   |
| 100              | 32 | 14.4 | 8.0 | 25 | 50 | 67  | 18  | 26  | FMC32                   |
| 125              | 40 | 16.4 | 9.0 | 29 | 63 | 87  | 22  | 32  | FMB40/FMC40             |

### ➤ Tornillo de Sujeción



| Codigo | ØD | S  | K  | L  | M        | Tamaño Cortador |
|--------|----|----|----|----|----------|-----------------|
| CB0825 | 13 | 6  | 8  | 25 | M08x1.25 | Ø40             |
| CB1025 | 16 | 8  | 10 | 25 | M10x1.50 | Ø50, Ø63        |
| CB1035 | 16 | 8  | 10 | 35 | M10x1.50 | Ø50, Ø63 (HRM)  |
| CB1230 | 18 | 10 | 12 | 30 | M12x1.75 | Ø80             |
| CB1245 | 18 | 10 | 12 | 45 | M12x1.75 | Ø80 (HRM)       |
| CB1630 | 24 | 14 | 16 | 30 | M16x2.0  | Ø100            |
| CB1645 | 24 | 14 | 16 | 45 | M16x2.0  | Ø100 (HRM)      |
| CB2040 | 30 | 17 | 20 | 40 | M20x2.5  | Ø125            |



# Aplicaciones Herramientas para Engranajes

## Ej. de Aplicación Externa

### Acabado: M20



- **Diam. Cortador:**  $\varnothing 400$
- **No Dientes:** 20
- **Engrane Externo:**  
Cortador de acabado para el procesamiento de engranes que cuenta con un nivel de precisión KS 4
- Cortador que simultáneamente realiza Chafflánes cuando esta en operación



M20XZ130-EX

### Semi-Acabado



- **Diam. Cortador:**  $\varnothing 280$
- **No Dientes:** 48
- Diseñado para el proceso de engranes externos con espiral.
- Se puede trabajar desde la raíz del engranaje con insertos tipo R optimos



M20-M22-ROU

### Desbaste



- **Diam. Cortador:**  $\varnothing 300$
- **No Dientes:** 60
- Alto rango de avance con Baja resistencia de corte debido al diseño en V al montar los insertos



LNE333-02-1



LNE434-02-1



KEL1906-C0.6-MF

## Ej. de Aplicación Interna

### Acabado: M16



- **Diam. Cortador:**  $\varnothing 400$
- **No Dientes:** 20
- **Engrane Interno:**  
Cortador de acabado para el procesamiento de engranes que cuenta con un nivel de precisión KS 4
- Cortador que simultáneamente realiza Chafflánes cuando esta en operación



M16XZ130

### Semi-Acabado



- **Diam. Cortador:**  $\varnothing 280$
- **No Dientes:** 48Tooth
- El cortador de semi-acabado ha sido diseñado para la transformación de la forma externa del engranaje a una forma curvilínea.



M16-M18-ROU



LNE433-R60

### Desbaste



- **Diam. Cortador:**  $\varnothing 560$
- **No Dientes:** 40Tooth
- Puede utilizarse para el proceso de engranes debido al diseño óptimo y al tipo de inserto



KEL1906-C0.6-MF



LNE434-02-1

## Ej. Maquinado y Operación


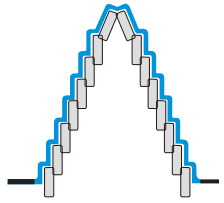

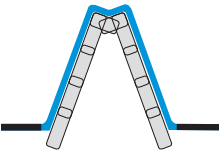

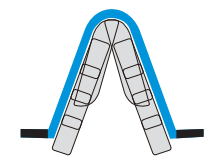

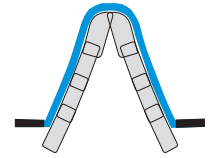

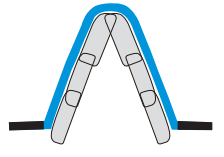

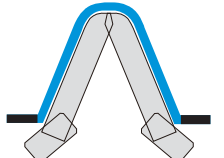

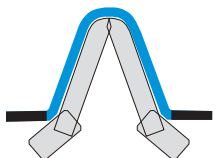

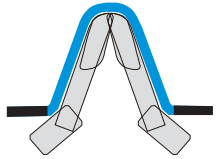


- **Maquina**  
Gleason - PFAUTER Maquina CNC para Hobs  
(Power: 52 kW)
- **Condición de Corte**  
vc = 119.98 m/min (n = 86.8 rpm)  
fz = 0.518 mm/diente (vf = 450 mm/min)  
ae = 36 mm  
Sin refrigerante
- **Herramienta**  
M16-PT-RACK-KOR03 ( $\varnothing 440 \times W90$ )
- **Cortador para Semi-Acabado (baja carga, baja resistencia)**



- **Maquina**  
KARATS (30 kw)
- **Condición de Corte**  
vc = 150 m/min, n = 119 rpm  
fz = 0.09 mm/diente, vf = 81.6 mm/min  
ae = 45 mm  
Sin refrigerante
- **Herramienta**  
Cortador M24 Externo para Semi-Acabado Insertos Utilizados  
M40-ROU (Main),  
CPE424-01 (Flank)

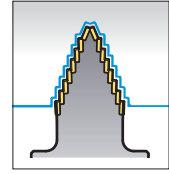
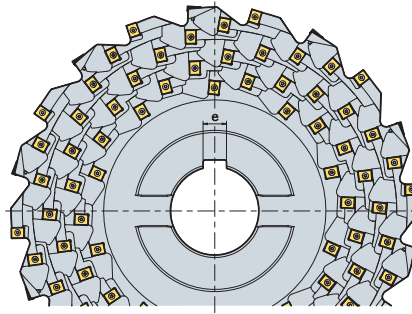
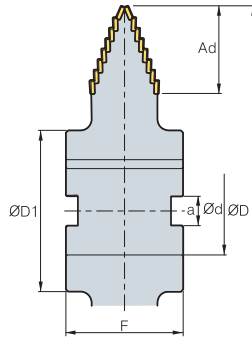
# E Tabla informativa herramientas para engranajes

| Tipo         | Forma del Cortador  | Forma del Filo de Corte   | Tipo                                | Características  |
|--------------|---|---|-------------------------------------|--|
| Desbaste     |    |    | De Paso                             | <ul style="list-style-type: none"> <li>• Trabaja por diente del engranaje tamaño grande.</li> <li>• Baja resistencia en el corte con insertos de diseño de paso.</li> </ul>  |
|              |    |    | En Forma V                          | <ul style="list-style-type: none"> <li>• Baja resistencia en el corte debido al diseño en V del filo al colocar los insertos</li> <li>• Óptima configuración del filo de corte de acuerdo al tipo y la forma del cortador</li> </ul> |
| Semi-Acabado |    |    | Baja Resistencia en el Corte        | <ul style="list-style-type: none"> <li>• Inserto de 4 filos</li> <li>• Rompeviruta 3 dimensional en el flanco</li> <li>• Óptima configuración del filo de corte para una baja resistencia en el corte</li> </ul>                     |
|              |   |   | Engranajes Externos de Alta Rigidez | <ul style="list-style-type: none"> <li>• Ajuste óptimo del inserto tipo R</li> <li>• Cortador para Semi-Acabado de alta rigidez</li> </ul>   |
|              |  |  | Engranajes Internos de Alta Rigidez | <ul style="list-style-type: none"> <li>• Insertos para Semi-Acabado exclusivos para Engranajes Internos</li> <li>• Ajusta óptimo del filo de corte de acuerdo con la forma del diente interno</li> </ul>                             |
| Acabado      |  |  | Engranajes Externos                 | <ul style="list-style-type: none"> <li>• Forma cóncava de la línea del filo de corte de acuerdo al tipo de engranajes externos</li> <li>• Ajuste óptimo del filo de corte de acuerdo con las condiciones de los clientes</li> </ul>  |
|              |  |  | Engranajes internos                 | <ul style="list-style-type: none"> <li>• En la esquinas cuenta con insertos para realizar Chaflánes</li> <li>• Cartuchos ajustables para realizar y controlar el Chaflán</li> </ul>  |
|              |  |  | 2 Tipos                             | <ul style="list-style-type: none"> <li>• Inserto exclusivo para la parte de origen maquinado</li> <li>• Inserto 4 filos</li> </ul>   |

• Ajusta óptimo del filo de dorte de acuerdo con las condiciones de los clientes



# Cortador para Desbaste (Tipo Escalonado)


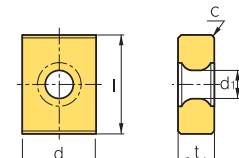

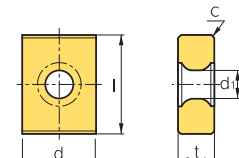


(mm)

| m  |     | ØD  | Ad  | Ød  | ØD1 | a  | e  | F   |
|----|-----|-----|-----|-----|-----|----|----|-----|
| 30 | 96  | 450 | 90  | 100 | 180 | 25 | 14 | 140 |
|    | 108 | 500 | 90  | 100 | 180 | 25 | 14 | 140 |
|    | 120 | 560 | 90  | 120 | 220 | 40 | 32 | 160 |
| 40 | 112 | 450 | 105 | 100 | 180 | 25 | 14 | 140 |
|    | 126 | 500 | 105 | 100 | 180 | 25 | 14 | 140 |
|    | 140 | 560 | 105 | 120 | 220 | 40 | 32 | 160 |
| 50 | 160 | 560 | 119 | 120 | 220 | 40 | 32 | 160 |

## Insertos disponibles

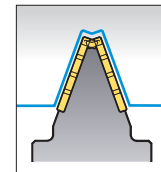
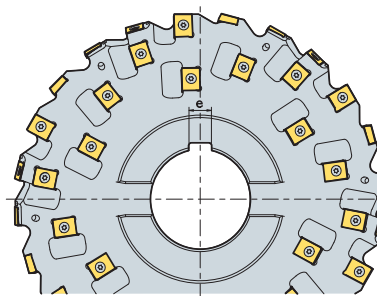
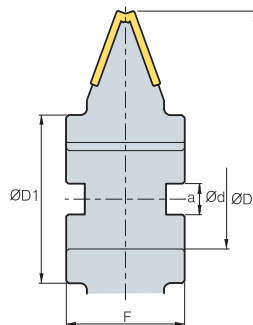
(mm)

| Imagen  | Codigo                        | Recubierto |        |        |        | Sin Rec. |     | Dimensiones |       |      |                |     | Forma   |
|---|-------------------------------|------------|--------|--------|--------|----------|-----|-------------|-------|------|----------------|-----|---|
|   |                               | NC5330     | PC9530 | PC3500 | PC5300 | H01      | G10 | l           | d     | t    | d <sub>i</sub> | c   |   |
| <br>Filo de corte reforzado    | LNE 434-02-1                  |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 6.35 | 5.4            | 0.6 |  |
|   | KEL 1906-C0.6-MF<br>190610-MR |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 6.35 | 5.4            | 0.6 |   |
| <br>Baja resistencia de Cortei | KEL 1906-C0.6-MF<br>190610-MR |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 6.35 | 5.4            | -   |  |
|   |                               |            |        |        |        |          |     |             |       |      |                |     |   |

\* La especificaciones están sujetas a cambios de acuerdo a las condiciones del clientes y condiciones técnicas de KORLOY

◎: 1st Opcion ○: 2nd Opcion

## Cortador para Desbaste (Forma en V)



(mm)

| m  | Tipo |     | ØD  | Ød  | ØD <sub>1</sub> | a  | e  | F   |
|----|------|-----|-----|-----|-----------------|----|----|-----|
| 20 | rack | 48  | 280 | 80  | 135             | 25 | 18 | 95  |
| 22 | rack | 48  | 280 | 80  | 135             | 25 | 18 | 95  |
| 24 | rack | 48  | 320 | 80  | 145             | 25 | 18 | 105 |
| 26 | rack | 60  | 320 | 80  | 145             | 25 | 18 | 105 |
| 28 | rack | 96  | 400 | 100 | 180             | 25 | 24 | 130 |
| 30 | rack | 96  | 400 | 100 | 180             | 25 | 24 | 130 |
| 32 | rack | 96  | 400 | 100 | 180             | 25 | 24 | 130 |
| 34 | rack | 112 | 400 | 100 | 180             | 25 | 24 | 130 |
| 36 | rack | 112 | 450 | 100 | 180             | 25 | 24 | 130 |
| 38 | rack | 112 | 450 | 100 | 180             | 25 | 24 | 130 |
| 40 | rack | 128 | 450 | 100 | 180             | 25 | 24 | 160 |
| 42 | rack | 128 | 450 | 100 | 180             | 25 | 24 | 160 |
| 44 | rack | 128 | 560 | 120 | 220             | 32 | 32 | 160 |
| 46 | rack | 144 | 560 | 120 | 220             | 32 | 32 | 160 |
| 48 | rack | 144 | 560 | 120 | 220             | 32 | 32 | 160 |
| 50 | rack | 144 | 560 | 120 | 220             | 32 | 32 | 160 |

### Insertos disponibles

(mm)

| Imagen                         | Codigo                        | Recubierto |        |        |        | Sin Rec. |     | Dimensiones |       |      |                |     | Forma |
|--------------------------------|-------------------------------|------------|--------|--------|--------|----------|-----|-------------|-------|------|----------------|-----|-------|
|                                |                               | NC5330     | PC9530 | PC3500 | PC5300 | H01      | G10 | l           | d     | t    | d <sub>1</sub> | c   |       |
| <br>Filo de corte reforzado    | LNE 434-02-1                  |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 6.35 | 5.4            | 0.6 |       |
| <br>Baja resistencia de Cortei | LNE 1906-C0.6-MF<br>190610-MR |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 6.35 | 5.4            | 0.6 |       |
| <br>Filo de corte reforzado    | KEL 333-02-1                  |            |        | ○      | ◎      |          |     | 14.3        | 12.7  | 6.35 | 5.8            | 0.8 |       |
| <br>80°                        | CNHQ 1005-C0.5                |            |        |        |        |          |     | 10          | 10    | 5.4  | -              | -   |       |

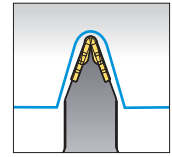
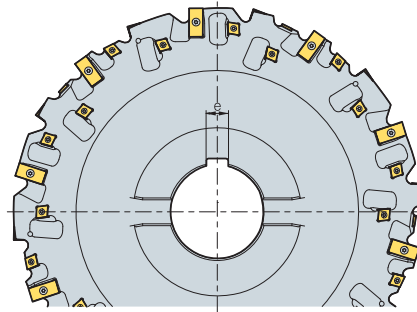
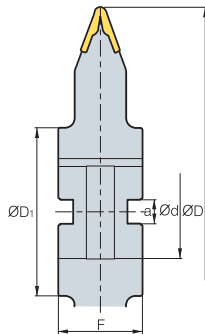
\* La especificaciones están sujetas a cambios de acuerdo a las condiciones del clientes y condiciones técnicas de KORLOY

◎ : 1st Opcion ○ : 2rd Opcion





# Cortador para Semi-Acabado (Baja Resistencia de Corte)



(mm)

| m  | No. de Insertos |    | ØD  | Ød  | ØD1 | a  | e  | F   |
|----|-----------------|----|-----|-----|-----|----|----|-----|
| 6  | 30,60,120       | 18 | 250 | 60  | 100 | 25 | 18 | 70  |
| 8  | 30,60,120       | 18 | 250 | 60  | 100 | 25 | 18 | 80  |
| 10 | 30,60,120       | 24 | 250 | 60  | 100 | 25 | 18 | 80  |
| 12 | 30,60,120       | 24 | 250 | 60  | 100 | 25 | 18 | 90  |
| 14 | 30,60,120       | 24 | 280 | 80  | 135 | 25 | 24 | 95  |
| 16 | 30,60,120       | 32 | 280 | 80  | 135 | 25 | 24 | 100 |
| 18 | 30,60,120       | 32 | 320 | 80  | 145 | 25 | 24 | 105 |
| 20 | 30,60,120       | 64 | 400 | 100 | 180 | 25 | 24 | 110 |
| 22 | 30,60,120       | 64 | 400 | 100 | 180 | 25 | 24 | 110 |
| 24 | 30,60,120       | 64 | 400 | 100 | 180 | 25 | 24 | 120 |

## Insertos disponibles

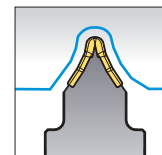
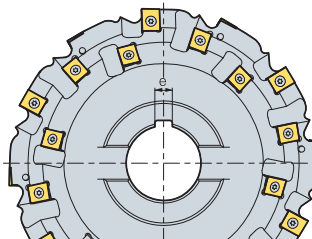
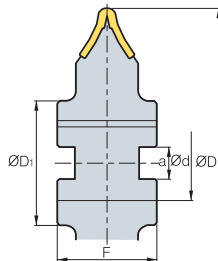
(mm)

| Imagen  | Codigo        | Recubierto |        |        |        | Sin Rec. |      | Dimensiones |      |      |                |      | Forma |
|---------|---------------|------------|--------|--------|--------|----------|------|-------------|------|------|----------------|------|-------|
|         |               | NC5330     | PC9530 | PC3500 | PC5300 | H01      | G10  | l           | d    | t    | d <sub>t</sub> | c    |       |
|         | M6-2ST        |            |        | ○      | ◎      |          |      | 19.05       | 11.6 | 3.8  | 4.4            | 2.25 |       |
|         | M8-2ST        |            |        | ○      | ◎      |          |      | 19.05       | 11.6 | 4    | 4.4            | 3    |       |
|         | M10-2ST       |            |        | ○      | ◎      |          |      | 19.05       | 11.6 | 4.76 | 4.4            | 3.75 |       |
|         | M12-2ST       |            |        | ○      | ◎      |          |      | 19.05       | 14.3 | 6.35 | 5.5            | 4.5  |       |
|         | M14-2ST       |            |        | ○      | ◎      |          |      | 25.4        | 14.3 | 6.35 | 5.5            | 5.25 |       |
|         | M16-2ST       |            |        | ○      | ◎      |          |      | 31.8        | 14.3 | 7.14 | 5.5            | 6    |       |
|         | M18-2ST       |            |        | ○      | ◎      |          |      | 31.8        | 14.3 | 7.14 | 5.5            | 6.75 |       |
|         | M20-2ST       |            |        | ○      | ◎      |          |      | 31.8        | 14.3 | 9.52 | 5.5            | 7.5  |       |
|         | M22-2ST       |            |        | ○      | ◎      |          |      | 31.8        | 14.3 | 9.52 | 5.5            | 8.25 |       |
| M24-2ST |               |            | ○      | ◎      |        |          | 31.8 | 14.3        | 9.52 | 5.5  | 9              |      |       |
|         | KEC 120606-MX |            |        | ○      | ◎      |          |      | 12          | 12.7 | 6.35 | 4.5            | -    |       |
|         | 150708-MX     |            |        | ○      | ◎      |          |      | 15.15       | 15   | 7.6  | 5.8            | -    |       |

\* La especificaciones están sujetas a cambios de acuerdo a las condiciones del clientes y condiciones técnicas de KORLOY

◎ : 1st Opcion ○ : 2rd Opcion

## Cortador para Semi-Acabado (Cortador Externo, Filo de Alta Resistencia)



(mm)

| m  | No. de Insertos |  | ØD  | Ød  | ØD1 | a  | e  | F   |
|----|-----------------|--|-----|-----|-----|----|----|-----|
| 12 | 30, 60, 120     |  | 250 | 60  | 100 | 25 | 14 | 70  |
| 14 | 30, 60, 120     |  | 250 | 60  | 100 | 25 | 14 | 80  |
| 16 | 30, 60, 120     |  | 250 | 60  | 100 | 25 | 14 | 80  |
| 18 | 30, 60, 120     |  | 250 | 60  | 100 | 25 | 14 | 90  |
| 20 | 30, 60, 120     |  | 280 | 80  | 135 | 25 | 18 | 95  |
| 22 | 30, 60, 120     |  | 280 | 80  | 135 | 25 | 18 | 100 |
| 24 | 30, 60, 120     |  | 320 | 80  | 145 | 25 | 18 | 105 |
| 26 | 30, 60, 120     |  | 400 | 100 | 180 | 25 | 24 | 110 |
| 28 | 30, 60, 120     |  | 400 | 100 | 180 | 25 | 24 | 110 |
| 30 | 30, 60, 120     |  | 400 | 100 | 180 | 25 | 24 | 120 |
| 32 | 30, 60, 120     |  | 400 | 100 | 180 | 25 | 24 | 130 |
| 34 | 30, 60, 120     |  | 400 | 100 | 180 | 25 | 24 | 130 |

### Insertos disponibles

(mm)

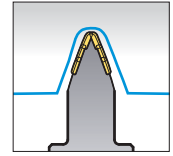
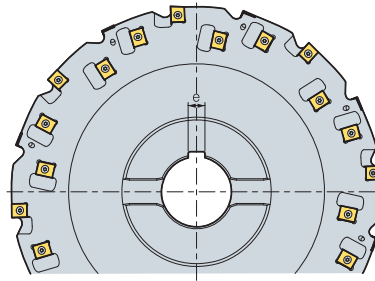
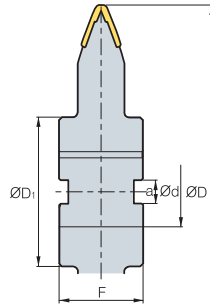
| Imagen | Codigo           | Recubierta |        |        |        | Sin Rec. |     | Dimensiones |       |      |     |     |     | Forma |
|--------|------------------|------------|--------|--------|--------|----------|-----|-------------|-------|------|-----|-----|-----|-------|
|        |                  | NC5330     | PC9530 | PC3500 | PC5300 | H01      | G10 | l           | d     | t    | d1  | R   | c   |       |
|        | M8-ROU           |            |        | ○      | ◎      |          |     | 15.875      | 11    | 4.76 | 4.6 | 4.6 | -   |       |
|        | M12-M14-ROU      |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 6.35 | 5.4 | 5.4 | -   |       |
|        | M16-M18-ROU      |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 7    | 5.4 | 5.4 | -   |       |
|        | M20-M22-ROU      |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 7.94 | 5.4 | 5.4 | -   |       |
|        | M40-ROU          |            |        | ○      | ◎      |          |     | 25.4        | 14.29 | 9.52 | 5.4 | 5.4 | -   |       |
|        | LNE 434-02-1     |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 6.35 | 5.4 | -   | 0.6 |       |
|        | KEL 1906-C0.6-MF |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 6.35 | 5.4 | -   | 0.6 |       |
|        | KEL 190610-MR    |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 6.35 | 5.4 | -   | -   |       |

\* La especificaciones están sujetas a cambios de acuerdo a las condiciones del clientes y condiciones técnicas de KORLOY

◎ : 1st Opcion ○ : 2rd Opcion



# Cortador para Semi-Acabado (Cortador Externo, Filo de Alta resistencia)



(mm)

| m  | No. de Insertos |    | ØD  | Ød  | ØD1 | a  | e  | F   |
|----|-----------------|----|-----|-----|-----|----|----|-----|
| 12 | 30,60,120       | 24 | 250 | 60  | 100 | 25 | 14 | 70  |
| 14 | 30,60,120       | 36 | 250 | 60  | 100 | 25 | 14 | 80  |
| 16 | 30,60,120       | 36 | 250 | 60  | 100 | 25 | 14 | 80  |
| 18 | 30,60,120       | 36 | 250 | 60  | 100 | 25 | 14 | 90  |
| 20 | 30,60,120       | 48 | 280 | 80  | 135 | 25 | 18 | 95  |
| 22 | 30,60,120       | 48 | 280 | 80  | 135 | 25 | 18 | 100 |
| 24 | 30,60,120       | 48 | 320 | 80  | 145 | 25 | 18 | 105 |
| 26 | 30,60,120       | 72 | 400 | 100 | 180 | 25 | 24 | 110 |
| 28 | 30,60,120       | 72 | 400 | 100 | 180 | 25 | 24 | 110 |
| 30 | 30,60,120       | 72 | 400 | 100 | 180 | 25 | 24 | 120 |
| 32 | 30,60,120       | 84 | 400 | 100 | 180 | 25 | 24 | 130 |
| 34 | 30,60,120       | 84 | 400 | 100 | 180 | 25 | 24 | 130 |

## Insertos disponibles

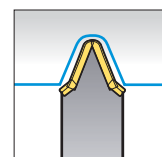
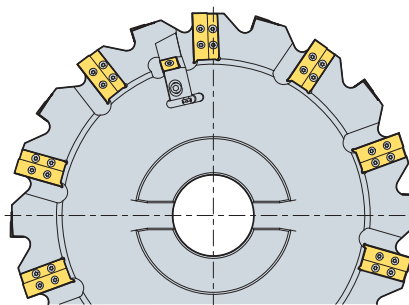
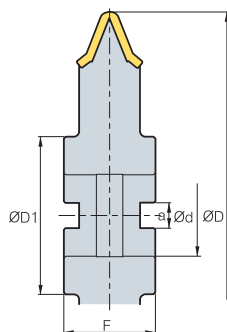
(mm)

| Imagen | Codigo      | Recubierto |        |        |        | Sin Rec. |     | Dimensiones |       |      |     |     | Forma |
|--------|-------------|------------|--------|--------|--------|----------|-----|-------------|-------|------|-----|-----|-------|
|        |             | NC5330     | PC9530 | PC3500 | PC5300 | H01      | G10 | l           | d     | t    | d1  | c   |       |
|        | M8-ROU      |            |        | ○      | ◎      |          |     | 15.875      | 11    | 4.76 | 4.6 | 2   |       |
|        | M12-M14-ROU |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 6.35 | 5.4 | 3   |       |
|        | M16-M18-ROU |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 7    | 5.4 | 5   |       |
|        | M20-M22-ROU |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 7.94 | 5.4 | 7   |       |
|        | M40-ROU     |            |        | ○      | ◎      |          |     | 25.4        | 14.29 | 9.52 | 5.4 | 10  |       |
|        | LNE 433-R80 |            |        | ○      | ◎      |          |     | 19.05       | 14.29 | 5.56 | 5.4 | 2.5 |       |

\* La especificaciones están sujetas a cambios de acuerdo a las condiciones del clientes y condiciones técnicas de KORLOY

◎ : 1st Opcion ○ : 2nd Opcion

## Cortador para Acabado (Cortador Externo, de 1 paso)



(mm)

| m  |    | ØD  | Ød | ØD <sub>1</sub> | a  | F  |
|----|----|-----|----|-----------------|----|----|
| 6  | 20 | 400 | 80 | 155             | 25 | 90 |
| 8  | 20 | 400 | 80 | 155             | 25 | 90 |
| 10 | 20 | 400 | 80 | 155             | 25 | 90 |
| 12 | 20 | 400 | 80 | 155             | 25 | 90 |
| 14 | 20 | 400 | 80 | 155             | 25 | 90 |
| 16 | 20 | 400 | 80 | 155             | 25 | 90 |
| 18 | 20 | 400 | 80 | 155             | 25 | 90 |
| 20 | 20 | 400 | 80 | 155             | 25 | 90 |
| 22 | 20 | 400 | 80 | 155             | 25 | 90 |
| 24 | 20 | 400 | 80 | 155             | 25 | 90 |

### Insertos disponibles

(mm)

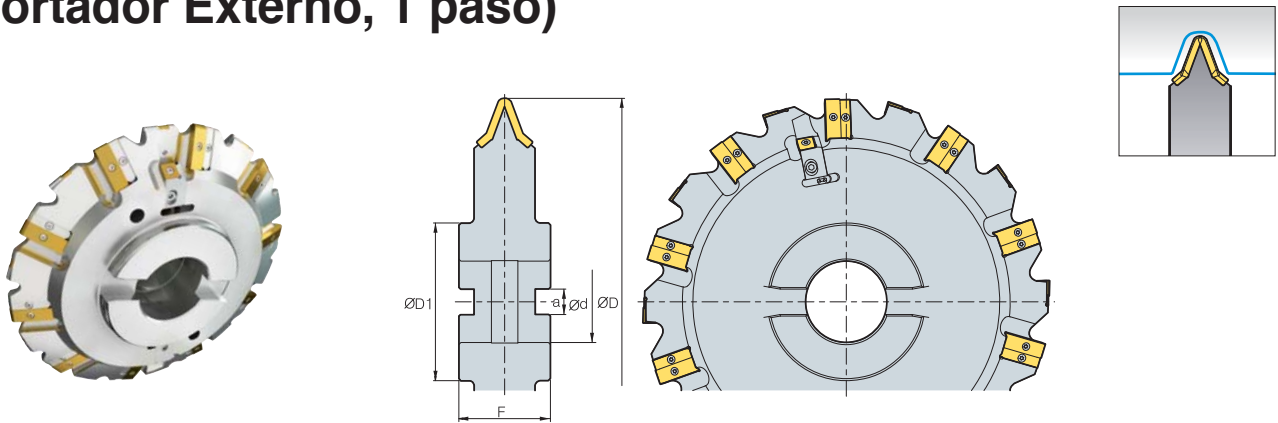
| Imagen | Codigo         | Recubierto |        |        |        | Sin Rec. |     | Dimensiones |        |      |                |      | Forma |
|--------|----------------|------------|--------|--------|--------|----------|-----|-------------|--------|------|----------------|------|-------|
|        |                | NC5330     | PC9530 | PC3500 | PC5300 | H01      | G10 | l           | d      | t    | d <sub>1</sub> | R    |       |
|        | M6             |            |        | ○      | ◎      |          |     | 19          | 14.3   | 5    | 5.5            | 2.25 |       |
|        | M8             |            |        | ○      | ◎      |          |     | 27          | 14.3   | 5.4  | 5.5            | 3    |       |
|        | M10            |            |        | ○      | ◎      |          |     | 29          | 14.3   | 6.35 | 5.5            | 3.75 |       |
|        | M12            |            |        | ○      | ◎      |          |     | 33          | 14.3   | 6.35 | 5.5            | 4.5  |       |
|        | M14            |            |        | ○      | ◎      |          |     | 39          | 14.3   | 6.35 | 5.5            | 5.25 |       |
|        | M16            |            |        | ○      | ◎      |          |     | 43          | 14.3   | 7.94 | 5.5            | 6    |       |
|        | M18            |            |        | ○      | ◎      |          |     | 50          | 14.3   | 7.94 | 5.5            | 6.75 |       |
|        | M20            |            |        | ○      | ◎      |          |     | 54          | 14.3   | 9.53 | 5.5            | 7.5  |       |
|        | M24            |            |        | ○      | ◎      |          |     | 64          | 14.3   | 9.53 | 5.5            | 9    |       |
|        | SNEQ 1507-C0.8 |            |        | ○      | ◎      |          |     | 15.875      | 15.875 | 7.94 | -              | -    |       |

※ La especificación están sujetas a cambios de acuerdo a las condiciones del clientes y condiciones técnicas de KORLOY

◎ : 1st Opcion ○ : 2rd Opcion



# Cortador para Acabado (Cortador Externo, 1 paso)



(mm)

| m  |    | ØD  | Ød | ØD <sub>1</sub> | a  | F  |
|----|----|-----|----|-----------------|----|----|
| 6  | 20 | 400 | 80 | 155             | 25 | 90 |
| 8  | 20 | 400 | 80 | 155             | 25 | 90 |
| 10 | 20 | 400 | 80 | 155             | 25 | 90 |
| 12 | 20 | 400 | 80 | 155             | 25 | 90 |
| 14 | 20 | 400 | 80 | 155             | 25 | 90 |
| 16 | 20 | 400 | 80 | 155             | 25 | 90 |
| 18 | 20 | 400 | 80 | 155             | 25 | 90 |
| 20 | 20 | 400 | 80 | 155             | 25 | 90 |
| 22 | 20 | 400 | 80 | 155             | 25 | 90 |
| 24 | 20 | 400 | 80 | 155             | 25 | 90 |

## Insertos disponibles

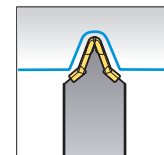
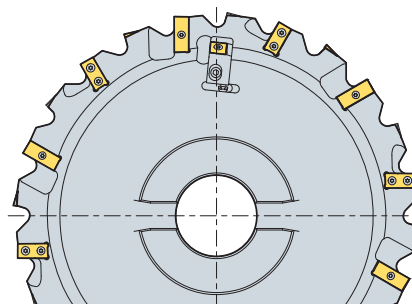
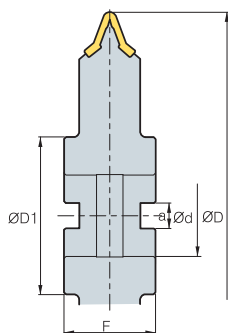
(mm)

| Imagen | Codigo | Recubierto |        |        |        | Sin Rec. |     | Dimensiones |        |      |                |      | Forma |
|--------|--------|------------|--------|--------|--------|----------|-----|-------------|--------|------|----------------|------|-------|
|        |        | NC5330     | PC9530 | PC3500 | PC5300 | H01      | G10 | l           | d      | t    | d <sub>1</sub> | R    |       |
|        | M6     |            |        | ○      | ⊙      |          |     | 19          | 14.3   | 5    | 5.5            | 2.25 |       |
|        | M8     |            |        | ○      | ⊙      |          |     | 27          | 14.3   | 5.4  | 5.5            | 3    |       |
|        | M10    |            |        | ○      | ⊙      |          |     | 29          | 14.3   | 6.35 | 5.5            | 3.75 |       |
|        | M12    |            |        | ○      | ⊙      |          |     | 33          | 14.3   | 6.35 | 5.5            | 4.5  |       |
|        | M14    |            |        | ○      | ⊙      |          |     | 39          | 14.3   | 6.35 | 5.5            | 5.25 |       |
|        | M16    |            |        | ○      | ⊙      |          |     | 43          | 14.3   | 7.94 | 5.5            | 6    |       |
|        | M18    |            |        | ○      | ⊙      |          |     | 50          | 14.3   | 7.94 | 5.5            | 6.75 |       |
|        | M20    |            |        | ○      | ⊙      |          |     | 54          | 14.3   | 9.53 | 5.5            | 7.5  |       |
|        | M22    |            |        | ○      | ⊙      |          |     | 57          | 14.3   | 9.53 | 5.5            | 8.25 |       |
|        | M24    |            |        | ○      | ⊙      |          |     | 64          | 14.3   | 9.53 | 5.5            | 9    |       |
|        | SNEQ   | 1507-C0.8  |        | ○      | ⊙      |          |     | 15.875      | 15.875 | 7.94 | -              | -    |       |

\* La especificaciones están sujetas a cambios de acuerdo a las condiciones del clientes y condiciones técnicas de KORLOY

⊙ : 1st Opcion ○ : 2nd Opcion

## Cortador para Acabado (2 Tipos Cortador Externo/Interno)



(mm)

| m  |    | ØD  | Ød | ØD <sub>1</sub> | a  | F  |
|----|----|-----|----|-----------------|----|----|
| 6  | 24 | 400 | 80 | 155             | 25 | 90 |
| 8  | 24 | 400 | 80 | 155             | 25 | 90 |
| 10 | 24 | 400 | 80 | 155             | 25 | 90 |
| 12 | 24 | 400 | 80 | 155             | 25 | 90 |
| 14 | 24 | 400 | 80 | 155             | 25 | 90 |
| 16 | 24 | 400 | 80 | 155             | 25 | 90 |
| 18 | 24 | 400 | 80 | 155             | 25 | 90 |
| 20 | 24 | 400 | 80 | 155             | 25 | 90 |
| 22 | 24 | 400 | 80 | 155             | 25 | 90 |
| 24 | 24 | 400 | 80 | 155             | 25 | 90 |

### Insertos disponibles

(mm)

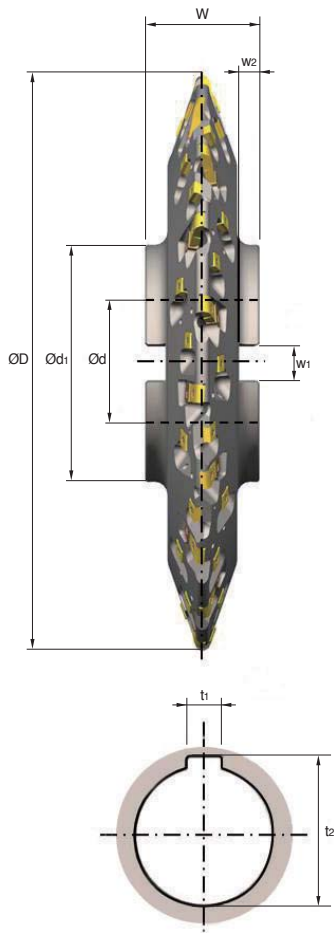
| Imagen  | Codigo         | Recubierto |        |        |        | Sin Rec. |      | Dimensiones |        |      |                |      | Forma |
|---------|----------------|------------|--------|--------|--------|----------|------|-------------|--------|------|----------------|------|-------|
|         |                | NC5330     | PC9530 | PC3500 | PC5300 | H01      | G10  | l           | d      | t    | d <sub>1</sub> | R    |       |
|         | M6             |            | ○      |        | ⊙      |          |      | 19          | 14.3   | 5    | 5.5            | 2.25 |       |
|         | M8             |            | ○      |        | ⊙      |          |      | 27          | 14.3   | 5.4  | 5.5            | 3    |       |
|         | M10            |            | ○      |        | ⊙      |          |      | 29          | 14.3   | 6.35 | 5.5            | 3.75 |       |
|         | M12            |            | ○      |        | ⊙      |          |      | 33          | 14.3   | 6.35 | 5.5            | 4.5  |       |
|         | M14            |            | ○      |        | ⊙      |          |      | 39          | 14.3   | 6.35 | 5.5            | 5.25 |       |
|         | M16            |            | ○      |        | ⊙      |          |      | 43          | 14.3   | 7.94 | 5.5            | 6    |       |
|         | M18            |            | ○      |        | ⊙      |          |      | 50          | 14.3   | 7.94 | 5.5            | 6.75 |       |
|         | M20            |            | ○      |        | ⊙      |          |      | 54          | 14.3   | 9.53 | 5.5            | 7.5  |       |
|         | M22            |            | ○      |        | ⊙      |          |      | 57          | 14.3   | 9.53 | 5.5            | 8.25 |       |
|         | SNEQ 1507-C0.8 |            | ○      |        | ⊙      |          |      | 15.875      | 15.875 | 7.94 | -              | -    |       |
|         | M6-2ST         |            |        |        |        |          |      | 19.05       | 11.6   | 3.8  | 4.4            | 2.25 |       |
|         | M8-2ST         |            |        |        |        |          |      | 19.05       | 11.6   | 4    | 4.4            | 3    |       |
|         | M10-2ST        |            |        |        |        |          |      | 19.05       | 11.6   | 4.76 | 4.4            | 3.75 |       |
|         | M12-2ST        |            |        |        |        |          |      | 19.05       | 14.3   | 6.35 | 5.5            | 4.5  |       |
|         | M14-2ST        |            |        |        |        |          |      | 25.4        | 14.3   | 6.35 | 5.5            | 5.25 |       |
|         | M16-2ST        |            |        |        |        |          |      | 31.8        | 14.3   | 7.14 | 5.5            | 6    |       |
|         | M18-2ST        |            |        |        |        |          |      | 31.8        | 14.3   | 7.14 | 5.5            | 6.75 |       |
|         | M20-2ST        |            |        |        |        |          |      | 31.8        | 14.3   | 9.52 | 5.5            | 7.5  |       |
|         | M22-2ST        |            |        |        |        |          |      | 31.8        | 14.3   | 9.52 | 5.5            | 8.25 |       |
| M24-2ST |                |            |        |        |        |          | 31.8 | 14.3        | 9.52   | 5.5  | 9              |      |       |

※ La especificaciones están sujetas a cambios de acuerdo a las condiciones del clientes y condiciones técnicas de KORLOY

⊙ : 1st Opcion ○ : 2rd Opcion



**➤ Especificación del Cortador**



**Tipo del cortador**

- |                                   |  |                                  |
|-----------------------------------|--|----------------------------------|
| <input type="checkbox"/> Desbaste | <input type="checkbox"/> Semi-Acabado              | <input type="checkbox"/> Acabado |
| <input type="checkbox"/> Paso     | <input type="checkbox"/> Baja Resistencia del Filo | <input type="checkbox"/> 1 Paso  |
| <input type="checkbox"/> Forma V  | <input type="checkbox"/> Alta rigidez del Filo     | <input type="checkbox"/> 2 Paso  |

■ Existencias para acabado (una cara) (mm) :

■ Diámetro externo ØD (mm) :

■ Diámetro del agujero. Ød (mm) :

■ Diámetro del eje. Ød1 (mm) :

■ Anchura del Cortador W (mm) :

■ Cuñero Radial w1 (mm) :

■ Cuñero Radial w2 (mm) :

■ Cuñero Axial t1 (mm) :

■ Cuñero Axial t2 (mm) :

**➤ Datos del engrane**

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Engrane Exterior | <input type="checkbox"/> Engrane Interior | <input type="checkbox"/> Estante de Engranés |
|---|---|--|

■ Modulo M:

■ NO. de Dientes Z (mm):

■ Angulo de Presion  $\alpha$  (°):

■ Angulo de la Helice  $\beta$  (°):

■ Adicion l coeficiente de Modificacion x:

■ Tip diámetro da (mm):

■ Raiz del Diametro  $d_f$  (mm):

■ Raiz del Radio  $\rho_{fp}$  (mm)

■ Longitud de la base  $W_k$  (mm)

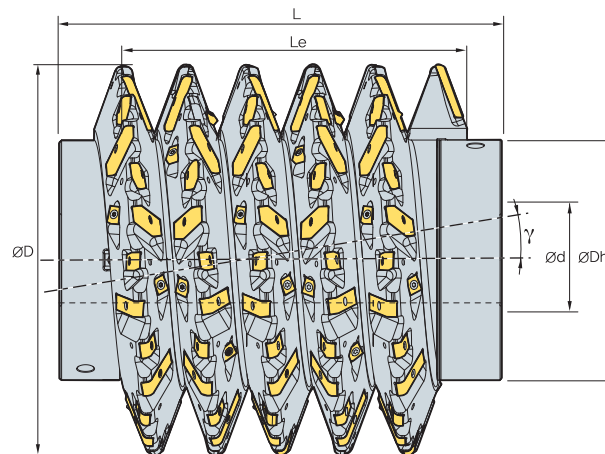
■ No. de medida del diente K:

■ Dimension de la esfera  $M_d$  (mm):

■ Diámetro Esférico  $D_M$  (mm):

■ Calidad del engrane (DIN, JIS):

# HOB indexable



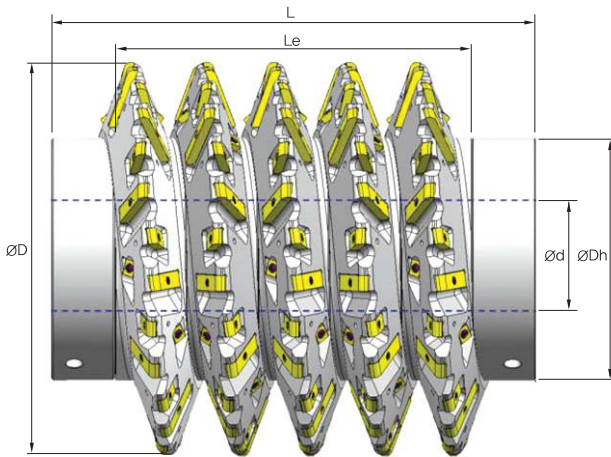
(mm)

| Módulo de engrane | ØD  | ØDh | Ød  | N.º segm. (Paso) | Largo | Inserto de segmento | Total de insertos | γ (El ángulo de incidencia) |
|-------------------|-----|-----|-----|------------------|-------|---------------------|-------------------|-----------------------------|
| 6                 | 180 | 125 | 40  | 6                | (113) | 15                  | 90                | 2.084                       |
|                   | 210 | 125 | 50  | 6                | (113) | 17                  | 102               | 1.763                       |
|                   | 240 | 160 | 60  | 6                | (113) | 19                  | 114               | 1.528                       |
| 7                 | 180 | 125 | 40  | 6                | (132) | 15                  | 90                | 2.469                       |
|                   | 210 | 125 | 50  | 6                | (132) | 17                  | 102               | 2.084                       |
|                   | 240 | 160 | 60  | 6                | (132) | 19                  | 114               | 1.803                       |
| 8                 | 210 | 125 | 50  | 6                | (151) | 17                  | 102               | 2.413                       |
|                   | 240 | 160 | 60  | 6                | (151) | 19                  | 114               | 2.084                       |
|                   | 270 | 180 | 80  | 6                | (151) | 21                  | 126               | 1.834                       |
| 9                 | 210 | 125 | 50  | 6                | (169) | 17                  | 102               | 2.751                       |
|                   | 240 | 160 | 60  | 6                | (169) | 19                  | 114               | 2.372                       |
|                   | 270 | 180 | 80  | 6                | (169) | 21                  | 126               | 2.084                       |
| 10                | 210 | 125 | 50  | 6                | (189) | 17                  | 102               | 3.099                       |
|                   | 240 | 160 | 60  | 6                | (189) | 19                  | 114               | 2.666                       |
|                   | 270 | 180 | 80  | 6                | (189) | 21                  | 126               | 2.339                       |
| 12                | 240 | 140 | 60  | 6                | (226) | 18                  | 108               | 3.276                       |
|                   | 270 | 180 | 80  | 6                | (226) | 22                  | 132               | 2.866                       |
|                   | 350 | 215 | 80  | 6                | (226) | 26                  | 156               | 2.149                       |
| 14                | 270 | 180 | 80  | 6                | (264) | 22                  | 132               | 3.415                       |
|                   | 350 | 215 | 80  | 6                | (264) | 26                  | 156               | 2.547                       |
| 16                | 270 | 160 | 80  | 6                | (302) | 22                  | 132               | 3.989                       |
|                   | 350 | 215 | 80  | 6                | (302) | 26                  | 156               | 2.959                       |
| 18                | 270 | 145 | 80  | 5                | (283) | 22                  | 110               | 4.589                       |
|                   | 350 | 215 | 80  | 5                | (283) | 26                  | 130               | 3.383                       |
| 20                | 350 | 215 | 80  | 5                | (314) | 26                  | 130               | 3.823                       |
|                   | 450 | 265 | 100 | 5                | (314) | 34                  | 170               | 2.866                       |





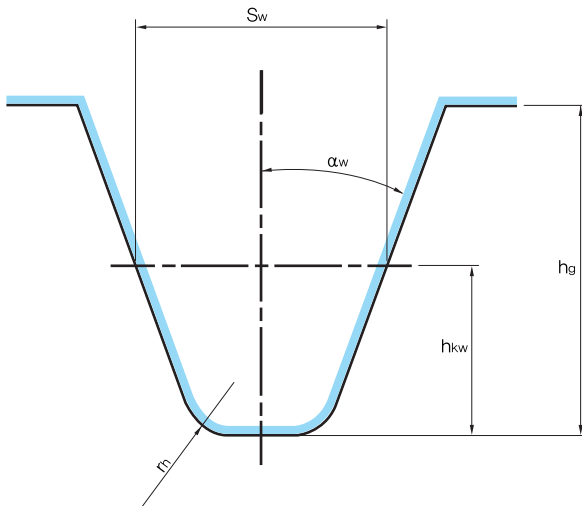
**HOB indexable**



**Especificación de herramientas**

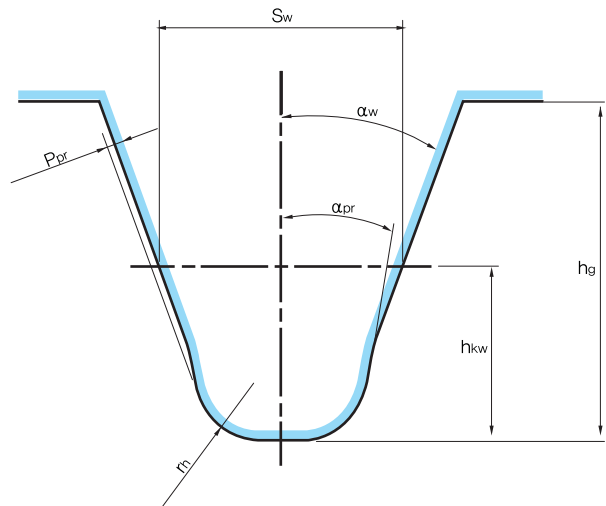
- Diámetro externo  $\text{ØD}$  (mm) : \_\_\_\_\_
- Diámetro taladrado  $\text{Ød}$  (mm) : \_\_\_\_\_
- Diámetro de cubo  $\text{ØDh}$  (mm) : \_\_\_\_\_
- Larga de herramienta  $L$  (mm) : \_\_\_\_\_
- Larga de corte  $L_e$  (mm) : \_\_\_\_\_
- Dirección espiral RH/LH : \_\_\_\_\_
- La clase de calidad acc. a DIN 3968 : \_\_\_\_\_

**Perfil de herramienta (Módulo m6 ~)**



- Módulo  $M$  : \_\_\_\_\_
- Addendum  $h_{kw}$  (mm) : \_\_\_\_\_
- El espesor de dientes  $S_w$  (mm) : \_\_\_\_\_
- La profundidad de dientes  $h_g$  (mm) : \_\_\_\_\_

**Perfil de herramienta de desbaste (Módulo m8~)**

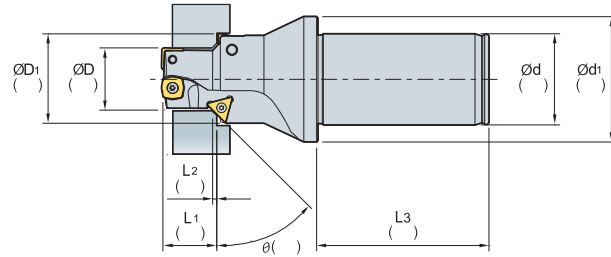


- Ángulo de presión  $\alpha_w$  (mm) : \_\_\_\_\_
- El monto de protuberancia  $P_{pr}$  (mm) : \_\_\_\_\_
- Ángulo de protuberancia  $\alpha_{pr}$  (mm) : \_\_\_\_\_
- Radio de la punta  $r_h$  (mm) : \_\_\_\_\_

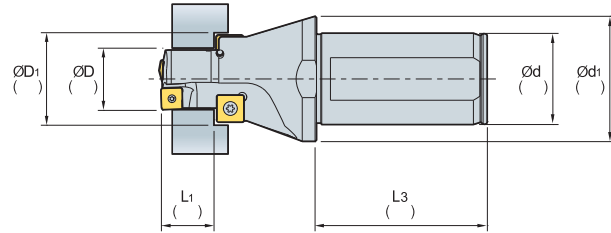
# E Modelo orden especial de herramientas especiales de mandrinado

## Modelo de pedido herramienta especial taladro y fresado multi proposito

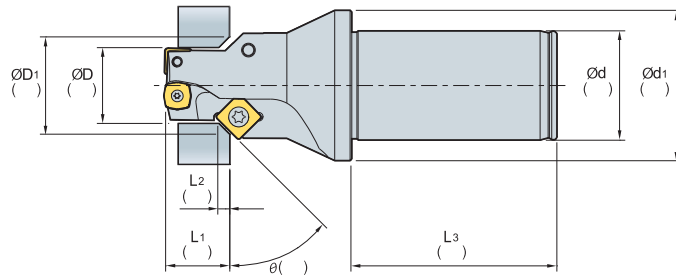
### Taladrado, chaflán, escariado



### Taladrado, escariado



### Taladrado, chaflán



\* Ítems a encargar disponibles basados en diseños arriba indicados

## Insertos disponibles

(mm)

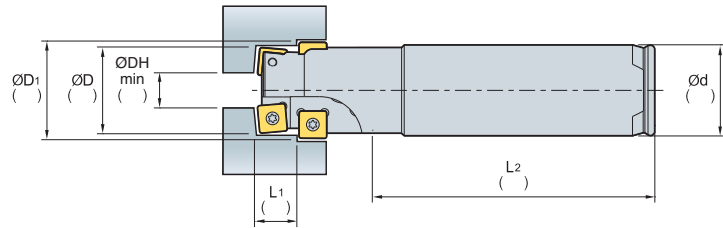
| Imagen | Codigo | Recubierta |        | Dimensiones |       |      |     |                | Tornillo disponible | Forma |
|--------|--------|------------|--------|-------------|-------|------|-----|----------------|---------------------|-------|
|        |        | PC5300     | PC3600 | l           | d     | t    | r   | d <sub>1</sub> |                     |       |
|        | SPMT   | 050204-BC  | ●      | 4.2         | 5     | 2.48 | 0.4 | 2.25           | FTNA0204            |       |
|        |        | 060204-BC  | ●      | 5.2         | 6     | 2.48 | 0.4 | 2.61           | FTNA02205           |       |
|        |        | 07T308-BC  | ●      | 6.34        | 7.94  | 3.97 | 0.8 | 2.85           | FTKA02565           |       |
|        |        | 090408-BC  | ●      | 7.9         | 9.525 | 4.3  | 0.8 | 4.05           | FTNA03508           |       |
|        |        | 110408-BC  | ●      | 9.9         | 11.5  | 5    | 0.8 | 4.45           | FTKA0408            |       |
|        |        | 120408-BC  | ●      | 11.1        | 12.7  | 5    | 0.8 | 4.45           | FTKA0408            |       |
|        |        | 140512-BC  | ●      | 11.9        | 14.3  | 5.4  | 1.2 | 5.75           | FTNA0510            |       |
|        | TCMT   | 090204-MP  |        | 8.6         | 5.56  | 2.38 | 0.4 | 2.50           | FTKA02206           |       |
|        |        | 090208-MP  |        | 7.6         | 5.56  | 2.38 | 0.8 | 2.50           | FTKA02206           |       |
|        |        | 110202-MP  |        | 10.5        | 6.35  | 2.38 | 0.2 | 2.80           | FTKA2565            |       |
|        |        | 110204-MP  |        | 10.0        | 6.35  | 2.38 | 0.4 | 2.80           | FTKA2565            |       |
|        |        | 110208-MP  | ●      | 9.0         | 6.35  | 2.38 | 0.8 | 2.80           | FTKA2565            |       |
|        |        | 16T304-MP  | ●      | 15.5        | 9.525 | 3.97 | 0.4 | 4.40           | FTGA3512            |       |
|        |        | 16T308-MP  | ●      | 14.5        | 9.525 | 3.97 | 0.8 | 4.40           | FTGA3512            |       |

● En Almacen

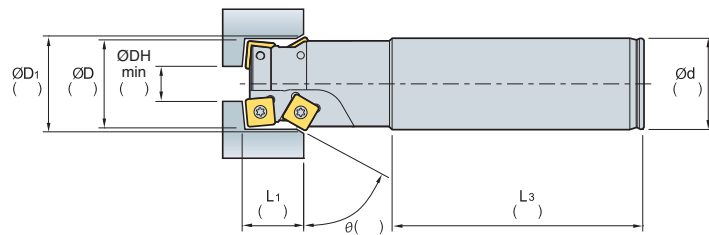


Herramientas especiales multipropósito

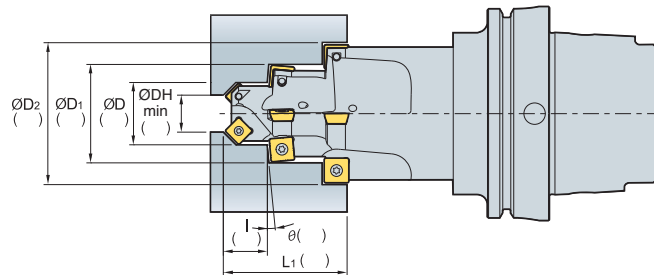
Taladrado, Mandrinado



Taladrado, Achaflanado



Taladrado, Mandrinado y Achaflanado



\* Ítems a encargar disponibles basados en diseños arriba indicados

Insertos disponibles

(mm)

| Imagen | Codigo | Recubierto |        | Dimensiones |      |       |      |                | Tornillo disponible | Forma     |  |
|--------|--------|------------|--------|-------------|------|-------|------|----------------|---------------------|-----------|--|
|        |        | PC5300     | PC3600 | l           | d    | t     | r    | d <sub>1</sub> |                     |           |  |
|        | SPMT   | 050204-BC  | ●      |             | 4.2  | 5     | 2.48 | 0.4            | 2.25                | FTNA0204  |  |
|        |        | 060204-BC  | ●      |             | 5.2  | 6     | 2.48 | 0.4            | 2.61                | FTNA02205 |  |
|        |        | 07T308-BC  | ●      |             | 6.34 | 7.94  | 3.97 | 0.8            | 2.85                | FTKA02565 |  |
|        |        | 090408-BC  | ●      |             | 7.9  | 9.525 | 4.3  | 0.8            | 4.05                | FTNA03508 |  |
|        |        | 110408-BC  | ●      |             | 9.9  | 11.5  | 5    | 0.8            | 4.45                | FTKA0408  |  |
|        |        | 120408-BC  | ●      |             | 11.1 | 12.7  | 5    | 0.8            | 4.45                | FTKA0408  |  |
|        |        | 140512-BC  | ●      |             | 11.9 | 14.3  | 5.4  | 1.2            | 5.75                | FTNA0510  |  |
|        | TCMT   | 090204-MP  |        |             | 8.6  | 5.56  | 2.38 | 0.4            | 2.50                | FTKA02206 |  |
|        |        | 090208-MP  |        |             | 7.6  | 5.56  | 2.38 | 0.8            | 2.50                | FTKA02206 |  |
|        |        | 110202-MP  |        |             | 10.5 | 6.35  | 2.38 | 0.2            | 2.80                | FTKA2565  |  |
|        |        | 110204-MP  |        |             | 10.0 | 6.35  | 2.38 | 0.4            | 2.80                | FTKA2565  |  |
|        |        | 110208-MP  | ●      |             | 9.0  | 6.35  | 2.38 | 0.8            | 2.80                | FTKA2565  |  |
|        |        | 16T304-MP  | ●      |             | 15.5 | 9.525 | 3.97 | 0.4            | 4.40                | FTGA3512  |  |
|        |        | 16T308-MP  | ●      |             | 14.5 | 9.525 | 3.97 | 0.8            | 4.40                | FTGA3512  |  |

● En Almacén

# F

## Endmills

Fresas enterizas Korloy, nueva tecnología y conocimiento técnico, la mejor calidad para aumentar la productividad y la maquinabilidad



## **Información Técnica para Fresas Sólidas Endmills**

- F02 Sistema Codificación Endmills
- F04 Índice de fresas enterizas

## **Fresas Sólidas Endmills**

- F09 Información Técnica para H Endmill
- F12 H Endmill
- F14 Información Técnica para V Endmill
- F16 V Endmill
- F17 Información Técnica para Z Endmill
- F20 Z Endmill
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- F29 Formato para orden especial de T Endmill
- F30 Información Técnica para D Endmill
- F32 D Endmill
- F37 Información técnica de fresas sólidas para Aluminio
- F38 Fresas sólidas para aluminio
- F40 Información Técnica para C-Max
- F41 C-Max
- F44 Información Técnica para Super Endmill
- F46 Super Endmill

## **Fresas Sólidas Endmills**

- F51 Información Técnica para Composite Router Endmill
- F52 Composite Router Endmill
- F57 Información Técnica para I+ Endmill
- F60 I+ Endmill
- F72 Información Técnica para Z+ Endmill
- F75 Z+ Endmill
- F89 Información Técnica para S+ Endmill
- F91 S+ Endmill
- F92 Información Técnica para R+ Endmill
- F97 R+ Endmill
- F103 Información Técnica para A+ Endmill
- F105 A+ Endmill
- F114 Información Técnica para PCD Endmill
- F115 PCD Endmill

## **Fresas Enterizas Cementadas**

- F116 Información Técnica para Brazed Endmill
- F118 Brazed Endmill

## **Formato Pedido Fresas Enterizas Especiales**

- F123 Formato Pedido Fresas Enterizas Especiales

# F Sistema Codificación



**1 Series**  
Z B E 2 040 - 050 - R T - V N S

Z, IP, ZP: Fresa enteriza para uso general    SSEA, AP: Fresas integrales para aluminio  
 P: Fresa enteriza para alta dureza y alta velocidad    SP: Fresas integrales para acero inoxidable  
 C: Fresa enteriza para cobre y aleaciones de cobre    CC: Fresas integrales para materiales compuestos  
 D: Fresa enteriza para grafito y materiales no ferrosos    T: Fresas integrales para materiales para implantes  
 V: Fresa frontal variable  
 FM: Fresa enteriza de alto avance

**5 Diametro de Corte**  
Z B E 2 040 - 050 - R T - V N S

| Notación | ØD (mm) |
|----------|---------|
| 040      | Ø4.0    |
| 060      | Ø6.0    |
| 080      | Ø8.0    |
| 100      | Ø10.0   |

**2 Tipo**  
Z B E 2 040 - 050 - R T - V N S

Tipo plano  
F

Tipo esférico  
B

Tipo con radio  
R

**3 Endmill**  
Z B E 2 040 - 050 - R T - V N S

**6 Logitud total**  
Z B E 2 040 - 050 - R T - V N S

| Largoitud Total |        |
|-----------------|--------|
| Notación        | L (mm) |
| 050             | 50     |
| 080             | 80     |
| 100             | 100    |

**4 Número de canales**  
Z B E 2 040 - 050 - R T - V N S

2 canales   
2

3 canales   
3

4 canales   
4

6 canales   
6

※ El anterior sistema de codigos no se aplica para las Serie SSEA y ZSE



# R02 T00 - V05 N12 S06

7

Radio Esquina

8

Angulo inclinación

9

Logitud de flauta

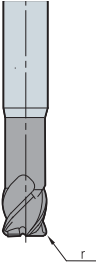
10

Logitud de cuello

11

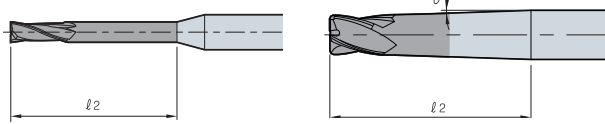
Diametro Mango

**7 Radio Esquina**  
Z B E 2 040 - 050 - **R** T - V N S



| Radio Esquina |        |
|---------------|--------|
| Notación      | R (mm) |
| R02           | r 0.2  |
| R05           | r 0.5  |
| R10           | r 1.0  |
| R15           | r 1.5  |

**10 Logitud de cuello**  
Z B E 2 040 - 050 - R T - V **N** S

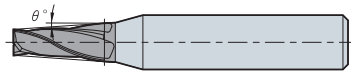


Largitud del Cuello      Largitud del Cuello Conico

$l_2$  (mm): Largitud del Cuello      T ( $\theta^\circ$ ): Angulo Inclinacion

| Largitud del Cuello |            | Largitud del Cuello Conico |                         |
|---------------------|------------|----------------------------|-------------------------|
| Notación            | $l_2$ (mm) | Notación                   | $l_2 + T(\theta^\circ)$ |
| N05                 | 5          | N0510                      | 5+1°                    |
| N08                 | 8          | N0815                      | 8+1.5°                  |
| N10                 | 10         | N1020                      | 10+2°                   |
| N12                 | 12         | N1225                      | 12+2.5°                 |


**8 Angulo de Inclinación**  
Z B E 2 040 - 050 - R T **T** - V N S



T ( $\theta^\circ$ ): Angulo Inclinacion

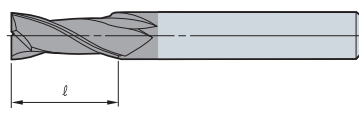
| Angulo Inclinacion |                      |
|--------------------|----------------------|
| Notación           | T ( $\theta^\circ$ ) |
| T10                | 1°                   |
| T15                | 1.5°                 |
| T20                | 2°                   |

**11 Diametro del Mango**  
Z B E 2 040 - 050 - R T - V N S **S**



| Diametro del Mango |         |
|--------------------|---------|
| Notación           | Ød (mm) |
| S06                | Ø6      |
| S08                | Ø8      |
| S10                | Ø10     |
| S12                | Ø12     |
| S16                | Ø16     |

**9 Logitud de flauta**  
Z B E 2 040 - 050 - R T - V **V** N S



| Logitud de flauta |      |
|-------------------|------|
| Notación          | (mm) |
| V05               | 5    |
| V10               | 10   |
| V15               | 15   |

※ Este sistema de codigo es valido también para endmills especiales





















# F Índice de Fresas Enterizas

| Tipo                                   | Forma                       | Codigo   | Substrato   | Figura  | Recubierta | Usos                       | Número de canales | Tamaño |     | Pieza de trabajo |                  |         |                     |   |                  | Pag. |            |
|--|-----------------------------|----------|---|---|------------|----------------------------|-------------------|--------|-----|------------------|------------------|---------|---------------------|---|------------------|------|------------|
|  |                             |          |   |   |            |                            |                   | Min    | Max | P                | M                | K       | N                   | S                                       | H                |      |            |
|  |                             |          |   |   |            |                            |                   |        |     | Acero            | Acero Inoxidable | Función | Metales No-Ferrosos | Aluminos Resin. Carb. Resinas Plásticas | Acero Endurecido |      |            |
| <b>H Endmill</b><br><small>new</small> | Esférico                    | PBE2000  | PC303S  |    | ○          | Alta velocidad alta dureza | 2                 | 0.5    | 12  | ◎                |                  | ◎       |                     |   |                  |      | F12        |
|  | Radio                       | PRE4000  | PC310U  |    | ○          | Alta velocidad alta dureza | 4                 | 3      | 12  | ◎                |                  | ◎       |                     |   |                  |      | F13        |
| <b>V Endmill</b>                       | Plano                       | VFE4000  | PC215F  |    | ○          | General                    | 4                 | 2.5    | 16  | ◎                | ○                | ○       |                     |   |                  |      | F16        |
| <b>Z Endmill</b><br><small>new</small> | Plano                       | ZFE2000  | PC315E  |    | ○          | General                    | 2                 | 1      | 16  | ◎                | ○                | ◎       |                     |   |                  |      | F20        |
|  |                             | ZFE4000  | PC315E  |    | ○          | General                    | 4                 | 1      | 16  | ◎                | ○                | ◎       |                     |   |                  |      | F21        |
|  | Plano Corto                 | ZSFE2000 | PC315E  |    | ○          | General                    | 2                 | 1      | 12  | ◎                | ○                | ◎       |                     |   |                  |      | F22        |
|  |                             | ZSFE4000 | PC315E  |    | ○          | General                    | 4                 | 1      | 12  | ◎                | ○                | ◎       |                     |   |                  |      | F22        |
| Esférico                               | ZBE2000                     | PC315E   |  | ○   | General    | 2                          | 1                 | 12     | ◎   | ○                | ◎                |         |                     |   |                  | F23  |            |
| <b>F Endmill</b>                       | Alto avance                 | FME4000  | PC203F  |  | ○          | Alta velocidad alta dureza | 4                 | 6      | 12  | ○                |                  | ○       |                     | ◎                                       | ◎                |      | F26        |
|  | Alto avance (vástago largo) | FMLE4000 | PC203F  |  | ○          | Alta velocidad alta dureza | 4                 | 6      | 12  | ○                |                  | ○       |                     | ◎                                       | ◎                |      | F26        |
| <b>T Endmill</b><br><small>new</small> | Esférico                    | TZBE     | ND3000  |  | ○          | Dental, Zirconia           | 2                 | 0.6    | 3   |                  |                  |         |                     | ◎                                       |                  |      | F27        |
|  |                             | TTBE     | PC2510  |  | ○          | Dental, Metal              | 2                 | 0.6    | 3   |                  |                  |         |                     |   | ◎                |      | F27        |
|  |                             | TWBE     | H01   |  | -          | Dental, Cera               | 2                 | 0.6    | 3   |                  |                  |         |                     | ◎                                       |                  |      | F27        |
| <b>D Endmill</b><br><small>new</small> | Plano                       | DFE2000  | ND3000  |  | ○          | Grafito, Cerámicas         | 2                 | 1      | 12  |                  |                  |         |                     | ◎                                       |                  |      | F32        |
|  |                             | DFE4000  | ND3000  |  | ○          | Grafito, Cerámicas         | 4                 | 2      | 12  |                  |                  |         |                     | ◎                                       |                  |      | F33        |
|  | Esférico                    | DBE2000  | ND3000  |  | ○          | Grafito, Cerámicas         | 2                 | 0.6    | 12  |                  |                  |         |                     | ◎                                       |                  |      | F34<br>F35 |
|  |                             | DBE4000  | ND3000  |  | ○          | Grafito, Cerámicas         | 4                 | 2      | 12  |                  |                  |         |                     | ◎                                       |                  |      | F36        |

◎: Excelente ○: Bueno























| Tipo                           | Forma                          | Codigo    | Substrato               | Figura  | Recubierta | Usos                                   | Número de canales | Tamaño |     | Pieza de trabajo |                  |           |                        |                         |                   | Pag.        |
|--------------------------------|--------------------------------|-----------|-------------------------|---|------------|--|-------------------|--------|-----|------------------|------------------|-----------|------------------------|-------------------------|-------------------|-------------|
|                                |                                |           |                         |   |            |  |                   | Min    | Max | P                | M                | K         | N                      | S                       | H                 |             |
|                                |                                |           |                         |   |            |  |                   |        |     | Acero            | Acero Inoxidable | Fundición | Materiales No-Ferrosos | Aleaciones Resin. Color | Aleaciones Titano |             |
| Fresas enterizas para aluminio | Plano                          | SSEA2000  | H01<br>PD1005<br>PD1010 |    | -<br>(○)   | Aluminio                               | 2                 | 1      | 20  | ○                |                  |           | ◎                      |                         |                   | F38         |
|                                | Plano                          | SSEA3000  | H01<br>PD1005<br>PD1010 |    | -<br>(○)   | Aluminio                               | 3                 | 2      | 16  | ○                |                  |           | ◎                      |                         |                   | F38         |
|                                | Esférico                       | SSBEA2000 | H01<br>PD1005<br>PD1010 |    | -<br>(○)   | Aluminio                               | 2                 | 1      | 20  | ○                |                  |           | ◎                      |                         |                   | F39         |
| C-Max                          | Plano                          | CFE2000   | PC210C                  |    | ○          | Cobre,<br>Aleacion de<br>Cobre         | 2                 | 1      | 12  | ○                |                  |           | ◎                      |                         |                   | F41         |
|                                | Planode<br>Cuello<br>Largo     | CFNE2000  | PC210C                  |    | ○          | Cobre,<br>Aleacion de<br>Cobre         | 2                 | 0.5    | 4   | ○                |                  |           | ◎                      |                         |                   | F41         |
|                                | Esférico                       | CBE2000   | PC210C                  |    | ○          | Cobre,<br>Aleacion de<br>Cobre         | 2                 | 1      | 12  | ○                |                  |           | ◎                      |                         |                   | F42         |
|                                | Esférico<br>de Cuello<br>Largo | CBNE2000  | PC210C                  |    | ○          | Cobre,<br>Aleacion de<br>Cobre         | 2                 | 0.5    | 4   | ○                |                  |           | ◎                      |                         |                   | F42         |
|                                | Radio                          | CRE2000   | PC210C                  |  | ○          | Cobre,<br>Aleacion de<br>Cobre         | 2                 | 2      | 12  | ○                |                  |           | ◎                      |                         |                   | F43         |
|                                | Esférico<br>de Cuello<br>Largo | CRNE2000  | PC210C                  |  | ○          | Cobre,<br>Aleacion de<br>Cobre         | 2                 | 1      | 4   | ○                |                  |           | ◎                      |                         |                   | F43         |
| Super<br>Endmill               | Radio                          | SRES4000  | SL                      |  | ○          | HRSA                                   | 4                 | 3      | 20  |                  |                  |           |                        | ◎                       |                   | F46~<br>F50 |
| Composite Router Endmill       | Plano                          | CCDR4000  | ND2100                  |  | ○          | Materiales<br>compuestos<br>CFRP, GFRP | 4                 | 6      | 8   |                  |                  |           | ◎                      |                         |                   | F52         |
|                                |                                | CCDR6000  | ND2100                  |  | ○          | Materiales<br>compuestos<br>CFRP, GFRP | 6                 | 10     | 12  |                  |                  |           | ◎                      |                         |                   | F52         |
|                                |                                | CCHR4000  | ND2100                  |  | ○          | Materiales<br>compuestos<br>CFRP, GFRP | 4                 | 6      | 8   |                  |                  |           | ◎                      |                         |                   | F53         |
|                                |                                | CCHR6000  | ND2100                  |  | ○          | Materiales<br>compuestos<br>CFRP, GFRP | 6                 | 10     | 12  |                  |                  |           | ◎                      |                         |                   | F53         |
|                                |                                | CCR2000   | ND2100                  |  | ○          | Materiales<br>compuestos<br>CFRP, GFRP | 2                 | 4      | 12  |                  |                  |           | ◎                      |                         |                   | F54         |
|                                |                                | CCLR4000  | ND2100                  |  | ○          | Materiales<br>compuestos<br>CFRP, GFRP | 4                 | 4      | 12  |                  |                  |           | ◎                      |                         |                   | F55         |
|                                |                                | CCRR6000  | ND2100                  |  | ○          | Materiales<br>compuestos<br>CFRP, GFRP | 6                 | 6      | 8   |                  |                  |           | ◎                      |                         |                   | F56         |
|                                |                                | CCRR8000  | ND2100                  |  | ○          | Materiales<br>compuestos<br>CFRP, GFRP | 8                 | 10     | 12  |                  |                  |           | ◎                      |                         |                   | F56         |



















◎: Excelente ○: Bueno

# F Índice de Fresas Enterizas

| Tipo         | Forma                          | Codigo    | Substrato | Figura  | Recubierta  | Usos    | Número de canales | Tamaño |     | Pieza de trabajo |                    |         |                     |                                      |                    | Pag.       |
|--------------|--------------------------------|-----------|-----------|---|---|---------|-------------------|--------|-----|------------------|--------------------|---------|---------------------|--------------------------------------|--------------------|------------|
|              |                                |           |           |   |   |         |                   | Min    | Max | P                | M                  | K       | N                   | S                                    | H                  |            |
|              |                                |           |           |   |   |         |                   |        |     | Aceros           | Aceros Inoxidables | Función | Metales No-Ferrosos | Abraces Rese. Carb. Adhesivos Tiarno | Aceros Endurecidos |            |
| I + Endmill  | Plano                          | IPFE2000  | PC320     |    | ○   | General | 2                 | 1      | 20  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | ○                  | F60        |
|              |                                | IPFE4000  | PC320     |    | ○   | General | 4                 | 1      | 20  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | ○                  | F62        |
|              | Plano Largo                    | IPLFE2000 | PC320     |    | ○   | General | 2                 | 1      | 20  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | ○                  | F61        |
|              |                                | IPLFE4000 | PC320     |    | ○   | General | 4                 | 1      | 20  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | ○                  | F63        |
|              | Estérico                       | IPBE2000  | PC320     |    | ○   | General | 2                 | 1      | 20  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | ○                  | F64        |
|              |                                | IPBE4000  | PC320     |    | ○   | General | 4                 | 1      | 20  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | ○                  | F66        |
|              | Estérico Largo                 | IPLBE2000 | PC320     |   | ○   | General | 2                 | 1      | 16  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | ○                  | F65        |
|              | Radio                          | IPRE2000  | PC320     |  | ○   | General | 2                 | 1      | 12  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | ○                  | F67<br>F68 |
|              |                                | IPRE4000  | PC320     |  | ○   | General | 4                 | 2      | 12  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | ○                  | F70        |
|              | Largo radio                    | IPLRE2000 | PC320     |  | ○   | General | 2                 | 3      | 12  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | ○                  | F69        |
|              |                                | IPLRE4000 | PC320     |  | ○   | General | 4                 | 3      | 12  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | ○                  | F71        |
|              | Z + Endmill <small>new</small> | Plano     | ZPFE2000  | PC320U  |  | ○       | General           | 2      | 1   | 20               | ⊙                  | ○       | ⊙                   | ○                                    | ○                  | F75        |
| Plano Corto  |                                | ZPSFE2000 | PC320U    |  | ○   | General | 2                 | 1      | 16  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | F76                |            |
| Plano Largo  |                                | ZPLFE2000 | PC320U    |  | ○   | General | 2                 | 2      | 20  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | F76                |            |
| Flauta Largo |                                | ZPLFE2000 | PC320U    |  | ○   | General | 2                 | 2      | 20  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | F77                |            |
| Plano        |                                | ZPFE4000  | PC320U    |  | ○   | General | 4                 | 1      | 20  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | F78                |            |
| Plano Corto  |                                | ZPSFE4000 | PC320U    |  | ○   | General | 4                 | 1      | 16  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | F79                |            |
| Plano Largo  |                                | ZPLFE4000 | PC320U    |  | ○   | General | 4                 | 2      | 20  | ⊙                | ○                  | ⊙       | ○                   | ○                                    | F80                |            |

⊙: Excelente ○: Bueno






















| Tipo                             | Forma          | Codigo    | Substrato | Figura  | Recubierto | Usos     | Número de canales | Tamaño |     | Pieza de trabajo |                  |           |                     |                          |                    | Pag. |
|----------------------------------|----------------|-----------|-----------|---|------------|----------|-------------------|--------|-----|------------------|------------------|-----------|---------------------|--------------------------|--------------------|------|
|                                  |                |           |           |   |            |          |                   | Min    | Max | P                | M                | K         | N                   | S                        | H                  |      |
|                                  |                |           |           |   |            |          |                   |        |     | Acero            | Acero Inoxidable | Fundición | Metales No-Ferrosos | Aleaciones Bajas Carbono | Aleaciones Titanio |      |
| Z+ Endmill<br><small>new</small> | Flauta Largo   | ZPLFE4000 | PC320U    |    | ○          | General  | 4                 | 1      | 20  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F81  |
|                                  | Plano          | ZPFE3000  | PC320U    |    | ○          | General  | 3                 | 2      | 25  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F82  |
|                                  |                | ZPFE6000  | PC320U    |    | ○          | General  | 6                 | 6      | 20  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F82  |
|                                  | Esférico       | ZPBE2000  | PC320U    |    | ○          | General  | 2                 | 0.8    | 20  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F83  |
|                                  | Esférico Largo | ZPLBE2000 | PC320U    |    | ○          | General  | 2                 | 2      | 12  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F84  |
|                                  | Esférico       | ZPBE4000  | PC320U    |    | ○          | General  | 4                 | 2      | 20  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F84  |
|                                  | Radio          | ZPRE2000  | PC320U    |    | ○          | General  | 2                 | 1      | 16  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F85  |
|                                  | Largo radio    | ZPLRE2000 | PC320U    |  | ○          | General  | 2                 | 6      | 16  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F86  |
|                                  | Radio          | ZPRE4000  | PC320U    |  | ○          | General  | 4                 | 1.5    | 16  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F87  |
|                                  | Largo radio    | ZPLRE4000 | PC320U    |  | ○          | General  | 4                 | 6      | 16  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F88  |
| S+ Endmill<br><small>new</small> | Plano          | SPFE4000  | PC320S    |  | -          | STS      | 4                 | 1      | 12  | ○                | ◎                | ○         | ◎                   | ○                        | ○                  | F91  |
|                                  | Plano Largo    | SPLFE4000 | PC320S    |  | -          | STS      | 4                 | 1      | 12  | ○                | ◎                | ○         | ◎                   | ○                        | ○                  | F91  |
| R+ Endmill                       | Desbaste       | RPAE      | FN30T     |  | -          | Aluminio | 3                 | 6      | 25  |                  |                  |           | ◎                   |                          |                    | F97  |
|                                  |                | RPE-FP-H  | PC30T     |  | ○          | General  | 4                 | 5      | 20  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F97  |
|                                  |                | RPLE-FP-H | PC30T     |  | ○          | General  | 4                 | 5      | 20  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F98  |
|                                  |                | RPE-XG    | PC30T     |  | ○          | General  | 4                 | 6      | 20  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F98  |
|                                  |                | RPE-FP-L  | PC30T     |  | ○          | General  | 4                 | 5      | 20  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F99  |
|                                  |                | RPE-RG    | PC40T     |  | ○          | General  | 4                 | 5      | 20  | ◎                | ○                | ◎         | ○                   | ○                        | ○                  | F99  |

◎: Excelente ○: Bueno



# F Índice de Fresas Enterizas

| Tipo            | Forma       | Codigo        | Substrato   | Figura  | Recubierta          | Usos                                     | Número de canales | Tamaño |     | Pieza de trabajo |                  |         |                     |                                     |                  | Pag. |
|-----------------|-------------|---------------|---|---|---------------------|--|-------------------|--------|-----|------------------|------------------|---------|---------------------|-------------------------------------|------------------|------|
|                 |             |               |   |   |                     |  |                   | Min    | Max | P                | M                | K       | N                   | S                                   | H                |      |
|                 |             |               |   |   |                     |  |                   |        |     | Acero            | Acero Inoxidable | Función | Metales No-Ferrosos | Alcarras Resq. Carb. Resacaes. Tiro | Acero Endurecido |      |
| R+ Endmill      | Desbaste    | RPE-RG        | HN30T<br>HC30T  |    | ○                   | General                                  | 4                 | 6      | 20  | ⊙                | ○                | ⊙       | ○                   | ○                                   | F100             |      |
|                 |             | RPE-FF        | HC30T   |    | ○                   | General                                  | 4                 | 6      | 20  | ⊙                | ○                | ⊙       | ○                   | ○                                   | F100             |      |
|                 |             | RPE-FP        | HC30T   |    | ○                   | General                                  | 4                 | 6      | 20  | ⊙                | ○                | ⊙       | ○                   | ○                                   | F101             |      |
|                 |             | RPE-RG        | HN20T<br>HC10T<br>HC20T   |    | ○                   | General                                  | 4                 | 6      | 50  | ⊙                | ○                | ⊙       | ○                   | ○                                   | F102             |      |
| A+ Endmill      | Plano       | APFE2000      | H05S  |    | -                   | Aluminio                                 | 2                 | 1      | 20  | ⊙                | ○                | ○       | ⊙                   | ○                                   | F105             |      |
|                 |             | APFE3000      | H05S  |    | -                   | Aluminio                                 | 3                 | 1      | 20  | ⊙                | ○                | ○       | ⊙                   | ○                                   | F105             |      |
|                 | Medio Plano | APMFE2000     | H05S  |    | -                   | Aluminio                                 | 2                 | 3      | 20  | ⊙                | ○                | ○       | ⊙                   | ○                                   | F106             |      |
|                 |             | APMFE3000     | H05S  |   | -                   | Aluminio                                 | 3                 | 3      | 20  | ⊙                | ○                | ○       | ⊙                   | ○                                   | F106             |      |
| PCD Endmill     | Plano       | PDE1000       | DP200   |  | -                   | Materiales no ferrosos<br>Alta velocidad | 1                 | 4.6    | 6   | ⊙                | ○                | ○       | ⊙                   | ○                                   | F115             |      |
|                 |             | PDE2000       | DP200   |  | -                   | Materiales no ferrosos<br>Alta velocidad | 2                 | 6      | 12  | ⊙                | ○                | ○       | ⊙                   | ○                                   | F115             |      |
| Brazeed Endmill | Plano       | ZSE200        | FCC<br>PC221F   |  | -<br>(○)            | Fundición,<br>Acero                      | 2                 | 14     | 50  | ○                | ○                | ⊙       | ○                   | ○                                   | F118             |      |
|                 |             | ZSE300        | FCC<br>PC221F   |  | -<br>(○)            | Fundición,<br>Acero                      | 3                 | 14     | 50  | ○                | ○                | ⊙       | ○                   | ○                                   | F118<br>F119     |      |
|                 |             | ZSE400        | FCC<br>PC221F   |  | -<br>(○)            | Fundición,<br>Acero                      | 4                 | 14     | 50  | ○                | ○                | ⊙       | ○                   | ○                                   | F119             |      |
|                 |             | ZSE600        | FCC<br>PC221F   |  | -<br>(○)            | Fundición,<br>Acero                      | 6                 | 34     | 50  | ○                | ○                | ⊙       | ○                   | ○                                   | F119             |      |
|                 | ZSEA200     | FCC           |  | -   | Aluminio,<br>Cobre  | 2  | 15                | 50     | ⊙   | ○                | ○                | ○       | ○                   | F120                                |                  |      |
|                 | Plano Largo | ZSEL200       | FCC<br>PC221F   |  | -                   | Fundición,<br>Acero                      | 2                 | 14     | 50  | ○                | ○                | ⊙       | ○                   | ○                                   | F121             |      |
|                 |             | ZSEL400       | FCC<br>PC221F   |  | -                   | Fundición,<br>Acero                      | 4                 | 16     | 40  | ○                | ○                | ⊙       | ○                   | ○                                   | F121             |      |
|                 |             | ZSEXL200      | FCC<br>PC221F   |  | -                   | Fundición,<br>Acero                      | 2                 | 20     | 25  | ○                | ○                | ⊙       | ○                   | ○                                   | F121             |      |
| Esférico        | ZSBE200     | FCC<br>PC221F |  | -   | Fundición,<br>Acero | 2  | 13                | 50     | ○   | ○                | ⊙                | ○       | ○                   | F122                                |                  |      |

⊙: Excelente ○: Bueno



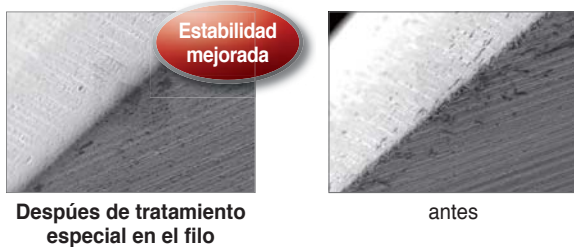
Fresa enteriza para mecanizado de alta velocidad para acero endurecido

# H Endmill **new**

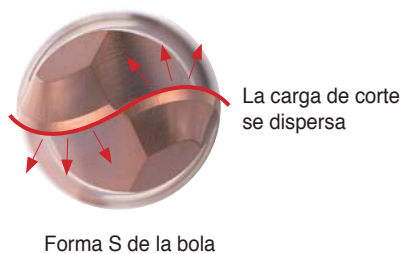
- Para mecanizar acero endurecido y con tratamiento térmico bajo HRC70
- Nueva tecnología de recubrimiento mejora la resistencia al desgaste
- Un nuevo diseño mejora la maquinabilidad
- Mecanizado de alta velocidad y alta precisión disponible

## Características

- Nuevo grado (PC303S, PC310U)
  - El sustrato ultra fino y el revestimiento AlTiSiN garantizan una excelente resistencia al desgaste
- Tratamiento especial en el filo
  - se utilizó un diseño especial de arista corte especial para reducir el astillado y prolongar la vida útil de la herramienta
- Alta precisión con tolerancia h5 - El sistema de producción de alta calidad permite la tolerancia-h5 en todo el lote

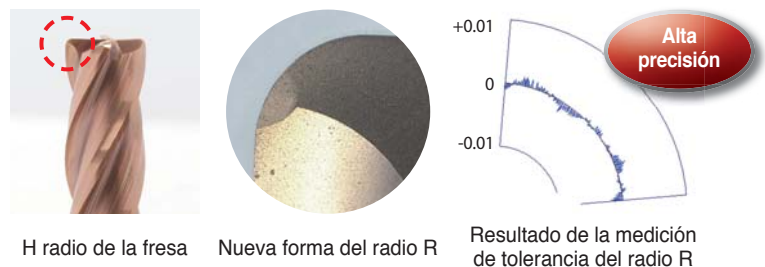


## PBE (Esférico)



- La forma S del filo radial dispersa las cargas de corte
- La tolerancia de la medida R es inferior a  $\pm 0.005\text{mm}$

## PRE (Radio)

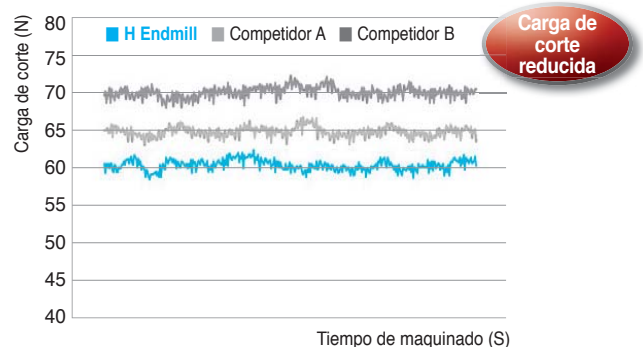


- La nueva forma del radio R reduce las cargas de corte
- La tolerancia del vértice R es inferior a  $\pm 0,005\text{mm}$

## Evaluación del desempeño

- **Pieza de trabajo** STD11 (HRC60)
- **Condiciones de corte**
  - Diámetro =  $\varnothing 8.0$ ,  $n$  ( $\text{min}^{-1}$ ) = 4,000
  - $vc$  (m/min) = 100,  $vf$  (mm/min) = 800
  - $fz$  (mm/t) = 0.05,  $ap$  (mm) = 8.0
  - $ae$  (mm) = 0.25, seco
- **Herramientas** PRE4080-100-R05

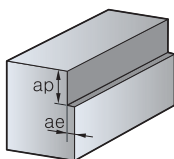
\* El diseño especial del filo reduce las cargas de corte y prolonga la vida útil de la herramienta



## Condiciones de corte recomendadas (PRE4000 con Radio)

| Pieza de trabajo<br>Condiciones<br>Diámetro (Ø) | Por encima de HRC40<br>(HPM1, KP4M, etc.) |                       | Por debajo de HRC55<br>(NAK55, NAK80, STAVAX, etc.) |                       | HRC55~HRC70<br>(STD11, STD61, etc.) |                       |
|---|---|-----------------------|---|-----------------------|-------------------------------------|-----------------------|
|   | R.P.M<br>n (min <sup>-1</sup> )           | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> )                     | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> )     | Avance<br>vf (mm/min) |
| 3   | 17,300                                    | 1,250                 | 11,500  | 840                   | 7,500                               | 256                   |
| 4   | 13,200                                    | 1,300                 | 8,800   | 880                   | 5,600                               | 268                   |
| 5   | 12,500                                    | 1,500                 | 8,300   | 1,000                 | 5,100                               | 296                   |
| 6   | 10,350                                    | 1,400                 | 6,900   | 950                   | 4,200                               | 280                   |
| 8   | 7,800                                     | 1,350                 | 5,200   | 900                   | 3,200                               | 264                   |
| 10  | 6,150                                     | 1,260                 | 4,100   | 840                   | 2,550                               | 248                   |
| 12  | 5,250                                     | 1,260                 | 3,500   | 840                   | 2,100                               | 240                   |

### Consejo aplicación



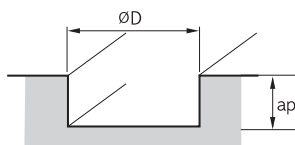
- Relación entre profundidad axial (ap) y radial (ae)
  - ap = 0.1D
  - ae = 0.03D

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## Condiciones de corte recomendadas (PRE4000 con Radio)

| Pieza de trabajo<br>Condiciones<br>Diámetro (Ø) | Por encima de HRC40<br>(HPM1, KP4M, etc.) |                       | Por debajo de HRC55<br>(NAK55, NAK80, STAVAX, etc.) |                       | HRC55~HRC70<br>(STD11, STD61, etc.) |                       |
|---|---|-----------------------|---|-----------------------|-------------------------------------|-----------------------|
|   | R.P.M<br>n (min <sup>-1</sup> )           | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> )                     | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> )     | Avance<br>vf (mm/min) |
| 3   | 17,300                                    | 544                   | 11,500  | 336                   | 7,500                               | 128                   |
| 4   | 13,200                                    | 560                   | 8,800   | 352                   | 5,600                               | 136                   |
| 5   | 12,500                                    | 644                   | 8,300   | 400                   | 5,100                               | 144                   |
| 6   | 10,350                                    | 616                   | 6,900   | 384                   | 4,200                               | 144                   |
| 8   | 7,800                                     | 576                   | 5,200   | 356                   | 3,200                               | 132                   |
| 10  | 6,150                                     | 544                   | 4,100   | 332                   | 2,550                               | 124                   |
| 12  | 5,250                                     | 544                   | 3,500   | 332                   | 2,100                               | 124                   |

### Consejo aplicación



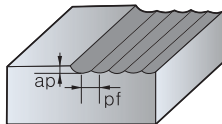
- Profundidad de ranurado
  - ap = 0.05D
  - ae = 1.0D

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

**Condiciones de corte recomendadas (PBE2000 esférico)**

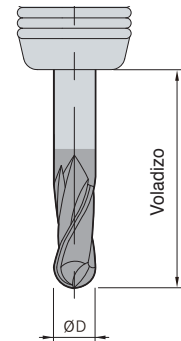
| Pieza de trabajo<br>Condiciones<br>Diámetro (Ø) | Por encima de HRC40<br>(HPM1, KP4M, etc.) |                    | Por debajo de HRC55<br>(NAK55, NAK80, STAVAX, etc.) |                    | HRC55~HRC70<br>(STD11, STD61, etc.) |                    |
|---|---|--------------------|---|--------------------|-------------------------------------|--------------------|
|   | R.P.M n (min <sup>-1</sup> )              | Avance vf (mm/min) | R.P.M n (min <sup>-1</sup> )                        | Avance vf (mm/min) | R.P.M n (min <sup>-1</sup> )        | Avance vf (mm/min) |
| 0.5   | 35,000                                    | 1,470              | 31,500  | 1,330              | 28,000                              | 1,050              |
| 1   | 35,000                                    | 2,940              | 31,500  | 2,660              | 28,000                              | 2,000              |
| 1.2   | 33,600                                    | 3,010              | 30,100  | 2,695              | 26,600                              | 2,100              |
| 1.5   | 33,600                                    | 3,150              | 30,100  | 2,800              | 25,900                              | 2,150              |
| 2   | 33,460                                    | 3,360              | 28,000  | 2,800              | 24,500                              | 2,200              |
| 2.5   | 25,900                                    | 3,710              | 22,400  | 2,800              | 17,500                              | 2,200              |
| 3   | 22,260                                    | 3,710              | 18,550  | 2,800              | 16,500                              | 2,200              |
| 4   | 16,730                                    | 3,710              | 14,000  | 2,800              | 13,000                              | 2,200              |
| 5   | 17,800                                    | 4,900              | 15,000  | 3,750              | 12,500                              | 2,100              |
| 6   | 13,400                                    | 4,100              | 11,000  | 3,100              | 10,000                              | 2,500              |
| 8   | 10,700                                    | 3,500              | 9,000   | 2,700              | 8,000                               | 2,150              |
| 10  | 8,900                                     | 3,100              | 7,500   | 2,400              | 6,600                               | 1,900              |
| 12  | 6,680                                     | 2,500              | 5,600   | 1,900              | 5,000                               | 1,550              |

**Consejo aplicación**



- ap = 0.02D
- pf = 0.05D

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción



**Condiciones de corte según voladizo**

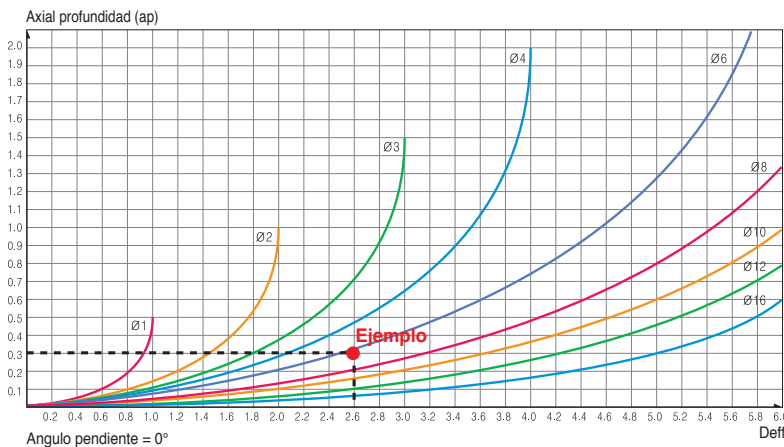
- Condiciones de corte en caso de ser sujetado con alto voladizo
  - Cuando el saliente incrementa en 1D, disminuya R.P.M y avance un 10%
- En el caso del tipo recto, ajustar las condiciones de acuerdo con el saliente
  - Ejemplo: cuando el voladizo es 3D y se incrementa en 1D, disminuye R.P.M y avance 10%

**Fórmulas de corte (para fresas radiales)**

- Fórmula velocidad de corte efectiva =  $(\pi \times \text{Deff} \times n)/1000$  (n = min<sup>-1</sup>)
- Fórmula diámetro efectivo =  $(2\sqrt{ap(D-ap)} \times \alpha)$   
D = Ø (diámetro de herramienta), Deff = diámetro efectivo
- Velocidad de corte: cuando el ángulo de pendiente es 0° =  $(\pi \times \text{Deff} \times n)/1000$   
Deff = Eficiencia del diámetro, Calculo de Deff si es ap con varias fresas enterizas esféricas

|          |                             |
|----------|-----------------------------|
| α: α = 1 | Ángulo de pendiente θ = 0°  |
| α = 1.2  | Ángulo de pendiente θ = 7°  |
| α = 1.5  | Ángulo de pendiente θ = 15° |
| α = 1.7  | Ángulo de pendiente θ = 30° |
| α = 2.17 | Ángulo de pendiente θ = 45° |
| α = 2.3  | Ángulo de pendiente θ = 60° |

**Fórmulas velocidad de corte (fresa radial; ángulo de pendiente = 0°)**



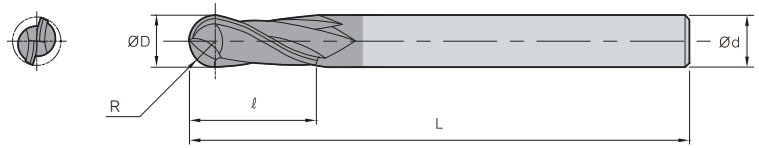
- Ej) Diámetro: 6 mm, ap = 0.3 mm, Deff = 2.6 mm, N = 14,000 (min<sup>-1</sup>)  
 Ángulo de pendiente 0°: Veff = 113.7 (m/min)  
 Ángulo de pendiente 15°: Veff = 113.7 x 1.5 = 170.6 (m/min)

**Alerta**

- Las condiciones de corte dependen de la condición de la máquina y la forma de corte
- Use un fluido de corte que sea apropiado para la pieza de trabajo y que produzca pocas reacciones a la temperatura



## PBE2000 (Esférico)



| ØD    | Tolerancia  |
|-------|-------------|
| ~Ø5.9 | 0.00~-0.015 |
| Ø6.0~ | 0.00~-0.025 |



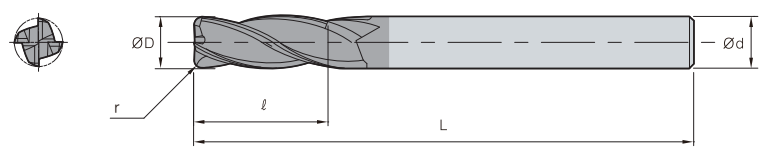
(mm)

| Codigo     | R    | ØD  | Ød | ℓ   | L   |
|------------|------|-----|----|-----|-----|
| <b>PBE</b> |      |     |    |     |     |
| 2005-040   | 0.25 | 0.5 | 6  | 1   | 40  |
| 2010-050   | 0.5  | 1   | 6  | 2.5 | 50  |
| 2012-050   | 0.6  | 1.2 | 6  | 3   | 50  |
| 2015-050   | 0.75 | 1.5 | 6  | 4   | 50  |
| 2020-050   | 1    | 2   | 6  | 5   | 50  |
| 2025-060   | 1.25 | 2.5 | 6  | 7   | 60  |
| 2030-060   | 1.5  | 3   | 6  | 8   | 60  |
| 2040-070   | 2    | 4   | 6  | 8   | 70  |
| 2050-080   | 2.5  | 5   | 6  | 10  | 80  |
| 2060-090   | 3    | 6   | 6  | 12  | 90  |
| 2080-100   | 4    | 8   | 8  | 14  | 100 |
| 2100-100   | 5    | 10  | 10 | 18  | 100 |
| 2120-110   | 6    | 12  | 12 | 22  | 110 |





# PRE4000 (Radio)



| ØD    | Tolerancia  |
|-------|-------------|
| ~Ø5.9 | 0.00~-0.015 |
| Ø6.0~ | 0.00~-0.025 |



(mm)

| Codigo       | ØD | Ød | ℓ  | L   | r   |
|--------------|----|----|----|-----|-----|
| <b>PRE</b>   |    |    |    |     |     |
| 4030-060-R01 | 3  | 6  | 8  | 60  | 0.1 |
| 4030-060-R02 | 3  | 6  | 8  | 60  | 0.2 |
| 4030-060-R03 | 3  | 6  | 8  | 60  | 0.3 |
| 4030-060-R05 | 3  | 6  | 8  | 60  | 0.5 |
| 4040-070-R01 | 4  | 6  | 10 | 70  | 0.1 |
| 4040-070-R02 | 4  | 6  | 10 | 70  | 0.2 |
| 4040-070-R03 | 4  | 6  | 10 | 70  | 0.3 |
| 4040-070-R05 | 4  | 6  | 10 | 70  | 0.5 |
| 4040-070-R10 | 4  | 6  | 10 | 70  | 1   |
| 4060-090-R02 | 6  | 6  | 15 | 90  | 0.2 |
| 4060-090-R03 | 6  | 6  | 15 | 90  | 0.3 |
| 4060-090-R05 | 6  | 6  | 15 | 90  | 0.5 |
| 4060-090-R10 | 6  | 6  | 15 | 90  | 1   |
| 4080-100-R02 | 8  | 8  | 20 | 100 | 0.2 |
| 4080-100-R03 | 8  | 8  | 20 | 100 | 0.3 |
| 4080-100-R05 | 8  | 8  | 20 | 100 | 0.5 |
| 4080-100-R10 | 8  | 8  | 20 | 100 | 1   |
| 4100-100-R03 | 10 | 10 | 25 | 100 | 0.3 |
| 4100-100-R05 | 10 | 10 | 25 | 100 | 0.5 |
| 4100-100-R10 | 10 | 10 | 25 | 100 | 1   |
| 4120-110-R03 | 12 | 12 | 30 | 110 | 0.3 |
| 4120-110-R05 | 12 | 12 | 30 | 110 | 0.5 |
| 4120-110-R10 | 12 | 12 | 30 | 110 | 1   |

# F Información Técnica para V Endmill

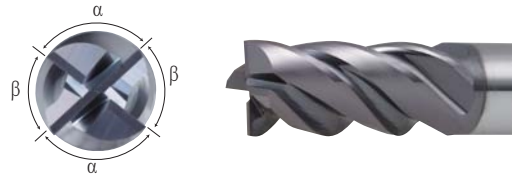
Productividad mejorada con un mecanizado efectivo debido a menor vibración

## V Endmill

### Variable Endmill

- Ángulo de hélice irregular
- Ángulo divisor irregular

\* Espaciado irregular entre los canales; reduce la vibración al posicionar los filos de corte en ángulos variables

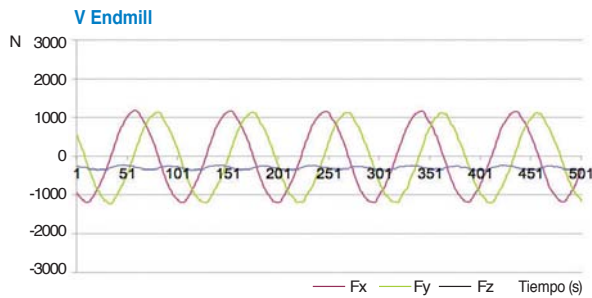


### Características

- 30% más de velocidad de corte (vc) y velocidad de avance (vf) para aumentar la productividad
- Mecanizado de alta calidad disponible gracias a la disminución de vibración y al excelente acabado superficial

### Rendimiento (prueba de vibración)

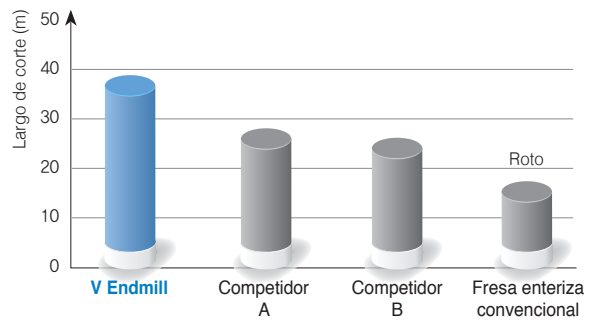
- **Pieza de trabajo** SCM440
- **Condición de corte** D = Ø8.0, n (m/min) = 3183, vc (m/min) = 80, vf (mm/min) = 713, fz (mm/t) = 0.055, ap (mm) = 8.0, ae (mm) = 8, seco
- **Herramientas** V Endmill VFE4080-060, Fresa enteriza convencional



### Desempeño (Acabado superficie)

- **Pieza de trabajo** STS304
- **Condición de corte** D = Ø8.0, n (min<sup>-1</sup>) = 3979, vc (m/min) = 100, vf (mm/min) = 796, fz (mm/t) = 0.05, ap (mm) = 12, ae (mm) = 0.8, seco
- **Herramientas** VFE4080-060

|                     |           |  |  |
|---------------------|-----------|--|--|
| Filo                |           |  |  |
| Acabado superficial |           |  |  |
| División            | V Endmill | Competidor A<br>Fresa enteriza de paso irregular | Competidor B<br>Fresa enteriza de paso irregular |



### Ejemplos de aplicación

- **Pieza de trabajo** SNCM439 (HRC 43~45)
- **Condición de corte** D = Ø8.0, n (m/min) = 6000, vc (m/min) = 150, vf (mm/min) = 600, fz (mm/t) = 0.025, ap (mm) = 7, ae (mm) = 0.8, refrigerante, soluble al agua
- **Herramientas** VFE4080-060



V Endmill



Fresa enteriza convencional



V Endmill(VFE4080)



Fresa enteriza convencional

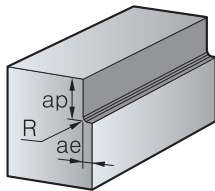


## Condiciones de corte recomendadas

### ■ Escuadrado

| Diámetro (ØD) | Aceros aleados y al carbono, HRC25 o menos (SM, SCM) |                    |         |         | Aceros para moldes, HRC35~45 (STS, KP4M) |                    |         |         |
|---------------|--|--------------------|---------|---------|--|--------------------|---------|---------|
|               | R.P.M (min <sup>-1</sup> )                           | Avance vf (mm/min) | ap (mm) | ae (mm) | R.P.M (min <sup>-1</sup> )               | Avance vf (mm/min) | ap (mm) | ae (mm) |
| 2.5           | 15,915   | 1,241              | 3.8     | 0.7     | 12,732                                   | 891                | 0.3     | 0.3     |
| 3.0           | 13,263   | 1,241              | 4.5     | 0.8     | 10,610                                   | 891                | 0.3     | 0.3     |
| 3.5           | 11,368   | 1,241              | 5.3     | 0.9     | 9,095                                    | 891                | 0.4     | 0.4     |
| 4.0           | 9,947  | 1,241              | 6.0     | 1.1     | 7,958                                    | 891                | 0.4     | 0.4     |
| 5.0           | 7,958  | 1,241              | 7.5     | 1.4     | 6,366                                    | 891                | 0.5     | 0.5     |
| 6.0           | 6,631  | 1,241              | 9.0     | 1.6     | 5,305                                    | 891                | 0.6     | 0.6     |
| 7.0           | 5,684  | 1,241              | 10.5    | 1.9     | 4,547                                    | 891                | 0.7     | 0.7     |
| 8.0           | 4,974  | 1,194              | 12.0    | 2.2     | 3,979                                    | 891                | 0.8     | 0.8     |
| 9.0           | 4,421  | 1,194              | 13.5    | 2.4     | 3,537                                    | 891                | 0.9     | 0.9     |
| 10.0          | 3,979  | 1,194              | 15.0    | 2.7     | 3,183                                    | 891                | 1.0     | 1.0     |
| 12.0          | 3,316  | 1,194              | 18.0    | 3.2     | 2,653                                    | 891                | 1.2     | 1.2     |
| 14.0          | 2,842  | 1,194              | 21.0    | 3.8     | 2,274                                    | 891                | 1.4     | 1.4     |
| 16.0          | 2,487  | 1,194              | 24.0    | 4.3     | 1,989                                    | 891                | 1.6     | 1.6     |

### Consejo aplicación



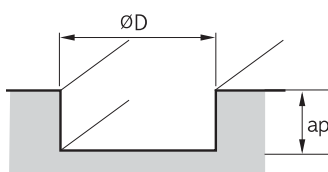
※ Condición de corte por voladizo

1. Saliente estándar: siga las condiciones de corte anteriores
2. Saliente largo: cuando el saliente se incrementa en 10 mm, disminuye la alimentación 5% y ae 5%

### ■ mortajado

| Diámetro (ØD) | Aceros aleados y al carbono, HRC25 o menos (SM, SCM) |                    |         | Aceros para moldes, HRC35~45 (STS, KP4M) |                    |         |
|---------------|--|--------------------|---------|--|--------------------|---------|
|               | R.P.M (min <sup>-1</sup> )                           | Avance vf (mm/min) | ap (mm) | R.P.M (min <sup>-1</sup> )               | Avance vf (mm/min) | ap (mm) |
| 2.5           | 15.915   | 1,035              | 2.8     | 12,732                                   | 700                | 2.5     |
| 3.0           | 13,263   | 1,035              | 3.3     | 10,610                                   | 700                | 3.0     |
| 3.5           | 11,268   | 1,035              | 3.9     | 9,095                                    | 700                | 3.5     |
| 4.0           | 9,947  | 1,035              | 4.4     | 7,958                                    | 700                | 4.0     |
| 5.0           | 7,958  | 1,035              | 5.5     | 6,366                                    | 700                | 5.0     |
| 6.0           | 6,631  | 1,035              | 6.6     | 5,305                                    | 700                | 6.0     |
| 7.0           | 5,687  | 1,035              | 7.7     | 4,549                                    | 700                | 7.0     |
| 8.0           | 4,974  | 1,035              | 8.8     | 3,979                                    | 700                | 8.0     |
| 9.0           | 4,421  | 1,035              | 9.9     | 3,537                                    | 700                | 9.0     |
| 10.0          | 3,979  | 1,035              | 11.0    | 3,183                                    | 700                | 10.0    |
| 12.0          | 3,316  | 1,035              | 13.2    | 2,653                                    | 700                | 12.0    |
| 14.0          | 2,842  | 1,035              | 15.4    | 2,274                                    | 700                | 14.0    |
| 16.0          | 2,487  | 1,035              | 17.6    | 1,989                                    | 700                | 16.0    |

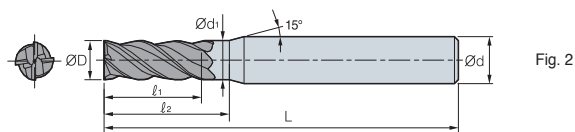
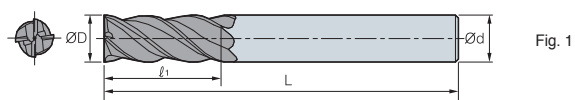
### Consejo aplicación



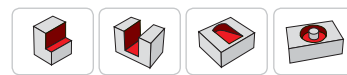
※ Condición de corte por voladizo

1. Saliente estándar: siga las condiciones de corte anteriores
2. Saliente largo: cuando el saliente se incrementa en 10 mm, disminuye la alimentación 5% y ae 5%

## VFE4000 (Plano)



| ØD      | Tolerancia  |
|---------|-------------|
| Ø2.5-Ø9 | 0.00~ -0.02 |
| Ø10-Ø16 | 0.00~ -0.03 |



(mm)

| Codigo   | ØD   | Ød   | d <sub>1</sub> | l <sub>1</sub> | l <sub>2</sub> | L  | Fig. |
|----------|------|------|----------------|----------------|----------------|----|------|
| VFE      |      |      |                |                |                |    |      |
| 4025-045 | 2.5  | 6.0  | 2.48           | 6.0            | 8.0            | 45 | 2    |
| 4030-050 | 3.0  | 6.0  | 2.98           | 7.0            | 9.5            | 50 | 2    |
| 4035-050 | 3.5  | 6.0  | 3.48           | 8.0            | 11.0           | 50 | 2    |
| 4040-050 | 4.0  | 6.0  | 3.98           | 9.0            | 12.0           | 50 | 2    |
| 4050-050 | 5.0  | 6.0  | 4.98           | 12.0           | 16.0           | 50 | 2    |
| 4060-050 | 6.0  | 6.0  | -              | 14.0           | -              | 50 | 1    |
| 4070-060 | 7.0  | 8.0  | 6.97           | 16.0           | 21.0           | 60 | 2    |
| 4080-060 | 8.0  | 8.0  | -              | 19.0           | -              | 60 | 1    |
| 4090-070 | 9.0  | 10.0 | 8.97           | 20.0           | 27.0           | 70 | 2    |
| 4100-075 | 10.0 | 10.0 | -              | 23.0           | -              | 75 | 1    |
| 4120-080 | 12.0 | 12.0 | -              | 27.0           | -              | 80 | 1    |
| 4140-085 | 14.0 | 14.0 | -              | 31.0           | -              | 85 | 1    |
| 4160-090 | 16.0 | 16.0 | -              | 36.0           | -              | 90 | 1    |



## Endmill para corte general

# Z Endmill **new**

- Fresa enteriza para corte general de varias piezas de trabajo, dureza inferior a HRC45 (acero al carbono, acero de aleación, fundición, aceros de cementación, etc.)
- Nueva geometría y recubrimiento mejoran el rendimiento y la vida útil de la herramienta
- Diseño optimizado de la cuchilla para menos astillado y mecanizado estable

### Características

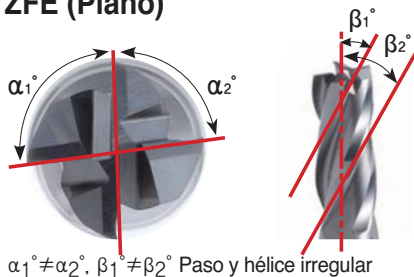
- Nuevo grado (PC315E) - El sustrato fino y el recubrimiento lubricante garantizan un excelente rendimiento a alta velocidad y alta temperatura
- Tratamiento especial del filo: se aplicó un diseño especial para reducir el astillado y prolongar la vida útil de la herramienta
- Alta precisión con tolerancia-h5 - Sistema de producción de alta calidad que permite tolerancia-h5 en toda la serie



después de tratamiento especial en el filo

antes

### ZFE (Plano)



$\alpha_1 \neq \alpha_2$ ,  $\beta_1 \neq \beta_2$  Paso y hélice irregular

- Paso y hélice irregular & Paso y hélice irregular reducen el golpeteo y mejoran la superficie

### ZBE (Esférico)



- La geometría S en la esfera dispersa la carga de corte
- La tolerancia de la medida de R es menor a  $\pm 0.005$  mm

### Ejemplos de aplicación

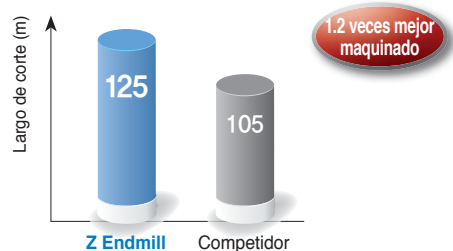
- **Pieza de trabajo** Acero al carbono (SM45C, ~ HRC20)
- **Condición de corte**  $D = \varnothing 8.0$ ,  $n$  ( $\text{min}^{-1}$ ) = 7,165,  $vc$  ( $\text{m}/\text{min}$ ) = 180,  $vf$  ( $\text{mm}/\text{min}$ ) = 1.433,  $fz$  ( $\text{mm}/\text{t}$ ) = 0.05,  $ap$  ( $\text{mm}$ ) = 8,  $ae$  ( $\text{mm}$ ) = 0.8, seco
- **Herramientas** ZFE4080-070



Z Endmill

Competidor

#### Resultado de la prueba



- Tratamiento de filo para menos astillado

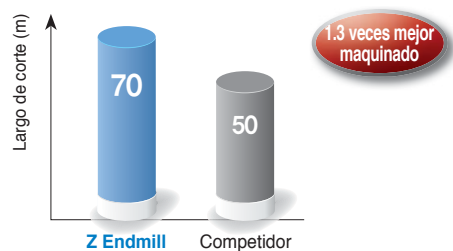
- **Pieza de trabajo** Acero al carbono (SM45C, ~ HRC20)
- **Condición de corte**  $D = \varnothing 8.0$ ,  $n$  ( $\text{min}^{-1}$ ) = 5.175,  $vc$  ( $\text{m}/\text{min}$ ) = 130,  $vf$  ( $\text{mm}/\text{min}$ ) = 1.035,  $fz$  ( $\text{mm}/\text{t}$ ) = 0.1,  $ap$  ( $\text{mm}$ ) = 0.5,  $ae$  ( $\text{mm}$ ) = 1.6, seco
- **Herramientas** ZFE2080-100



Z Endmill

Competidor

#### Resultado de la prueba

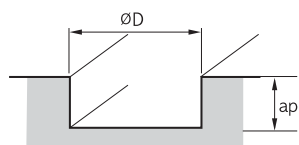


- Nuevo grado mejora la resistencia al desgaste

## ➤ Condiciones de corte recomendadas (ZFE2000/ZSFE2000 Plano)

| Pieza de trabajo<br>Condiciones | Acero aleado y al carbono<br>(por debajo de HRC30) |                    | Acero pre-endurecido<br>(HRC30~45) |                    | Acero inoxidable             |                    |
|---------------------------------|--|--------------------|------------------------------------|--------------------|------------------------------|--------------------|
|                                 | R.P.M n (min <sup>-1</sup> )                       | Avance vf (mm/min) | R.P.M n (min <sup>-1</sup> )       | Avance vf (mm/min) | R.P.M n (min <sup>-1</sup> ) | Avance vf (mm/min) |
| Diámetro (Ø)                    |  |                    |                                    |                    |                              |                    |
| 1                               | 19,745   | 175                | 13,057                             | 100                | 10,500                       | 70                 |
| 2                               | 11,560   | 190                | 7,560                              | 120                | 6,300                        | 90                 |
| 3                               | 8,920  | 210                | 5,560                              | 140                | 4,620                        | 120                |
| 4                               | 7,560  | 300                | 4,620                              | 180                | 3,880                        | 150                |
| 5                               | 6,300  | 320                | 3,780                              | 190                | 3,160                        | 160                |
| 6                               | 5,560  | 350                | 3,360                              | 220                | 2,840                        | 180                |
| 8                               | 4,200  | 380                | 2,520                              | 200                | 2,100                        | 180                |
| 10                              | 3,260  | 330                | 2,000                              | 160                | 1,680                        | 160                |
| 12                              | 2,740  | 280                | 1,680                              | 130                | 1,360                        | 130                |
| 16                              | 2,200  | 220                | 1,360                              | 110                | 1,060                        | 110                |

### Consejo aplicación



■ Profundidad ranurado

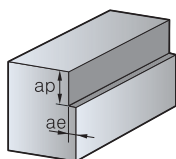
- $D \leq \varnothing 3$  ( $ap = 0.2D$ )
- $D > \varnothing 3$  ( $ap = 0.5D$ )

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## ➤ Condiciones de corte recomendadas (ZFE4000/ZSFE4000 Plano)

| Pieza de trabajo<br>Condiciones | Acero aleado y al carbono<br>(por debajo de HRC30) |                    | Acero pre-endurecido<br>(HRC30~45) |                    | Acero inoxidable             |                    |
|---------------------------------|--|--------------------|------------------------------------|--------------------|------------------------------|--------------------|
|                                 | R.P.M n (min <sup>-1</sup> )                       | Avance vf (mm/min) | R.P.M n (min <sup>-1</sup> )       | Avance vf (mm/min) | R.P.M n (min <sup>-1</sup> ) | Avance vf (mm/min) |
| Diámetro (Ø)                    |  |                    |                                    |                    |                              |                    |
| 2                               | 11,560   | 280                | 7,560                              | 170                | 6,300                        | 140                |
| 3                               | 8,920  | 320                | 5,560                              | 200                | 4,620                        | 170                |
| 4                               | 7,560  | 570                | 4,620                              | 350                | 3,880                        | 280                |
| 5                               | 6,300  | 600                | 3,780                              | 360                | 3,160                        | 300                |
| 6                               | 5,560  | 660                | 3,360                              | 410                | 2,840                        | 330                |
| 8                               | 4,200  | 710                | 2,520                              | 380                | 2,100                        | 350                |
| 10                              | 3,260  | 610                | 2,000                              | 300                | 1,680                        | 300                |
| 12                              | 2,740  | 520                | 1,680                              | 250                | 1,360                        | 240                |
| 16                              | 2,200  | 410                | 1,360                              | 200                | 1,100                        | 200                |

### Consejo aplicación



■ Profundidad axial (ap) y profundidad radial (ae)

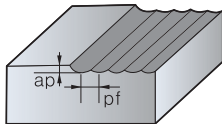
- $ap = 1.0D$
- $ae = 0.05D$

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## Condiciones de corte recomendadas (ZBE2000 esférico)

| Pieza de trabajo<br>Condiciones | Acero aleado y al carbono<br>(por debajo de HRC30) |                    | Acero pre-endurecido<br>(HRC30~45) |                    |
|---------------------------------|--|--------------------|------------------------------------|--------------------|
|                                 | R.P.M n (min <sup>-1</sup> )                       | Avance vf (mm/min) | R.P.M n (min <sup>-1</sup> )       | Avance vf (mm/min) |
| Diámetro (Ø)                    |  |                    |                                    |                    |
| 1                               | 30,000   | 2,880              | 30,000                             | 2,520              |
| 1.2                             | 30,000   | 3,060              | 28,800                             | 2,580              |
| 1.5                             | 30,000   | 3,240              | 28,800                             | 2,700              |
| 2                               | 29,820   | 3,420              | 28,680                             | 2,880              |
| 3                               | 19,860   | 3,600              | 19,080                             | 3,180              |
| 4                               | 14,940   | 3,600              | 14,340                             | 3,180              |
| 5                               | 11,160   | 3,480              | 10,680                             | 2,940              |
| 6                               | 8,340  | 2,910              | 8,040                              | 2,460              |
| 8                               | 6,660  | 2,520              | 6,420                              | 2,100              |
| 10                              | 5,580  | 2,220              | 5,340                              | 1,860              |
| 12                              | 4,170  | 1,770              | 4,008                              | 1,500              |

### Consejo aplicación

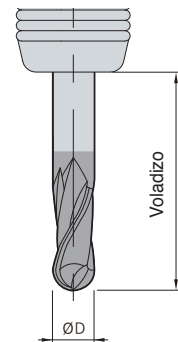


- $ap = 0.03D$
- $pf = 0.05D$

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## Condiciones de corte según voladizo

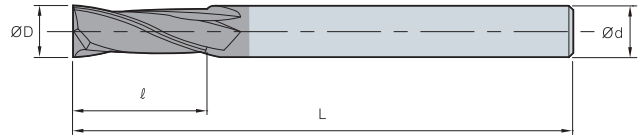
- Condiciones de corte en caso de ser sujetado con alto voladizo
  - Cuando el saliente incrementa en 1D, disminuya R.P.M y avance un 10%
- En el caso del tipo recto, ajustar las condiciones de acuerdo con el saliente
  - Ejemplo: cuando el voladizo es 3D y se incrementa en 1D, disminuye R.P.M y avance 10%



## Alerta

- Las condiciones de corte dependen de la condición de la máquina y la forma de corte
- Use un fluido de corte que sea apropiado para la pieza de trabajo y que produzca pocas reacciones a la temperatura

## ZFE2000 (Plano)



| ØD    | Tolerancia  |
|-------|-------------|
| ~Ø5.9 | 0.00~-0.015 |
| Ø6.0~ | 0.00~-0.025 |



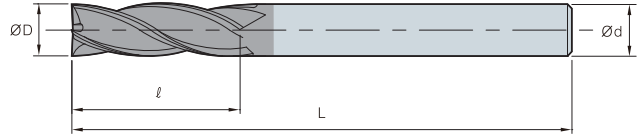
(mm)

| Codigo      | ØD  | Ød | ℓ   | L   |
|-------------|-----|----|-----|-----|
| ZFE         |     |    |     |     |
| 2010-050-S4 | 1   | 4  | 2.5 | 50  |
| 2010-050-S6 | 1   | 6  | 2.5 | 50  |
| 2012-050-S4 | 1.2 | 4  | 3   | 50  |
| 2012-050-S6 | 1.2 | 6  | 3   | 50  |
| 2015-050-S4 | 1.5 | 4  | 4   | 50  |
| 2015-050-S6 | 1.5 | 6  | 4   | 50  |
| 2020-050-S4 | 2   | 4  | 6   | 50  |
| 2020-050-S6 | 2   | 6  | 6   | 50  |
| 2025-050-S4 | 2.5 | 4  | 7.5 | 50  |
| 2025-050-S6 | 2.5 | 6  | 7.5 | 50  |
| 2030-050-S4 | 3   | 4  | 9   | 50  |
| 2030-050-S6 | 3   | 6  | 9   | 50  |
| 2035-050    | 3.5 | 6  | 10  | 50  |
| 2040-050-S4 | 4   | 4  | 11  | 50  |
| 2040-050-S6 | 4   | 6  | 11  | 50  |
| 2045-050    | 4.5 | 6  | 14  | 50  |
| 2050-060    | 5   | 6  | 15  | 60  |
| 2055-060    | 5.5 | 6  | 15  | 60  |
| 2060-060    | 6   | 6  | 15  | 60  |
| 2065-060    | 6.5 | 8  | 18  | 60  |
| 2070-060    | 7   | 8  | 20  | 60  |
| 2075-060    | 7.5 | 8  | 20  | 60  |
| 2080-070    | 8   | 8  | 20  | 70  |
| 2085-070    | 8.5 | 10 | 22  | 70  |
| 2090-070    | 9   | 10 | 22  | 70  |
| 2095-070    | 9.5 | 10 | 24  | 70  |
| 2100-075    | 10  | 10 | 25  | 75  |
| 2120-080    | 12  | 12 | 30  | 80  |
| 2140-100    | 14  | 14 | 35  | 100 |
| 2160-100    | 16  | 16 | 40  | 100 |





# ZFE4000 (Plano)



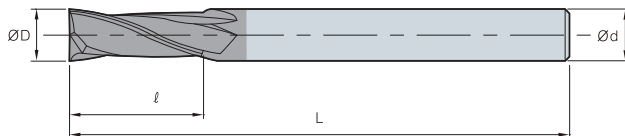
| ØD    | Tolerancia  |
|-------|-------------|
| ~Ø5.9 | 0.00~-0.015 |
| Ø6.0~ | 0.00~-0.025 |



(mm)

| Codigo      | ØD  | Ød | ℓ   | L   |
|-------------|-----|----|-----|-----|
| ZFE         |     |    |     |     |
| 4010-050-S4 | 1   | 4  | 2.5 | 50  |
| 4010-050-S6 | 1   | 6  | 2.5 | 50  |
| 4012-050-S4 | 1.2 | 4  | 3   | 50  |
| 4012-050-S6 | 1.2 | 6  | 3   | 50  |
| 4015-050-S4 | 1.5 | 4  | 4   | 50  |
| 4015-050-S6 | 1.5 | 6  | 4   | 50  |
| 4020-050-S4 | 2   | 4  | 6   | 50  |
| 4020-050-S6 | 2   | 6  | 6   | 50  |
| 4025-050-S4 | 2.5 | 4  | 7.5 | 50  |
| 4025-050-S6 | 2.5 | 6  | 7.5 | 50  |
| 4030-050-S4 | 3   | 4  | 9   | 50  |
| 4030-050-S6 | 3   | 6  | 9   | 50  |
| 4035-050    | 3.5 | 6  | 10  | 50  |
| 4040-050-S4 | 4   | 4  | 11  | 50  |
| 4040-050-S6 | 4   | 6  | 11  | 50  |
| 4045-050    | 4.5 | 6  | 14  | 50  |
| 4050-060    | 5   | 6  | 15  | 60  |
| 4055-060    | 5.5 | 6  | 15  | 60  |
| 4060-060    | 6   | 6  | 15  | 60  |
| 4065-060    | 6.5 | 8  | 18  | 60  |
| 4070-060    | 7   | 8  | 20  | 60  |
| 4075-060    | 7.5 | 8  | 20  | 60  |
| 4080-070    | 8   | 8  | 20  | 70  |
| 4085-070    | 8.5 | 10 | 22  | 70  |
| 4090-070    | 9   | 10 | 22  | 70  |
| 4095-070    | 9.5 | 10 | 24  | 70  |
| 4100-075    | 10  | 10 | 25  | 75  |
| 4120-080    | 12  | 12 | 30  | 80  |
| 4140-100    | 14  | 14 | 35  | 100 |
| 4160-100    | 16  | 16 | 40  | 100 |

## ZSFE2000/4000 (Plano corto)



| ØD    | Tolerancia   |
|-------|--------------|
| ~Ø5.9 | 0.00~ -0.015 |
| Ø6.0~ | 0.00~ -0.025 |

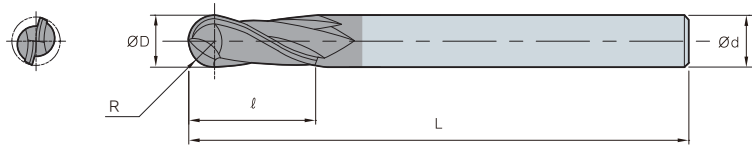


(mm)

|           | Codigo      | ØD  | Ød | ℓ   | L  |
|-----------|-------------|-----|----|-----|----|
| ZSFE<br>2 | 2010-040-S4 | 1   | 4  | 1.5 | 40 |
|           | 2010-040-S6 | 1   | 6  | 1.5 | 40 |
|           | 2012-040-S4 | 1.2 | 4  | 1.5 | 40 |
|           | 2012-040-S6 | 1.2 | 6  | 1.5 | 40 |
|           | 2015-040-S4 | 1.5 | 4  | 2.2 | 40 |
|           | 2015-040-S6 | 1.5 | 6  | 2.2 | 40 |
|           | 2020-040-S4 | 2   | 4  | 3   | 40 |
|           | 2020-040-S6 | 2   | 6  | 3   | 40 |
|           | 2025-040-S4 | 2.5 | 4  | 4   | 40 |
|           | 2025-040-S6 | 2.5 | 6  | 4   | 40 |
|           | 2030-045-S4 | 3   | 4  | 4.5 | 45 |
|           | 2030-045-S6 | 3   | 6  | 4.5 | 45 |
|           | 2040-045-S4 | 4   | 4  | 6   | 45 |
|           | 2040-045-S6 | 4   | 6  | 6   | 45 |
|           | 2060-050    | 6   | 6  | 9   | 50 |
|           | 2080-060    | 8   | 8  | 12  | 60 |
| 2100-065  | 10          | 10  | 15 | 65  |    |
| 2120-070  | 12          | 12  | 18 | 70  |    |
| ZSFE<br>4 | 4010-040-S4 | 1   | 4  | 1.5 | 40 |
|           | 4010-040-S6 | 1   | 6  | 1.5 | 40 |
|           | 4012-040-S4 | 1.2 | 4  | 1.5 | 40 |
|           | 4012-040-S6 | 1.2 | 6  | 1.5 | 40 |
|           | 4015-040-S4 | 1.5 | 4  | 2.2 | 40 |
|           | 4015-040-S6 | 1.5 | 6  | 2.2 | 40 |
|           | 4020-040-S4 | 2   | 4  | 3   | 40 |
|           | 4020-040-S6 | 2   | 6  | 3   | 40 |
|           | 4025-040-S4 | 2.5 | 4  | 4   | 40 |
|           | 4025-040-S6 | 2.5 | 6  | 4   | 40 |
|           | 4030-045-S4 | 3   | 4  | 4.5 | 45 |
|           | 4030-045-S6 | 3   | 6  | 4.5 | 45 |
|           | 4040-045-S4 | 4   | 4  | 6   | 45 |
|           | 4040-045-S6 | 4   | 6  | 6   | 45 |
|           | 4060-050    | 6   | 6  | 9   | 50 |
|           | 4080-060    | 8   | 8  | 12  | 60 |
| 4100-065  | 10          | 10  | 15 | 65  |    |
| 4120-070  | 12          | 12  | 18 | 70  |    |



# ZBE2000 (Esférico)



| ØD    | Tolerancia  |
|-------|-------------|
| ~Ø5.9 | 0.00~-0.015 |
| Ø6.0~ | 0.00~-0.025 |



(mm)

| Codigo      | R    | ØD  | Ød | ℓ   | L   |
|-------------|------|-----|----|-----|-----|
| <b>ZBE</b>  |      |     |    |     |     |
| 2010-050-S4 | 0.5  | 1   | 4  | 2.5 | 50  |
| 2010-050-S6 | 0.5  | 1   | 6  | 2.5 | 50  |
| 2012-050-S4 | 0.6  | 1.2 | 4  | 3   | 50  |
| 2012-050-S6 | 0.6  | 1.2 | 6  | 3   | 50  |
| 2015-050-S4 | 0.75 | 1.5 | 4  | 4   | 50  |
| 2015-050-S6 | 0.75 | 1.5 | 6  | 4   | 50  |
| 2020-050-S4 | 1    | 2   | 4  | 5   | 50  |
| 2020-050-S6 | 1    | 2   | 6  | 5   | 50  |
| 2025-060-S4 | 1.25 | 2.5 | 4  | 6   | 60  |
| 2025-060-S6 | 1.25 | 2.5 | 6  | 6   | 60  |
| 2030-060-S4 | 1.5  | 3   | 4  | 8   | 60  |
| 2030-060-S6 | 1.5  | 3   | 6  | 8   | 60  |
| 2035-070    | 1.75 | 3.5 | 6  | 8   | 70  |
| 2040-070-S4 | 2    | 4   | 4  | 8   | 70  |
| 2040-070-S6 | 2    | 4   | 6  | 8   | 70  |
| 2045-080    | 2.25 | 4.5 | 6  | 9   | 80  |
| 2050-080    | 2.5  | 5   | 6  | 10  | 80  |
| 2055-090    | 2.75 | 5.5 | 6  | 11  | 90  |
| 2060-090    | 3    | 6   | 6  | 12  | 90  |
| 2065-090    | 3.25 | 6.5 | 8  | 13  | 90  |
| 2070-090    | 3.5  | 7   | 8  | 14  | 90  |
| 2080-100    | 4    | 8   | 8  | 14  | 100 |
| 2085-100    | 4.25 | 8.5 | 10 | 16  | 100 |
| 2090-100    | 4.5  | 9   | 10 | 18  | 100 |
| 2100-100    | 5    | 10  | 10 | 18  | 100 |
| 2120-110    | 6    | 12  | 12 | 22  | 110 |

# F Información Técnica para F Endmill

Alta eficiencia y mecanizado de alto avance

## F Endmill

### Fresa enteriza de alto avance

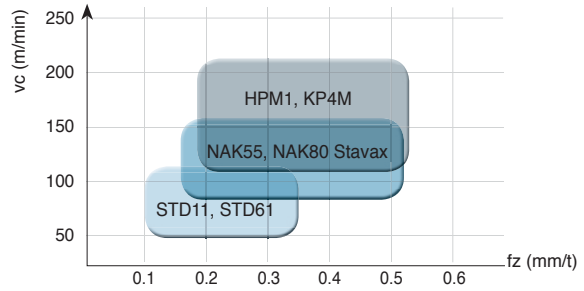
- Productividad mejorada y tiempo de trabajo reducido gracias a la alta capacidad de avance
- El diseño de la fresa permite reducir el costo de producción al incrementar la velocidad de avance.

#### Característica



- Área de desahogo de virutas más operación altamente eficiente
- Mecanizado de alto avance posible mediante la dispersión de las fuerzas de corte

#### Aplicación por pieza de trabajo

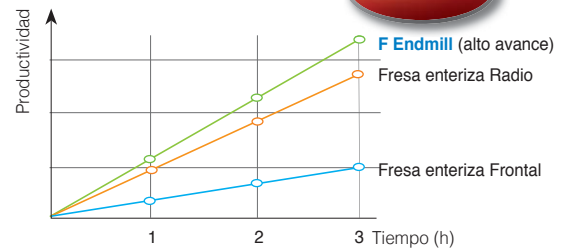


#### Ejemplo de productividad

| Tipo                           | Velocidad (vc) | Avance (fz) | D.O.C |     | el volumen de mecanizado (mm <sup>3</sup> /min) |
|--------------------------------|----------------|-------------|-------|-----|---|
|                                |                |             | ap    | ae  |   |
| <b>F-Endmill (alto avance)</b> | 180            | 0.30        | 0.5   | 5.0 | 135,000   |
| Fresa enteriza Radio           | 200            | 0.09        | 1.0   | 5.0 | 90,000  |
| Fresa enteriza Frontal         | 120            | 0.05        | 8.0   | 0.2 | 48,000  |

Mayor productividad debido al aumento del avance. 2.8 veces

#### Comparación de la productividad



#### Información para programación

| Rampa | Ángulo de rampa | Avance |
|-------|-----------------|--------|
|       | 1°              | 100%   |
|       | 2°              | 80%    |
|       | 3°              | 60%    |
|       | 4°              | 50%    |

| Helicoidal | Diametro (ØD) | Min. Diametro | Max. Diametro |
|------------|---------------|---------------|---------------|
|            | 6             | 7.8           | 12            |
|            | 8             | 10.2          | 16            |
|            | 10            | 12.4          | 20            |
|            | 12            | 14.9          | 24            |

\* ØDc: Avance(Centro de la herramienta) \* ØDh: Área de mecanizado

| Alto avance | Diametro (ØD) | Endmill-R | Radio CAM | Parte de corte abajo |
|-------------|---------------|-----------|-----------|----------------------|
|             | 6             | 0.5       | 0.7       | 0.21                 |
|             | 8             | 0.5       | 0.8       | 0.32                 |
|             | 10            | 1.0       | 1.3       | 0.36                 |
|             | 12            | 1.2       | 1.6       | 1.45                 |

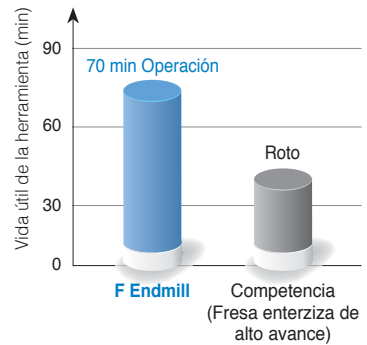


## Ejemplo de mecanizado

- **Pieza de trabajo** STD61+SKT (HRC45~50)
- **Condiciones de corte**  $D = \varnothing 12$ ,  $n$  ( $\text{min}^{-1}$ ) = 4.000,  $vc$  ( $\text{m}/\text{min}$ ) = 150.8,  $vf$  ( $\text{mm}/\text{min}$ ) = 4.000  
 $fz$  ( $\text{mm}/\text{t}$ ) = 0.25,  $ap$  ( $\text{mm}$ ) = 3.6,  $ae$  ( $\text{mm}$ ) = 0.6, seco
- **Herramienta** FME4120-075-R12



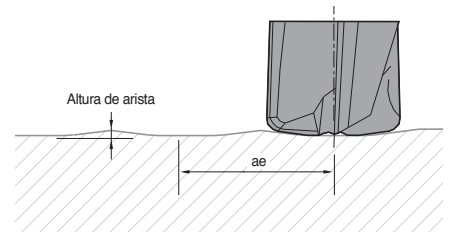
## Resultado de la prueba



## Condiciones de corte recomendadas

### Altura de arista mediante profundidad radio de corte

| Diámetro (ØD) | Profundidad radial (mm) |       |       |       |       |       |
|---------------|-------------------------|-------|-------|-------|-------|-------|
|               | 0.1XD                   | 0.2XD | 0.3XD | 0.4XD | 0.5XD | 0.6XD |
| 6             | 0                       | 0     | 0     | 0.02  | 0.06  | 0.11  |
| 8             | 0                       | 0     | 0     | 0.04  | 0.10  | 0.15  |
| 10            | 0                       | 0     | 0.01  | 0.07  | 0.14  | 0.21  |
| 12            | 0                       | 0     | 0.01  | 0.08  | 0.17  | 0.25  |



### Corte medio

| Diámetro (ØD) | Acero para moldes HRC35~45 (HPM1, KP4M) |                                      |         |         | Acero para moldes HRC45~55 (NAK55, NAK80, STAVAX) |                                      |         |         | Templado HRC55 (SKD11, STD61) |                                      |         |         |
|---------------|---|--------------------------------------|---------|---------|---|--------------------------------------|---------|---------|-------------------------------|--------------------------------------|---------|---------|
|               | RPM n ( $\text{min}^{-1}$ )             | Avance vf ( $\text{mm}/\text{min}$ ) | ap (mm) | ae (mm) | RPM n ( $\text{min}^{-1}$ )                       | Avance vf ( $\text{mm}/\text{min}$ ) | ap (mm) | ae (mm) | RPM n ( $\text{min}^{-1}$ )   | Avance vf ( $\text{mm}/\text{min}$ ) | ap (mm) | ae (mm) |
| 6             | 11,600                                  | 11,200                               | 0.24    | 1.6     | 9,000   | 7,570                                | 0.21    | 1.6     | 5,800                         | 3,500                                | 0.18    | 1.6     |
| 8             | 8,700                                   |                                      | 0.32    | 2.2     | 6,700   |                                      | 0.28    | 2.2     | 4,300                         |                                      | 0.24    | 2.2     |
| 10            | 7,000                                   |                                      | 0.40    | 2.7     | 5,400   |                                      | 0.35    | 2.7     | 3,500                         |                                      | 0.30    | 2.7     |
| 12            | 5,800                                   |                                      | 0.48    | 3.3     | 4,500   |                                      | 0.42    | 3.3     | 2,900                         |                                      | 0.36    | 3.3     |

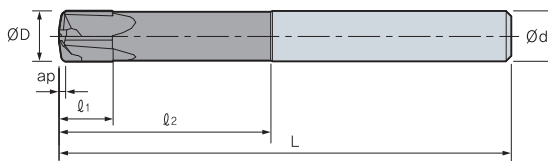
### Corte de desbaste

| Diámetro (ØD) | Acero para moldes HRC35~45 (HPM1, KP4M) |                                      |         |         | Acero para moldes HRC45~55 (NAK55, NAK80, STAVAX) |                                      |         |         | Templado HRC55 (SKD11, STD61) |                                      |         |         |
|---------------|---|--------------------------------------|---------|---------|---|--------------------------------------|---------|---------|-------------------------------|--------------------------------------|---------|---------|
|               | RPM n ( $\text{min}^{-1}$ )             | Avance vf ( $\text{mm}/\text{min}$ ) | ap (mm) | ae (mm) | RPM n ( $\text{min}^{-1}$ )                       | Avance vf ( $\text{mm}/\text{min}$ ) | ap (mm) | ae (mm) | RPM n ( $\text{min}^{-1}$ )   | Avance vf ( $\text{mm}/\text{min}$ ) | ap (mm) | ae (mm) |
| 6             | 8,488                                   | 9,167                                | 0.27    | 3.0     | 6,366   | 6,112                                | 0.24    | 3.0     | 4,244                         | 2,546                                | 0.21    | 3.0     |
| 8             | 6,366                                   |                                      | 0.36    | 4.0     | 4,775   |                                      | 0.32    | 4.0     | 3,183                         |                                      | 0.28    | 4.0     |
| 10            | 5,093                                   |                                      | 0.45    | 5.0     | 3,820   |                                      | 0.40    | 5.0     | 2,546                         |                                      | 0.35    | 5.0     |
| 12            | 4,244                                   |                                      | 0.54    | 6.0     | 3,183   |                                      | 0.48    | 6.0     | 2,122                         |                                      | 0.42    | 6.0     |

\* Condición de corte por voladizo

1. Voladizo estándar: Seguir la condición corte de la table arriba
2. Fresas de mango largo: reduzca el avance y la ae al 80%
3. Voladizo largo: Cuando el voladizo se sube hasta 10mm, reduzca 5% de avance y 5 % del ae

## FME4000 (Alto avance)



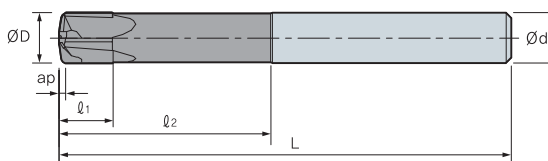
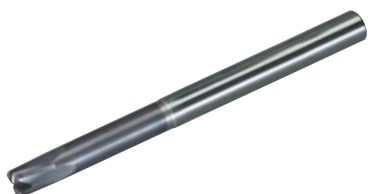
| ØD     | Tolerancia  |
|--------|-------------|
| Ø6~Ø12 | -0.01~-0.03 |



(mm)

| Codigo       | R   | ØD | Ød | l <sub>1</sub> | l <sub>2</sub> | L  | Ap. máx. (mm) | Radio CAM |
|--------------|-----|----|----|----------------|----------------|----|---------------|-----------|
| <b>FME</b>   |     |    |    |                |                |    |               |           |
| 4060-050-R05 | 0.5 | 6  | 6  | 4.5            | 18             | 50 | 0.35          | 0.7       |
| 4080-060-R05 | 0.5 | 8  | 8  | 6              | 24             | 60 | 0.45          | 0.8       |
| 4100-070-R10 | 1.0 | 10 | 10 | 7.5            | 30             | 70 | 0.65          | 1.3       |
| 4120-075-R12 | 1.2 | 12 | 12 | 9              | 36             | 75 | 0.78          | 1.6       |

## FMLE4000 (Alto avance vástago largo)



| ØD     | Tolerancia  |
|--------|-------------|
| Ø6~Ø12 | -0.01~-0.03 |



(mm)

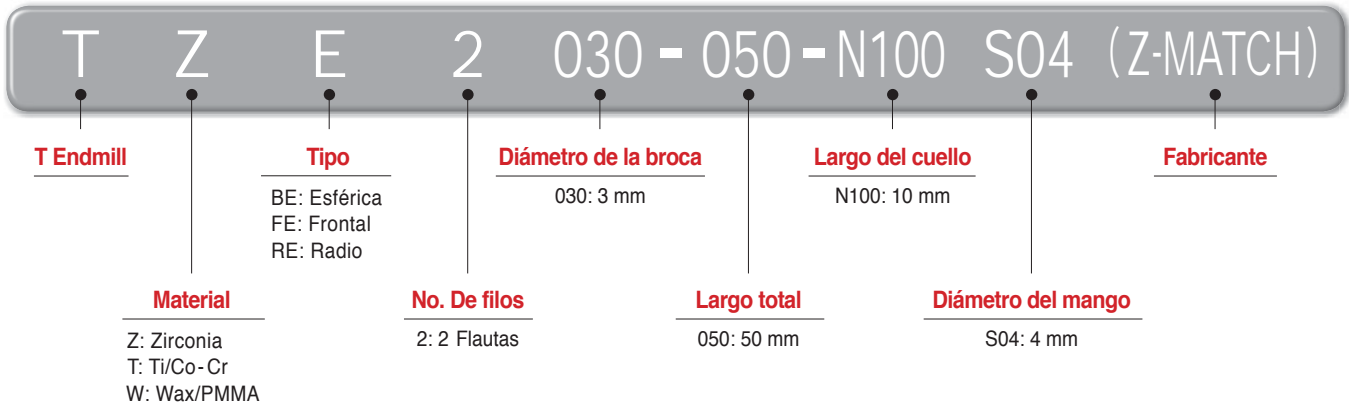
| Codigo       | R   | ØD | Ød | l <sub>1</sub> | l <sub>2</sub> | L   | Ap. máx. (mm) | Radio CAM |
|--------------|-----|----|----|----------------|----------------|-----|---------------|-----------|
| <b>FMLE</b>  |     |    |    |                |                |     |               |           |
| 4060-090-R05 | 0.5 | 6  | 6  | 4.5            | 30             | 90  | 0.35          | 0.7       |
| 4080-090-R05 | 0.5 | 8  | 8  | 6              | 40             | 90  | 0.45          | 0.8       |
| 4100-100-R10 | 1.0 | 10 | 10 | 7.5            | 50             | 100 | 0.65          | 1.3       |
| 4120-110-R12 | 1.2 | 12 | 12 | 9              | 60             | 110 | 0.78          | 1.6       |

Fresa entera para el mecanizado de prótesis dentales

T Endmill **new**

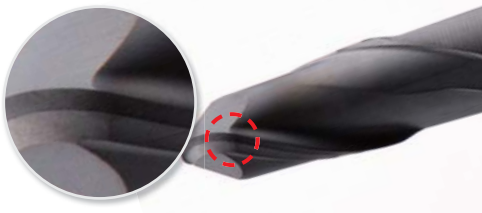
- Para el mecanizado de prótesis dentales de zirconia, titanio, Co-Cr, cera, PMMA, etc
- Rendimiento de corte optimizado haciendo coincidir un grado apropiado con cada tipo de material
- Reducción de desigualdad y excelente acabado en superficies mecanizadas debido al diseño optimizado del filo de corte
- Forma de herramienta especializada para cada tipo de máquina

➤ Sistema de codificación



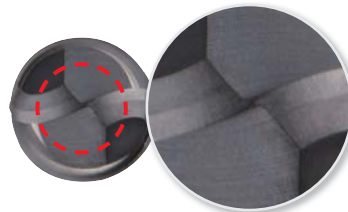
➤ Características

- Una herramienta específica para cada máquina - Cumple con las demandas del mercado
- Un grado especializado para cada pieza de trabajo - proporciona un rendimiento optimizado para varios materiales de implantes
- Diseño optimizado de última generación - permite una maquinabilidad excelente



Forma de corte tangencial

- Rectificado de pasada única
- Desigualdad reducida y excelente acabado en superficies mecanizadas

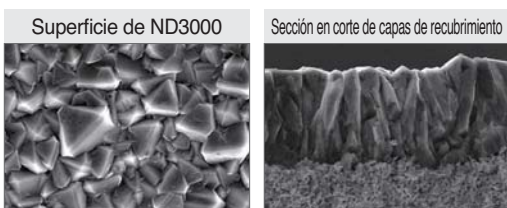


Forma esférica ajustada al centro

- La forma balanceada al centro asegura ángulo de desprendimiento en el punto central
- Los filos de corte de la forma curva proporcionan una excelente resistencia al desgaste y rendimiento de corte

➤ Solución de grado para zirconia

- **Desarrollo de ND3000 (grado recubierto de diamante)**
  - Recubrimiento de diamante de alta dureza que es excelente en el mecanizado de grafito y cerámica
  - Optimizado para alta velocidad y corte de trabajo medio gracias a su excelente adhesión a las capas de recubrimiento

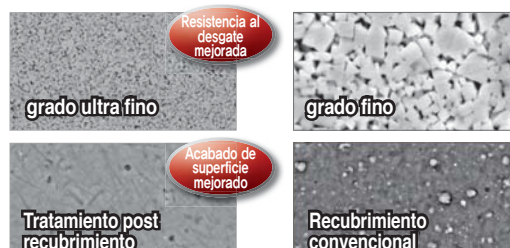


Superficie de ND3000  
Revestimiento de diamante de alta dureza (Hv 10,000) proporciona excelente resistencia al desgaste

Sección en corte de capas de recubrimiento  
grado especializado para Zirconia proporciona una excelente adhesión

➤ Solución de grado para titanio

- **Desarrollo de PC2510 (Grado recubierto para acero endurecido)**
  - Se aplicó tratamiento de post-recubrimiento para mejorar el acabado superficial
  - Una calidad optimizada para el mecanizado interrumpido de aceros de alta dureza y tratamiento en ambiente húmedo que va acompañado de un alto choque térmico. Sus características de sustrato ultrafino de alta tenacidad permite un rendimiento estable



Resistencia al desgaste mejorada  
grado ultra fino

grado fino

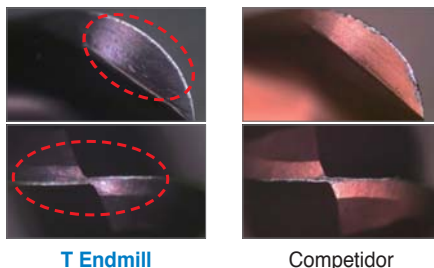
Acabado de superficie mejorado  
Tratamiento post recubrimiento

Recubrimiento convencional

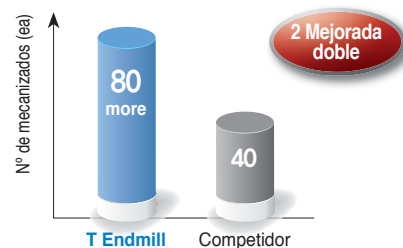
# F Información Técnica para T Endmill

## Evaluación del desempeño

- **Pieza de trabajo** Co-Cr
- **Condición de corte**
  - vc (m/min) = 150
  - fz (mm/t) = 0.08
  - ap (mm) = 0.13
  - ae (mm) = 0.7, Refrigerante
- **Herramientas** TTBE2030-050



### Resultado de la prueba



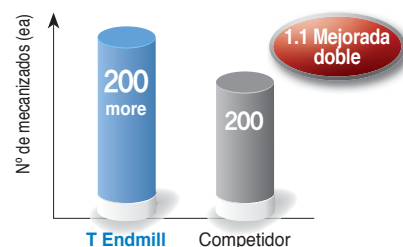
Excelente resistencia a la tenacidad y al desgaste gracias al nuevo grado PC2510.

## Ejemplos de aplicación

- **Uso** Implantes de muelas
- **Pieza de trabajo** Zirconia
- **Condición de corte**
  - vc (m/min) = 140
  - fz (mm/t) = 0.05
  - ae (mm) = 0.6, seco
- **Herramientas** TZBE2020-044-N200S03 (DOF)



### Resultado de la prueba



## Condiciones de corte recomendadas (Titanio y Co-Cr)

| Diámetro (Ø) | Aplicación | ap (mm) | ae (mm) | n (min <sup>-1</sup> ) | vf (mm/min) |
|--------------|------------|---------|---------|------------------------|-------------|
| 3.0          | Desbaste   | 0.12    | 0.7     | 10,500                 | 1,150       |
| 2.5          | Medio      | 0.08    | 0.53    | 11,500                 | 850         |
| 2.0          | Medio      | 0.08    | 0.42    | 14,500                 | 850         |
| 1.5          | Acabado    | 0.04    | 0.32    | 19,000                 | 850         |
| 1.0          | Acabado    | 0.02    | 0.07    | 28,500                 | 850         |
| 0.6          | Acabado    | 0.02    | 0.07    | 28,500                 | 850         |

## Condiciones de corte recomendadas (Zirconia)

| Diámetro (Ø) | Aplicación | ap (mm) | ae (mm) | n (min <sup>-1</sup> ) | vf (mm/min) |
|--------------|------------|---------|---------|------------------------|-------------|
| 3.0          | Desbaste   | 0.5     | 1.5     | 23,500                 | 1,600       |
| 2.5          | Medio      | 0.3     | 1.25    | 28,000                 | 1,200       |
| 2.0          | Acabado    | 0.3     | 1.0     | 35,000                 | 1,200       |
| 1.0          | Acabado    | 0.1     | 0.2     | 38,500                 | 1,050       |
| 0.6          | Acabado    | 0.1     | 0.2     | 63,500                 | 630         |



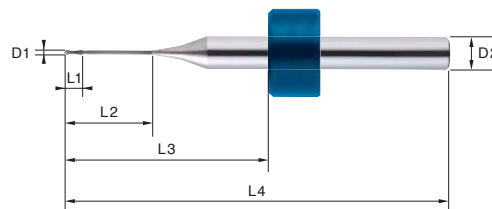


## Formato para orden especial de T Endmill

- Se pueden hacer anillos de parada y otros recursos de herramienta a pedido

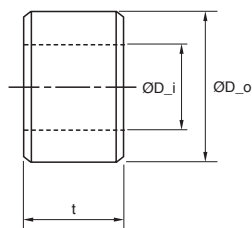
### [ Ficha de datos ]

|                                    |  |
|------------------------------------|--|
| Tipo de máquina                    |  |
| Pieza de trabajo                   |  |
| Material dental                    |  |
| Diámetro de corte (D1)             |  |
| Diámetro del mango (D2)            |  |
| Longitud de corte (L1)             |  |
| Longitud del cuello (L2)           |  |
| Posición del anillo de parada (L3) |  |
| Largo tota (L4)                    |  |
| Forma del anillo de parada         |  |

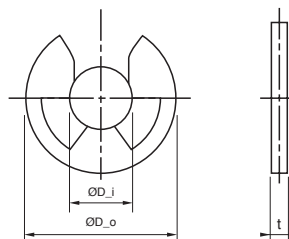


\* Si realiza un pedido especial, complete este formulario y envíelo a la oficina de ventas de KORLOY más cercana

### [ Especificación del anillo de parada ]



< Anillo plástico >



< Anillo tipo E >

(mm)

| Tipo            | Anillo de parada |      |      | Diámetro del Mango |    |    |
|-----------------|------------------|------|------|--------------------|----|----|
|                 | ØD_o             | ØD_i | t    | Ø3                 | Ø4 | Ø6 |
| Anillo plástico | Ø7.55            | Ø3   | 4.45 | ●                  |    |    |
|                 | Ø7.7             | Ø4   | 5.0  |                    | ●  |    |
|                 | Ø10.5            | Ø6   | 6.5  |                    |    | ●  |
| Anillo tipo E   | Ø6.0             | Ø2.5 | 0.4  | ●                  |    |    |

\* Se puede hacer que anillos de parada a pedido si los tamaños especificados se envían a una oficina de ventas KORLOY más cercana

# F Información Técnica para D Endmill

## Fresa enteriza revestido de diamante

# D Endmill new

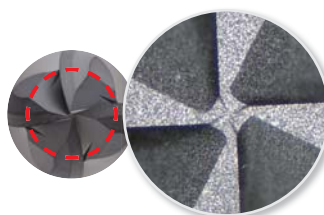
- Geometrías tangenciales de las aristas de corte para un excelente acabado superficial
- Excelente resistencia al desgaste debido a la alta dureza y recubrimiento de diamante de alta pureza
- Acabado superficial avanzado y rendimiento de corte gracias a los bordes afilados y las geometría tangencial

### Características



#### Geometría de filos tangencial

- Sistema de rectificado de un solo paso
- Evita pasadas escalonadas en la superficie maquinada
- Herramientas de 2 flautas y 4 flautas con punta esférica

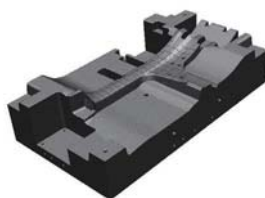


#### Forma esférica convergente al centro (4 flautas)

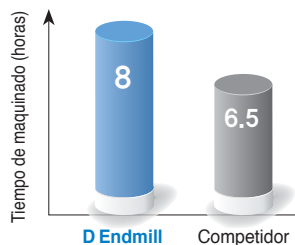
- Forma de punta esférica para mecanizado de alto avance
- Mejora de la rigidez y excelente acabado superficial

### Ejemplos de aplicación

- **Pieza de trabajo** Molde de grafito
- **Condiciones de corte**
  - vc (m/min) = 100
  - fz (mm/t) = 0.11
  - ap (mm) = 0.26, seco
- **Herramientas** DBE4060-110-N250S06

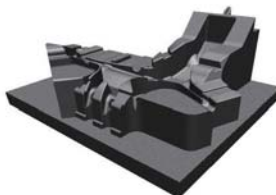


#### Resultado de la prueba

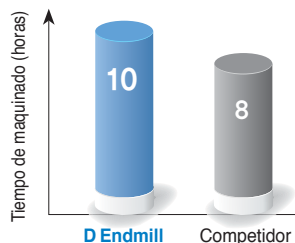


20% mayor vida útil

- **Pieza de trabajo** Molde de grafito
- **Condiciones de corte**
  - vc (m/min) = 180
  - fz (mm/t) = 0.1
  - ap (mm) = 0.2, seco
- **Herramientas** DBE2060-110-N250S06



#### Resultado de la prueba

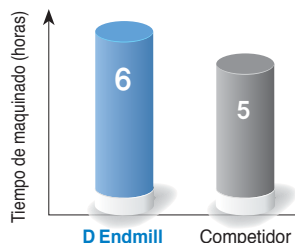


25% mayor vida útil

- **Pieza de trabajo** Molde de grafito
- **Condiciones de corte**
  - vc (m/min) = 300
  - fz (mm/t) = 0.1
  - ap (mm) = 0.15, seco
- **Herramientas** DBE2060-080-N250S06



#### Resultado de la prueba



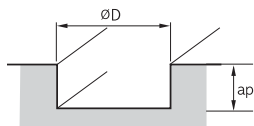
25% mayor vida útil



**Condiciones de corte recomendadas (Plano)**

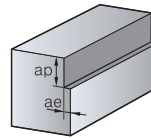
| Herramientas     | DFE2000 (Ranurado)              |                       | DFE2000 (Escuadrado)            |                       | DFE4000 (Escuadrado) |                       |
|------------------|---------------------------------|-----------------------|---------------------------------|-----------------------|----------------------|-----------------------|
| Pieza de trabajo | Grafito                         |                       |                                 |                       |                      |                       |
| Condición        | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) | RPM<br>n (min-1)     | Avance<br>vf (mm/min) |
| Diámetro (Ø)     |                                 |                       |                                 |                       |                      |                       |
| 1                | 40,000                          | 500                   | 40,000                          | 700                   | -                    | -                     |
| 2                | 25,000                          | 570                   | 25,000                          | 800                   | 25,000               | 1,600                 |
| 3                | 20,000                          | 570                   | 20,000                          | 800                   | 20,000               | 1,600                 |
| 4                | 18,000                          | 680                   | 18,000                          | 950                   | 18,000               | 1,900                 |
| 5                | 14,000                          | 960                   | 14,000                          | 1,200                 | 14,000               | 2,400                 |
| 6                | 11,000                          | 1,000                 | 11,000                          | 1,400                 | 11,000               | 2,800                 |
| 8                | 8,000                           | 930                   | 8,000                           | 1,300                 | 8,000                | 2,600                 |
| 10               | 6,500                           | 860                   | 6,500                           | 1,200                 | 6,500                | 2,400                 |
| 12               | 5,500                           | 860                   | 5,500                           | 1,200                 | 5,500                | 2,400                 |

**Consejo aplicación**



■ Profundidad de ranurado (ap)

- $D \leq \varnothing 2.5$ ,  $ap = 0.3D$
- $D > \varnothing 2.5$ ,  $ap = 0.5D$



■ Profundidad escuadrado (ap)

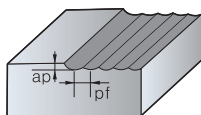
- $D \leq \varnothing 2.5$ ,  $ap = 1.5D$ ,  $ae = 0.05D$
- $D > \varnothing 2.5$ ,  $ap = 1.5D$ ,  $ae = 0.1D$

※ La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

**Condiciones de corte recomendadas (Esférico)**

| Herramientas     | DBE2000                         |                       | DBE4000                         |                       |
|------------------|---------------------------------|-----------------------|---------------------------------|-----------------------|
| Pieza de trabajo | Grafito                         |                       |                                 |                       |
| Condición        | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) |
| Diámetro (Ø)     |                                 |                       |                                 |                       |
| 1                | 16,000                          | 400                   | -                               | -                     |
| 2                | 16,000                          | 800                   | 16,000                          | 1,200                 |
| 3                | 16,000                          | 1,450                 | 16,000                          | 2,000                 |
| 4                | 16,000                          | 2,100                 | 16,000                          | 3,100                 |
| 5                | 15,500                          | 2,550                 | 15,000                          | 3,800                 |
| 6                | 15,000                          | 2,950                 | 15,000                          | 4,400                 |
| 8                | 13,000                          | 3,000                 | 13,000                          | 4,500                 |
| 10               | 11,500                          | 3,000                 | 12,000                          | 4,600                 |
| 12               | 10,700                          | 3,200                 | 10,000                          | 4,700                 |

**Consejo aplicación**



■ Profundidad de corte (ap)

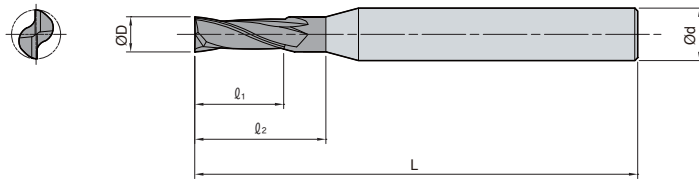
- $ap = 0.2D$
- $pf = 0.2D$

※ La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

**Alerta**

- Las condiciones de corte dependen de la condición de la máquina y la forma de corte
- La pieza de trabajo debe sujetarse rígidamente. En caso de vibraciones, reduzca las RPM y la velocidad de avance en la misma proporción
- Cuando el voladizo es más largo que 3D, reduzca las RPM y el avance

## DFE2000 (Plano)



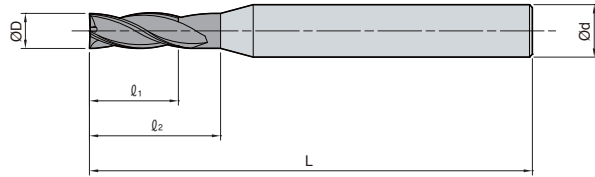
| ØD    | Tolerancia |
|-------|------------|
| ~Ø5.9 | 0.00~-0.02 |
| Ø6.0~ | 0.00~-0.03 |

(mm)

| Codigo           | ØD  | Ød | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L   |
|------------------|-----|----|----------------|----------------|-----|
| <b>DFE</b>       |     |    |                |                |     |
| 2010-045-N050S04 | 1   | 4  | 3              | 5              | 45  |
| 2010-060-N050S04 | 1   | 4  | 3              | 5              | 60  |
| 2010-060-N100S04 | 1   | 4  | 3              | 10             | 60  |
| 2010-060-N150S04 | 1   | 4  | 3              | 15             | 60  |
| 2010-060-N200S04 | 1   | 4  | 3              | 20             | 60  |
| 2010-060-N250S04 | 1   | 4  | 3              | 25             | 60  |
| 2015-060-N050S04 | 1.5 | 4  | 4              | 5              | 60  |
| 2015-060-N100S04 | 1.5 | 4  | 4              | 10             | 60  |
| 2015-060-N150S04 | 1.5 | 4  | 4              | 15             | 60  |
| 2015-060-N200S04 | 1.5 | 4  | 4              | 20             | 60  |
| 2015-060-N250S04 | 1.5 | 4  | 4              | 25             | 60  |
| 2020-045-N080S04 | 2   | 4  | 6              | 8              | 45  |
| 2020-080-N080S04 | 2   | 4  | 6              | 8              | 80  |
| 2020-080-N100S04 | 2   | 4  | 6              | 10             | 80  |
| 2020-080-N150S04 | 2   | 4  | 6              | 15             | 80  |
| 2020-080-N200S04 | 2   | 4  | 6              | 20             | 80  |
| 2020-080-N250S04 | 2   | 4  | 6              | 25             | 80  |
| 2020-080-N300S04 | 2   | 4  | 6              | 30             | 80  |
| 2020-080-N400S04 | 2   | 4  | 6              | 40             | 80  |
| 2030-050-N100S06 | 3   | 6  | 9              | 10             | 50  |
| 2030-080-N100S04 | 3   | 4  | 9              | 10             | 80  |
| 2030-080-N200S04 | 3   | 4  | 9              | 20             | 80  |
| 2030-080-N250S04 | 3   | 4  | 9              | 25             | 80  |
| 2030-080-N300S04 | 3   | 4  | 9              | 30             | 80  |
| 2030-080-N400S04 | 3   | 4  | 9              | 40             | 80  |
| 2040-050-N160S06 | 4   | 6  | 12             | 16             | 50  |
| 2040-080-N160S04 | 4   | 4  | 12             | 16             | 80  |
| 2050-060-N200S06 | 5   | 6  | 15             | 20             | 60  |
| 2050-110-N200S06 | 5   | 6  | 15             | 20             | 110 |
| 2060-060-N180S06 | 6   | 6  | 18             | -              | 60  |
| 2060-110-N250S06 | 6   | 6  | 18             | 25             | 110 |
| 2060-150-N250S06 | 6   | 6  | 18             | 25             | 150 |
| 2080-070-N250S08 | 8   | 8  | 25             | -              | 70  |
| 2080-150-N400S08 | 8   | 8  | 25             | 40             | 150 |
| 2100-080-N300S10 | 10  | 10 | 30             | -              | 80  |
| 2100-150-N500S10 | 10  | 10 | 30             | 50             | 150 |
| 2120-080-N350S12 | 12  | 12 | 35             | -              | 80  |
| 2120-150-N600S12 | 12  | 12 | 35             | 60             | 150 |



# DFE4000 (Plano)

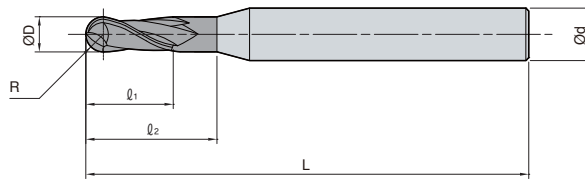


| ØD    | Tolerancia  |
|-------|-------------|
| ~Ø5.9 | 0.00~ -0.02 |
| Ø6.0~ | 0.00~ -0.03 |

(mm)

| Codigo           | ØD | Ød | l <sub>1</sub> | l <sub>2</sub> | L   |
|------------------|----|----|----------------|----------------|-----|
| <b>DFE</b>       |    |    |                |                |     |
| 4020-045-N060S04 | 2  | 4  | 6              | 8              | 45  |
| 4020-060-N100S04 | 2  | 4  | 10             | 12             | 60  |
| 4030-050-N100S06 | 3  | 6  | 10             | 12             | 50  |
| 4030-060-N150S04 | 3  | 4  | 15             | 18             | 60  |
| 4040-050-N150S06 | 4  | 6  | 15             | 18             | 50  |
| 4040-080-N200S04 | 4  | 4  | 20             | -              | 80  |
| 4060-060-N180S06 | 6  | 6  | 18             | -              | 60  |
| 4060-110-N300S06 | 6  | 6  | 30             | -              | 110 |
| 4060-150-N300S06 | 6  | 6  | 30             | -              | 150 |
| 4080-070-N250S08 | 8  | 8  | 25             | -              | 70  |
| 4080-110-N400S08 | 8  | 8  | 40             | -              | 110 |
| 4080-150-N400S08 | 8  | 8  | 40             | -              | 150 |
| 4100-080-N250S10 | 10 | 10 | 25             | -              | 80  |
| 4100-110-N400S10 | 10 | 10 | 40             | -              | 110 |
| 4100-150-N500S10 | 10 | 10 | 50             | -              | 150 |
| 4120-080-N300S12 | 12 | 12 | 30             | -              | 80  |
| 4120-110-N400S12 | 12 | 12 | 40             | -              | 110 |
| 4120-150-N500S12 | 12 | 12 | 50             | -              | 150 |

## DBE2000 (Esférico)



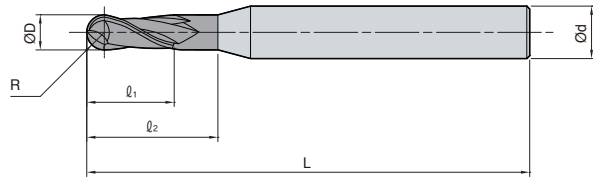
| ØD    | Tolerancia |
|-------|------------|
| ~Ø5.9 | 0.00~-0.02 |
| Ø6.0~ | 0.00~-0.03 |

(mm)

| Codigo           | R    | ØD  | Ød | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L   |
|------------------|------|-----|----|----------------|----------------|-----|
| <b>DBE</b>       |      |     |    |                |                |     |
| 2006-045-N020S04 | 0.3  | 0.6 | 4  | 2              | 2              | 45  |
| 2006-045-N050S04 | 0.3  | 0.6 | 4  | 2              | 5              | 45  |
| 2006-045-N080S04 | 0.3  | 0.6 | 4  | 2              | 8              | 45  |
| 2006-045-N100S04 | 0.3  | 0.6 | 4  | 2              | 10             | 45  |
| 2008-045-N030S04 | 0.4  | 0.8 | 4  | 2.5            | 3              | 45  |
| 2008-045-N050S04 | 0.4  | 0.8 | 4  | 2.5            | 5              | 45  |
| 2008-045-N100S04 | 0.4  | 0.8 | 4  | 2.5            | 10             | 45  |
| 2010-060-N030S04 | 0.5  | 1   | 4  | 3              | 3              | 60  |
| 2010-060-N050S04 | 0.5  | 1   | 4  | 3              | 5              | 60  |
| 2010-060-N080S04 | 0.5  | 1   | 4  | 3              | 8              | 60  |
| 2010-060-N100S04 | 0.5  | 1   | 4  | 3              | 10             | 60  |
| 2010-060-N120S04 | 0.5  | 1   | 4  | 3              | 12             | 60  |
| 2010-060-N150S04 | 0.5  | 1   | 4  | 3              | 15             | 60  |
| 2010-060-N200S04 | 0.5  | 1   | 4  | 3              | 20             | 60  |
| 2010-080-N250S04 | 0.5  | 1   | 4  | 3              | 25             | 80  |
| 2010-080-N300S04 | 0.5  | 1   | 4  | 3              | 30             | 80  |
| 2010-080-N350S04 | 0.5  | 1   | 4  | 3              | 35             | 80  |
| 2010-080-N400S04 | 0.5  | 1   | 4  | 3              | 40             | 80  |
| 2015-060-N050S04 | 0.75 | 1.5 | 4  | 4              | 5              | 60  |
| 2015-080-N100S04 | 0.75 | 1.5 | 4  | 4              | 10             | 80  |
| 2015-080-N150S04 | 0.75 | 1.5 | 4  | 4              | 15             | 80  |
| 2015-080-N200S04 | 0.75 | 1.5 | 4  | 4              | 20             | 80  |
| 2015-080-N250S04 | 0.75 | 1.5 | 4  | 4              | 25             | 80  |
| 2015-080-N300S04 | 0.75 | 1.5 | 4  | 4              | 30             | 80  |
| 2015-080-N350S04 | 0.75 | 1.5 | 4  | 4              | 35             | 80  |
| 2015-080-N400S04 | 0.75 | 1.5 | 4  | 4              | 40             | 80  |
| 2020-060-N080S04 | 1    | 2   | 4  | 6              | 8              | 60  |
| 2020-080-N100S04 | 1    | 2   | 4  | 6              | 10             | 80  |
| 2020-080-N150S04 | 1    | 2   | 4  | 6              | 15             | 80  |
| 2020-080-N200S04 | 1    | 2   | 4  | 6              | 20             | 80  |
| 2020-080-N250S04 | 1    | 2   | 4  | 6              | 25             | 80  |
| 2020-080-N300S04 | 1    | 2   | 4  | 6              | 30             | 80  |
| 2020-080-N350S04 | 1    | 2   | 4  | 6              | 35             | 80  |
| 2020-100-N400S04 | 1    | 2   | 4  | 6              | 40             | 100 |
| 2020-100-N450S04 | 1    | 2   | 4  | 6              | 45             | 100 |
| 2020-100-N500S04 | 1    | 2   | 4  | 6              | 50             | 100 |



# DBE2000 (Esférico)

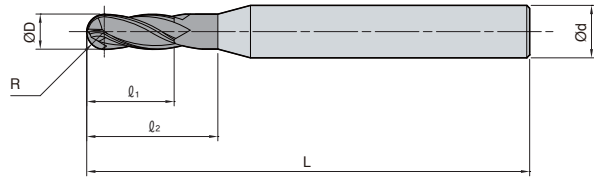


| ØD    | Tolerancia |
|-------|------------|
| ~Ø5.9 | 0.00~-0.02 |
| Ø6.0~ | 0.00~-0.03 |

(mm)

| Codigo           | R   | ØD | Ød | l <sub>1</sub> | l <sub>2</sub> | L   |
|------------------|-----|----|----|----------------|----------------|-----|
| <b>DBE</b>       |     |    |    |                |                |     |
| 2030-060-N100S04 | 1.5 | 3  | 4  | 9              | 10             | 60  |
| 2030-100-N150S04 | 1.5 | 3  | 4  | 9              | 15             | 100 |
| 2030-100-N200S04 | 1.5 | 3  | 4  | 9              | 20             | 100 |
| 2030-100-N250S04 | 1.5 | 3  | 4  | 9              | 25             | 100 |
| 2030-100-N300S04 | 1.5 | 3  | 4  | 9              | 30             | 100 |
| 2030-100-N350S04 | 1.5 | 3  | 4  | 9              | 35             | 100 |
| 2030-100-N400S04 | 1.5 | 3  | 4  | 9              | 40             | 100 |
| 2030-100-N500S04 | 1.5 | 3  | 4  | 9              | 50             | 100 |
| 2040-060-N160S04 | 2   | 4  | 4  | 12             | 16             | 60  |
| 2040-080-N160S04 | 2   | 4  | 4  | 12             | 16             | 80  |
| 2040-080-N300S04 | 2   | 4  | 4  | 12             | 30             | 80  |
| 2040-100-N160S04 | 2   | 4  | 4  | 12             | 16             | 100 |
| 2040-100-N400S04 | 2   | 4  | 4  | 12             | 40             | 100 |
| 2040-130-N160S04 | 2   | 4  | 4  | 12             | 16             | 130 |
| 2040-130-N400S04 | 2   | 4  | 4  | 12             | 40             | 130 |
| 2050-110-N200S06 | 2.5 | 5  | 6  | 15             | 20             | 110 |
| 2060-080-N250S06 | 3   | 6  | 6  | 20             | 25             | 80  |
| 2060-110-N250S06 | 3   | 6  | 6  | 20             | 25             | 110 |
| 2060-150-N300S06 | 3   | 6  | 6  | 20             | 30             | 150 |
| 2080-080-N300S08 | 4   | 8  | 8  | 25             | 30             | 80  |
| 2080-110-N300S08 | 4   | 8  | 8  | 25             | 30             | 110 |
| 2080-150-N500S08 | 4   | 8  | 8  | 25             | 50             | 150 |
| 2080-200-N400S08 | 4   | 8  | 8  | 25             | 40             | 200 |
| 2100-080-N400S10 | 5   | 10 | 10 | 30             | 40             | 80  |
| 2100-110-N400S10 | 5   | 10 | 10 | 30             | 40             | 110 |
| 2100-150-N600S10 | 5   | 10 | 10 | 30             | 60             | 150 |
| 2100-200-N500S10 | 5   | 10 | 10 | 30             | 50             | 200 |
| 2120-110-N500S12 | 6   | 12 | 12 | 35             | 50             | 110 |
| 2120-150-N500S12 | 6   | 12 | 12 | 35             | 50             | 150 |
| 2120-200-N600S12 | 6   | 12 | 12 | 35             | 60             | 200 |

## DBE4000 (Esférico)



| ØD    | Tolerancia |
|-------|------------|
| ~Ø5.9 | 0.00~-0.02 |
| Ø6.0~ | 0.00~-0.03 |

(mm)

| Codigo           | R   | ØD | Ød | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L   |
|------------------|-----|----|----|----------------|----------------|-----|
| <b>DBE</b>       |     |    |    |                |                |     |
| 4020-060-N080S04 | 1   | 2  | 4  | 6              | 8              | 60  |
| 4020-080-N100S04 | 1   | 2  | 4  | 6              | 10             | 80  |
| 4020-080-N200S04 | 1   | 2  | 4  | 6              | 20             | 80  |
| 4020-080-N300S04 | 1   | 2  | 4  | 6              | 30             | 80  |
| 4020-080-N400S04 | 1   | 2  | 4  | 6              | 40             | 80  |
| 4030-060-N100S04 | 1.5 | 3  | 4  | 9              | 10             | 60  |
| 4030-100-N150S04 | 1.5 | 3  | 4  | 9              | 15             | 100 |
| 4030-100-N200S04 | 1.5 | 3  | 4  | 9              | 20             | 100 |
| 4030-100-N300S04 | 1.5 | 3  | 4  | 9              | 30             | 100 |
| 4030-100-N400S04 | 1.5 | 3  | 4  | 9              | 40             | 100 |
| 4030-100-N500S04 | 1.5 | 3  | 4  | 9              | 50             | 100 |
| 4040-060-N160S04 | 2   | 4  | 4  | 12             | 16             | 60  |
| 4040-080-N160S04 | 2   | 4  | 4  | 12             | 16             | 80  |
| 4040-100-N160S04 | 2   | 4  | 4  | 12             | 16             | 100 |
| 4040-130-N160S04 | 2   | 4  | 4  | 12             | 16             | 130 |
| 4060-080-N250S06 | 3   | 6  | 6  | 20             | 25             | 80  |
| 4060-110-N250S06 | 3   | 6  | 6  | 20             | 25             | 110 |
| 4060-150-N300S06 | 3   | 6  | 6  | 20             | 30             | 150 |
| 4080-080-N300S08 | 4   | 8  | 8  | 25             | 30             | 80  |
| 4080-110-N300S08 | 4   | 8  | 8  | 25             | 30             | 110 |
| 4080-150-N350S08 | 4   | 8  | 8  | 25             | 35             | 150 |
| 4080-200-N400S08 | 4   | 8  | 8  | 25             | 40             | 200 |
| 4100-080-N350S10 | 5   | 10 | 10 | 30             | 35             | 80  |
| 4100-110-N350S10 | 5   | 10 | 10 | 30             | 35             | 110 |
| 4100-150-N400S10 | 5   | 10 | 10 | 30             | 40             | 150 |
| 4100-200-N500S10 | 5   | 10 | 10 | 30             | 50             | 200 |
| 4120-110-N500S12 | 6   | 12 | 12 | 35             | 50             | 110 |
| 4120-150-N500S12 | 6   | 12 | 12 | 35             | 50             | 150 |
| 4120-200-N600S12 | 6   | 12 | 12 | 35             | 60             | 200 |





Buena resistencia al astillado y resistencia a la aparición del filo de aportación

# Fresa enteriza sólidas para aluminio

- Buen acabado superficial, reduciendo la carga de corte y la aparición de filo de aportación
- Recubrimiento DLC
  - Mayor dureza (Hv3000-7000), prolongando la vida útil de la herramienta, aproximadamente de 3 a 6 veces mayor en comparación con la fresa sin recubrimiento
  - Ayuda a conseguir una rugosidad superficial baja en la pieza de trabajo gracias al excelente efecto lubricante; coeficiente de fricción muy bajo ( $\mu < 0.1$ )
- Superior en aluminio, aleaciones de aluminio, cobre y aleaciones de cobre

## Características del mecanizado de cobre y aluminio

- El filo de aportación se genera fácilmente aunque la pieza de trabajo tenga baja resistencia al corte y la evacuación de virutas sea buena
- Debido a que el coeficiente de expansión térmica es alto, el grado de deflexión debido al calor de mecanizado es muy elevado, y también ejerce una influencia sobre la calidad de la pieza de trabajo y la tensión residual
- Durante el mecanizado, las virutas pueden dañar fácilmente la superficie de la pieza de trabajo, ya que la dureza de estos materiales es baja. En general, la vida de la herramienta termina debido al desgaste de los flancos.

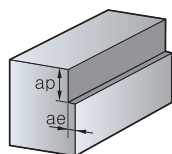
## Resolución de problemas para el mecanizado de cobre y aluminio

- Use mayor incidencia, filo positivo, aceite de corte (MQL) para disminuir la carga de corte y el filo de aporte
- Aumente  $V_c$  y reduzca la profundidad de corte para un mejor acabado superficial

## Condiciones de corte recomendadas (SSEA2000)

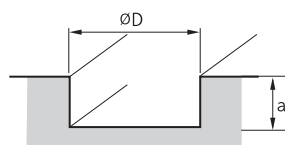
| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | Escuadrado                      |                       |                                    |                       | Ranurado                        |                       |                                    |                       |
|---|---------------------------------|-----------------------|------------------------------------|-----------------------|---------------------------------|-----------------------|------------------------------------|-----------------------|
|   | Aleación de aluminio (A7075)    |                       | Aleación de aluminio (cast) (AC4B) |                       | Aleación de aluminio (A7075)    |                       | Aleación de aluminio (cast) (AC4B) |                       |
|   | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> )    | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> )    | Avance<br>vf (mm/min) |
| 1   | 40,000                          | 480                   | 40,000                             | 368                   | 40,000                          | 368                   | 40,000                             | 280                   |
| 2   | 40,000                          | 880                   | 38,000                             | 680                   | 38,000                          | 680                   | 32,000                             | 440                   |
| 3   | 32,000                          | 1,120                 | 25,000                             | 760                   | 25,000                          | 760                   | 21,000                             | 480                   |
| 4   | 24,000                          | 1,200                 | 19,000                             | 800                   | 19,000                          | 800                   | 13,000                             | 520                   |
| 5   | 19,000                          | 1,280                 | 15,000                             | 880                   | 15,000                          | 800                   | 13,000                             | 560                   |
| 6   | 16,000                          | 1,520                 | 13,000                             | 960                   | 13,000                          | 880                   | 11,000                             | 600                   |
| 8   | 12,000                          | 1,520                 | 9,500                              | 960                   | 9,500                           | 960                   | 8,000                              | 640                   |
| 10  | 9,500                           | 1,520                 | 7,600                              | 960                   | 7,600                           | 960                   | 6,400                              | 640                   |
| 12  | 8,000                           | 1,520                 | 6,400                              | 960                   | 6,400                           | 960                   | 5,300                              | 640                   |
| 16  | 6,000                           | 1,520                 | 4,800                              | 960                   | 4,800                           | 800                   | 4,000                              | 576                   |
| 20  | 4,800                           | 1,200                 | 3,800                              | 800                   | 3,800                           | 776                   | 3,200                              | 528                   |

### Consejo aplicación



#### Profundidad de corte (ap) y empuje (ae)

- $ap: \leq 2.0D$
- $ae: \leq 0.2D$  ( $D < \varnothing 3$ )  
 $\leq 0.5D$  ( $D \geq \varnothing 3$ )

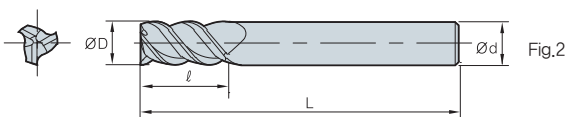
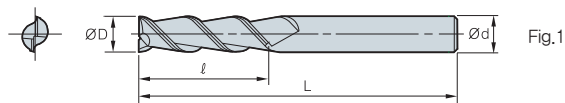


#### Profundidad de ranura (ap)

- $ap: \leq D$  (Máx: 12 mm)

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibraciones, reduzca la R.P.M y la velocidad de avance en la misma proporción

## SSEA2000/3000 (Plano)



| ØD      | Tolerancia    |
|---------|---------------|
| Ø1~Ø6   | -0.010~-0.030 |
| Ø7~Ø10  | -0.015~-0.040 |
| Ø11~Ø20 | -0.020~-0.050 |

(mm)

|             | Codigo      | ØD   | Ød | ℓ  | L  | Fig. |
|-------------|-------------|------|----|----|----|------|
| <b>SSEA</b> | 2010        | 1    | 6  | 3  | 40 | 1    |
|             | 2015        | 1.5  | 6  | 4  | 40 | 1    |
|             | 2020        | 2    | 6  | 6  | 40 | 1    |
|             | 2025        | 2.5  | 6  | 7  | 40 | 1    |
|             | 2030        | 3    | 6  | 10 | 45 | 1    |
|             | 2035        | 3.5  | 6  | 10 | 45 | 1    |
|             | 2040        | 4    | 6  | 12 | 45 | 1    |
|             | 2050        | 5    | 6  | 15 | 50 | 1    |
|             | 2060        | 6    | 6  | 15 | 50 | 1    |
|             | 2070        | 7    | 8  | 20 | 60 | 1    |
|             | 2080        | 8    | 8  | 20 | 60 | 1    |
|             | 2090        | 9    | 10 | 20 | 70 | 1    |
|             | 2100        | 10   | 10 | 25 | 70 | 1    |
|             | 2110        | 11   | 12 | 25 | 75 | 1    |
|             | 2120        | 12   | 12 | 30 | 75 | 1    |
|             | 2130        | 13   | 16 | 30 | 90 | 1    |
|             | 2140        | 14   | 16 | 35 | 90 | 1    |
|             | 2150        | 15   | 16 | 40 | 90 | 1    |
|             | 2160        | 16   | 16 | 40 | 90 | 1    |
|             | <b>SSEA</b> | 3020 | 2  | 6  | 6  | 40   |
| 3030        |             | 3    | 6  | 10 | 45 | 2    |
| 3035        |             | 3.5  | 6  | 10 | 45 | 2    |
| 3040        |             | 4    | 6  | 12 | 45 | 2    |
| 3050        |             | 5    | 6  | 15 | 50 | 2    |
| 3060        |             | 6    | 6  | 15 | 50 | 2    |
| 3070        |             | 7    | 8  | 20 | 60 | 2    |
| 3080        |             | 8    | 8  | 20 | 60 | 2    |
| 3090        |             | 9    | 10 | 20 | 70 | 2    |
| 3100        |             | 10   | 10 | 25 | 70 | 2    |
| 3110        |             | 11   | 12 | 25 | 75 | 2    |
| 3120        |             | 12   | 12 | 30 | 75 | 2    |
| 3130        |             | 13   | 16 | 30 | 90 | 2    |
| 3140        |             | 14   | 16 | 35 | 90 | 2    |
| 3150        |             | 15   | 16 | 40 | 90 | 2    |
| 3160        |             | 16   | 16 | 40 | 90 | 2    |

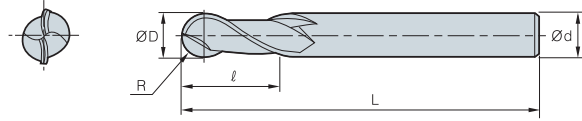
Orden especial de endmills: SSEA○○○○○I-L

Ej.1) 3 flautas, diámetro: 6.3.I: 17, L: 60 SSEA3063 17-60L

Ej.2) 3 flautas, diámetro: 6.3. tipo standard SSEA3063



# SSBEA2000 (Esférico)



| ØD    | Tolerancia |
|-------|------------|
| Todos | 0~-0.03    |

(mm)

| Codigo       | R    | ØD  | Ød | ℓ  | L   |
|--------------|------|-----|----|----|-----|
| <b>SSBEA</b> |      |     |    |    |     |
| 2010         | 0.5  | 1   | 6  | 3  | 70  |
| 2015         | 0.75 | 1.5 | 6  | 4  | 70  |
| 2020         | 1    | 2   | 6  | 6  | 70  |
| 2025         | 1.25 | 2.5 | 6  | 8  | 70  |
| 2030         | 1.5  | 3   | 6  | 10 | 70  |
| 2035         | 1.75 | 3.5 | 6  | 10 | 70  |
| 2040         | 2    | 4   | 6  | 12 | 70  |
| 2045         | 2.25 | 4.5 | 6  | 15 | 80  |
| 2050         | 2.5  | 5   | 6  | 15 | 80  |
| 2055         | 2.75 | 5.5 | 6  | 15 | 80  |
| 2060         | 3    | 6   | 6  | 15 | 80  |
| 2065         | 3.25 | 6.5 | 8  | 20 | 90  |
| 2070         | 3.5  | 7   | 8  | 20 | 90  |
| 2075         | 3.75 | 7.5 | 8  | 20 | 90  |
| 2080         | 4    | 8   | 8  | 20 | 90  |
| 2085         | 4.25 | 8.5 | 10 | 25 | 100 |
| 2090         | 4.5  | 9   | 10 | 25 | 100 |
| 2100         | 5    | 10  | 10 | 25 | 100 |
| 2110         | 5.5  | 11  | 12 | 30 | 110 |
| 2120         | 6    | 12  | 12 | 30 | 110 |
| 2130         | 6.5  | 13  | 16 | 35 | 120 |
| 2140         | 7    | 14  | 16 | 35 | 120 |
| 2150         | 7.5  | 15  | 16 | 40 | 120 |
| 2160         | 8    | 16  | 16 | 40 | 120 |
| 2170         | 8.5  | 17  | 20 | 40 | 130 |
| 2180         | 9    | 18  | 20 | 45 | 130 |
| 2190         | 9.5  | 19  | 20 | 45 | 130 |
| 2200         | 10   | 20  | 20 | 45 | 130 |

Orden especial de endmills: SSEA○○○○○I-L

Ej.1) 3 flautas, diámetro: 6.3.I: 17, L: 60 SSEA3063 17-60L

Ej.2) 3 flautas, diámetro: 6.3. tipo standard SSEA3063

# F Información Técnica para C-Max

(Cobre)

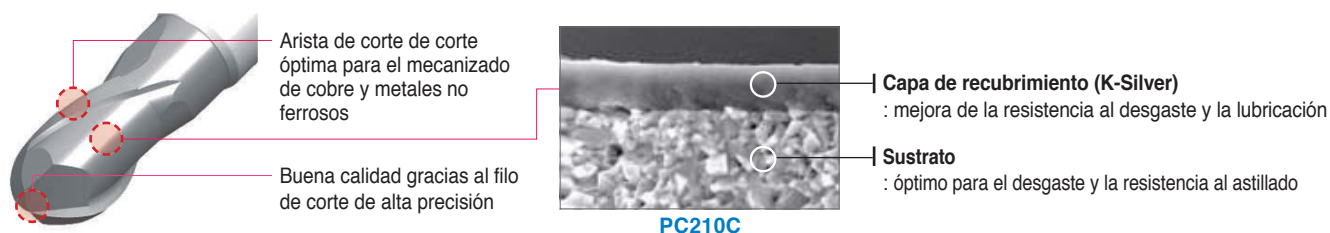
Larga vida de la herramienta y buena rugosidad de la superficie para el mecanizado de electrodos

## C-Max

### Cobre

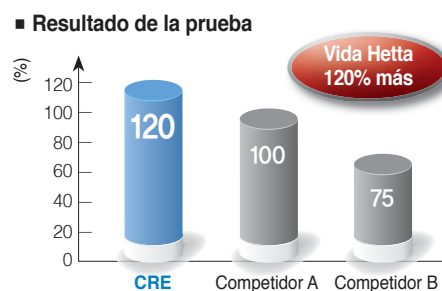
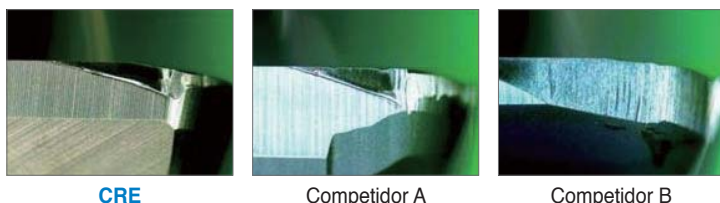
- Recubrimiento K-Silver y sustrato óptimo, garantizando una lubricación superior, resistencia al desgaste y resistencia al astillado
- Óptimo para el mecanizado de cobre y metales no ferrosos
- Amplia selección de productos (esférico, plano, con radio y con vástago largo)

### Características



### Ejemplo de aplicación

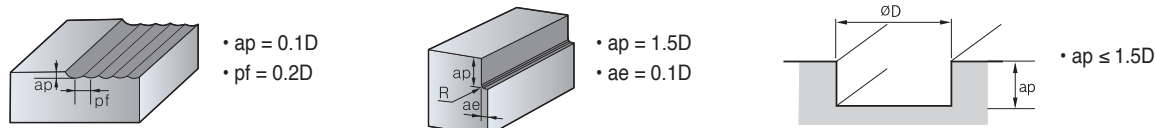
- **Pieza de trabajo** Cu, mecanizado de electrodos
- **Condiciones de corte**  $vc$  (m/min) = 70,  $fz$  (mm/t) = 0.083,  $ap$  (mm) = 0.6,  $ae$  (mm) = 3.0
- **Herramientas** CRE4100-070-R10



### Condiciones de corte recomendadas

| Pieza de trabajo       | CBE/CBNE                     |                    | CFE/CFNE                     |                    | CRE/CRNE                     |                    |
|------------------------|------------------------------|--------------------|------------------------------|--------------------|------------------------------|--------------------|
|                        | Aleaciones de Cobre          |                    |                              |                    |                              |                    |
| Condición Diámetro (Ø) | R.P.M n (min <sup>-1</sup> ) | Avance vf (mm/min) | R.P.M n (min <sup>-1</sup> ) | Avance vf (mm/min) | R.P.M n (min <sup>-1</sup> ) | Avance vf (mm/min) |
| 0.5                    | 40,000                       | 2,600              | 40,000                       | 1,800              | -                            | -                  |
| 1                      | 40,000                       | 2,800              | 40,000                       | 2,000              | 40,000                       | 2,000              |
| 1.5                    | 40,000                       | 3,200              | 40,000                       | 2,400              | 30,000                       | 2,400              |
| 2                      | 40,000                       | 3,600              | 30,000                       | 1,800              | 30,000                       | 1,800              |
| 3                      | 40,000                       | 4,000              | 23,000                       | 1,380              | 20,000                       | 1,380              |
| 4                      | 32,000                       | 3,200              | 15,000                       | 900                | 15,000                       | 900                |
| 5                      | 25,000                       | 2,500              | 12,000                       | 750                | 12,000                       | 750                |
| 6                      | 21,000                       | 2,100              | 10,000                       | 600                | 10,000                       | 600                |
| 8                      | 16,000                       | 1,600              | 8,000                        | 480                | 8,000                        | 480                |
| 10                     | 13,000                       | 1,300              | 6,400                        | 384                | 6,400                        | 384                |
| 12                     | 9,000                        | 900                | 5,400                        | 324                | 5,400                        | 324                |

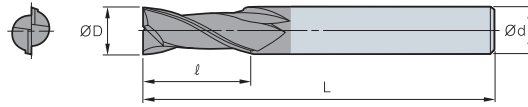
### Consejo aplicación



\* La pieza de trabajo debe sujetarse rígidamente En caso de vibraciones, reduzca la R.P.M y la velocidad de avance en la misma proporción



## CFE2000 (Plano)

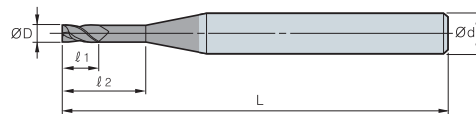


| ØD      | Tolerancia |
|---------|------------|
| Ø0.5~Ø6 | 0.00~0.01  |
| Ø8~Ø12  | 0.00~0.02  |

(mm)

| Codigo     | ØD  | Ød | ℓ   | L  |
|------------|-----|----|-----|----|
| <b>CFE</b> |     |    |     |    |
| 2010-040   | 1   | 4  | 2.5 | 40 |
| 2015-040   | 1.5 | 4  | 4   | 40 |
| 2020-045   | 2   | 4  | 5   | 45 |
| 2030-045   | 3   | 6  | 8   | 45 |
| 2040-050   | 4   | 6  | 11  | 50 |
| 2050-060   | 5   | 6  | 13  | 60 |
| 2060-060   | 6   | 6  | 13  | 60 |
| 2080-060   | 8   | 8  | 19  | 60 |
| 2100-070   | 10  | 10 | 22  | 70 |
| 2120-075   | 12  | 12 | 26  | 75 |

## CFNE2000 (Plano de Cuello Largo)

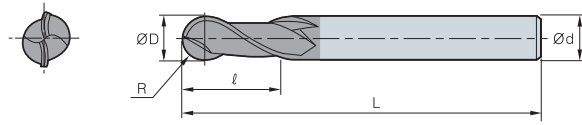


| ØD      | Tolerancia |
|---------|------------|
| Ø0.5~Ø6 | 0.00~0.01  |
| Ø8~Ø12  | 0.00~0.02  |

(mm)

| Codigo       | ØD  | Ød | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L  |
|--------------|-----|----|----------------|----------------|----|
| <b>CFNE</b>  |     |    |                |                |    |
| 2005-045-N2  | 0.5 | 4  | 0.8            | 2              | 45 |
| 2005-045-N4  | 0.5 | 4  | 0.8            | 4              | 45 |
| 2005-045-N6  | 0.5 | 4  | 0.8            | 6              | 45 |
| 2005-050-N8  | 0.5 | 4  | 0.8            | 8              | 50 |
| 2010-045-N4  | 1   | 4  | 1.5            | 4              | 45 |
| 2010-045-N6  | 1   | 4  | 1.5            | 6              | 45 |
| 2010-050-N8  | 1   | 4  | 1.5            | 8              | 50 |
| 2010-050-N10 | 1   | 4  | 1.5            | 10             | 50 |
| 2015-045-N6  | 1.5 | 4  | 2.3            | 6              | 45 |
| 2015-050-N8  | 1.5 | 4  | 2.3            | 8              | 50 |
| 2015-050-N10 | 1.5 | 4  | 2.3            | 10             | 50 |
| 2015-050-N12 | 1.5 | 4  | 2.3            | 12             | 50 |
| 2020-045-N6  | 2   | 4  | 3              | 6              | 45 |
| 2020-050-N8  | 2   | 4  | 3              | 8              | 50 |
| 2020-050-N10 | 2   | 4  | 3              | 10             | 50 |
| 2020-055-N12 | 2   | 4  | 3              | 12             | 50 |
| 2030-050-N10 | 3   | 4  | 4.5            | 10             | 50 |
| 2030-050-N12 | 3   | 4  | 4.5            | 12             | 50 |
| 2030-060-N14 | 3   | 4  | 4.5            | 14             | 60 |
| 2030-060-N16 | 3   | 4  | 4.5            | 16             | 60 |
| 2040-050-N12 | 4   | 6  | 6              | 12             | 50 |
| 2040-050-N16 | 4   | 6  | 6              | 16             | 50 |
| 2040-060-N20 | 4   | 6  | 6              | 20             | 60 |

## CBE2000 (Esférico)

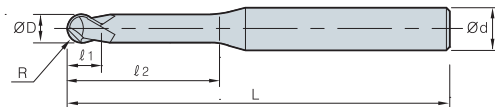


| ØD      | Tolerancia | R Tolerancia |
|---------|------------|--------------|
| Ø0.5-Ø6 | 0.00-0.01  | ±0.005       |
| Ø8-Ø12  | 0.00-0.02  | ±0.005       |

(mm)

| Codigo              | R    | ØD  | Ød | ℓ   | L   |
|---------------------|------|-----|----|-----|-----|
| <b>CBE</b> 2010-050 | 0.5  | 1   | 4  | 2.5 | 50  |
| 2015-050            | 0.75 | 1.5 | 4  | 4   | 50  |
| 2020-050            | 1    | 2   | 4  | 5   | 50  |
| 2030-060            | 1.2  | 3   | 6  | 8   | 60  |
| 2040-070            | 2    | 4   | 6  | 8   | 70  |
| 2050-080            | 2.5  | 5   | 6  | 10  | 80  |
| 2060-080            | 3    | 6   | 6  | 12  | 80  |
| 2080-090            | 4    | 8   | 8  | 14  | 90  |
| 2100-100            | 5    | 10  | 10 | 18  | 100 |
| 2120-110            | 6    | 12  | 12 | 22  | 110 |

## CBNE2000 (Esférico de Cuello Largo)



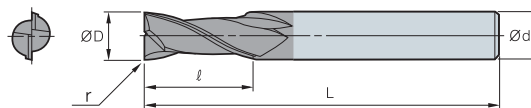
| ØD      | Tolerancia |
|---------|------------|
| Ø0.5-Ø6 | 0.00-0.01  |
| Ø8-Ø12  | 0.00-0.02  |

(mm)

| Codigo                  | R    | ØD  | Ød | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L  |
|-------------------------|------|-----|----|----------------|----------------|----|
| <b>CBNE</b> 2005-045-N2 | 0.25 | 0.5 | 4  | 0.5            | 2              | 45 |
| 2005-045-N4             | 0.25 | 0.5 | 4  | 0.5            | 4              | 45 |
| 2005-045-N6             | 0.25 | 0.5 | 4  | 0.5            | 6              | 45 |
| 2005-050-N8             | 0.25 | 0.5 | 4  | 0.5            | 8              | 50 |
| 2010-045-N4             | 0.5  | 1   | 4  | 1              | 4              | 45 |
| 2010-045-N6             | 0.5  | 1   | 4  | 1              | 6              | 45 |
| 2010-050-N8             | 0.5  | 1   | 4  | 1              | 8              | 50 |
| 2010-050-N10            | 0.5  | 1   | 4  | 1              | 10             | 50 |
| 2015-050-N8             | 0.75 | 1.5 | 4  | 1.5            | 8              | 50 |
| 2015-050-N10            | 0.75 | 1.5 | 4  | 1.5            | 10             | 50 |
| 2015-050-N12            | 0.75 | 1.5 | 4  | 1.5            | 12             | 50 |
| 2015-055-N14            | 0.75 | 1.5 | 4  | 1.5            | 14             | 55 |
| 2020-050-N8             | 1    | 2   | 4  | 2              | 8              | 50 |
| 2020-050-N10            | 1    | 2   | 4  | 2              | 10             | 50 |
| 2020-050-N12            | 1    | 2   | 4  | 2              | 12             | 50 |
| 2020-055-N14            | 1    | 2   | 4  | 2              | 14             | 55 |
| 2030-050-N10            | 1.5  | 3   | 4  | 3              | 10             | 50 |
| 2030-050-N12            | 1.5  | 3   | 4  | 3              | 12             | 50 |
| 2030-055-N14            | 1.5  | 3   | 4  | 3              | 14             | 55 |
| 2030-055-N16            | 1.5  | 3   | 4  | 3              | 16             | 60 |
| 2040-060-N16            | 2    | 4   | 6  | 4              | 16             | 60 |
| 2040-060-N20            | 2    | 4   | 6  | 4              | 20             | 60 |
| 2040-070-N25            | 2    | 4   | 6  | 4              | 25             | 70 |
| 2040-070-N30            | 2    | 4   | 6  | 4              | 30             | 70 |



## CRE2000 (Radio)

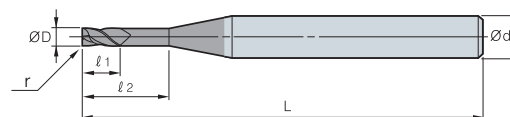


| ØD      | Tolerancia | R Tolerancia |
|---------|------------|--------------|
| Ø0.5~Ø6 | 0.00~0.01  | ±0.005       |
| Ø8~Ø12  | 0.00~0.02  | ±0.005       |

(mm)

| Codigo                  | r   | ØD | Ød | ℓ  | L  |
|-------------------------|-----|----|----|----|----|
| <b>CRE</b> 2020-045-R05 | 0.5 | 2  | 4  | 5  | 45 |
| 2030-045-R05            | 0.5 | 3  | 6  | 8  | 45 |
| 2040-050-R05            | 0.5 | 4  | 6  | 11 | 50 |
| 2050-060-R05            | 0.5 | 5  | 6  | 13 | 60 |
| 2060-060-R05            | 0.5 | 6  | 6  | 13 | 60 |
| 2080-060-R10            | 1   | 8  | 8  | 19 | 60 |
| 2100-070-R10            | 1   | 10 | 10 | 22 | 70 |
| 2120-075-R10            | 1   | 12 | 12 | 26 | 75 |

## CRNE2000 (Esférico de Cuello Largo)



| ØD      | Tolerancia | R Tolerancia |
|---------|------------|--------------|
| Ø0.5~Ø6 | 0.00~0.01  | ±0.005       |
| Ø8~Ø12  | 0.00~0.02  | ±0.005       |

(mm)

| Codigo                     | r   | ØD  | Ød | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L  |
|----------------------------|-----|-----|----|----------------|----------------|----|
| <b>CRNE</b> 2010-045-R02N4 | 0.2 | 1   | 4  | 1.5            | 4              | 45 |
| 2010-045-R02N6             | 0.2 | 1   | 4  | 1.5            | 6              | 45 |
| 2010-050-R02N8             | 0.2 | 1   | 4  | 1.5            | 8              | 50 |
| 2010-050-R02N10            | 0.2 | 1   | 4  | 1.5            | 10             | 50 |
| 2015-045-R02N6             | 0.2 | 1.5 | 4  | 2.3            | 6              | 45 |
| 2015-050-R02N8             | 0.2 | 1.5 | 4  | 2.3            | 8              | 50 |
| 2015-050-R02N10            | 0.2 | 1.5 | 4  | 2.3            | 10             | 50 |
| 2015-050-R02N12            | 0.2 | 1.5 | 4  | 2.3            | 12             | 50 |
| 2020-045-R05N6             | 0.5 | 2   | 4  | 3              | 6              | 45 |
| 2020-050-R05N8             | 0.5 | 2   | 4  | 3              | 8              | 50 |
| 2020-050-R05N10            | 0.5 | 2   | 4  | 3              | 10             | 50 |
| 2020-055-R05N12            | 0.5 | 2   | 4  | 3              | 12             | 50 |
| 2030-050-R05N10            | 0.5 | 3   | 4  | 4.5            | 10             | 50 |
| 2030-050-R05N12            | 0.5 | 3   | 4  | 4.5            | 12             | 50 |
| 2030-060-R05N14            | 0.5 | 3   | 4  | 4.5            | 14             | 60 |
| 2030-060-R05N16            | 0.5 | 3   | 4  | 4.5            | 16             | 60 |
| 2040-050-R05N12            | 0.5 | 4   | 6  | 6              | 12             | 50 |
| 2040-050-R05N16            | 0.5 | 4   | 6  | 6              | 16             | 50 |
| 2040-060-R05N20            | 0.5 | 4   | 6  | 6              | 20             | 60 |

# F Información Técnica para Super Endmill for HRSA

Fresa entera para mecanizado de aleaciones termorresistentes basadas en níquel (Inconel, Hasteloy, Waspaloy, etc)

## Super Endmill for HRSA new

- Fresa para motores de la industria aeroespacial, generadores y turbinas.
- Fresa optimizada para aleaciones termorresistentes a base de Ni (Inconel, Hasteloy, Waspaloy, etc)

### ➤ Sistema de codificación

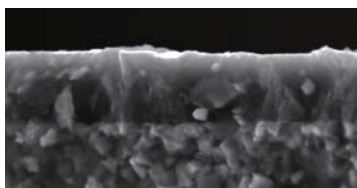
|                      |                    |  |                     |                                |                            |                       |
|----------------------|--------------------|--|---------------------|--------------------------------|----------------------------|-----------------------|
| S                    | RE                 | S  | 4                   | 120                            | - 080                      | - R30                 |
| <b>Super Endmill</b> | <b>Tipo</b>        | <b>Material</b>  | <b>No. De filos</b> | <b>Diámetro de herramienta</b> | <b>Longitud de canales</b> | <b>Radio de punta</b> |
|                      | R: Fresa con radio | S: Aleaciones termorresistentes<br>T: Titanio e inoxidable | 4: 4 Flautas        | 120: Ø12.0 mm                  | 080: 80 mm                 | 30: 30 mm             |

### ➤ Características

- Fresa exclusiva y optimizada para las industrias aeroespacial y de generación de energía. Para aleaciones termorresistentes como turbinas y motores.
- Espaciado irregular de los canales y forma de hélice: reduce las vibraciones y mejora la estabilidad en el mecanizado.
- Diseño de núcleo de alta rigidez: mejora de la evacuación de virutas y la estabilidad en el mecanizado.
- Filo de corte positivo y afilado: reduce la carga de corte y evita el endurecimiento de la pieza.
- Larga vida útil de la herramienta: Nueva calidad con sustrato de alta dureza y resistencia al desgaste.



### ➤ Características del grado



Recubrimiento con muy alta lubricación

- **Recubrimiento con lubricación excelente y tratamiento especial de la superficie**  
- Mejorada la resistencia a la soldadura y al astillamiento, mejorando la estabilidad de mecanizado





## Evaluación del desempeño

- **Pieza de trabajo** Inconel718 (HRC43~46)
- **Condición de corte** D = Ø12, vc (m/min) = 40, fz (mm/t) = 0.05, ap (mm) = 18, ae (mm) = 0.6, Refrigerante (Emulsión)
- **Herramientas** SRES4120-080-R10(Recubrimiento SL)

El sustrato de alta tenacidad proporciona un mecanizado estable y de alta calidad



- **Pieza de trabajo** Inconel718 (HRC43~46)
- **Condición de corte** D = Ø12, vc (m/min) = 40, fz (mm/t) = 0.05, ap (mm) = 18, ae (mm) = 0.6, Refrigerante (Soluble)
- **Herramientas** SRES4120-080-R10(Recubrimiento SL)

El sustrato de alta tenacidad proporciona un mecanizado estable y de alta calidad



- **Pieza de trabajo** Waspaloy (HRC36~38)
- **Condición de corte** D = Ø12, vc (m/min) = 30, fz (mm/t) = 0.04, ap (mm) = 6, ae (mm) = 18, Mecanizado troncooidal Refrigerante (Soluble)
- **Herramientas** SRES4120-080-R10(Recubrimiento SL)

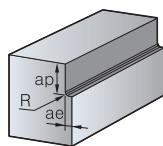
El sustrato de alta tenacidad proporciona un mecanizado estable y de alta calidad



## Condiciones de corte recomendadas

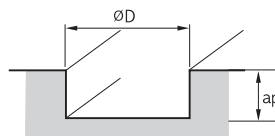
| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | Aleaciones termorresistentes de Ni (Inconel 718, 625, etc) |                       |                               |                       |
|---|--|-----------------------|-------------------------------|-----------------------|
|   | RPM<br>n (min <sup>-1</sup> )                              | Avance<br>vf (mm/min) | RPM<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) |
| 3   | 3,800  | 220                   | 2,500                         | 125                   |
| 4   | 3,000  | 240                   | 1,900                         | 135                   |
| 5   | 2,450  | 245                   | 1,500                         | 145                   |
| 6   | 2,100  | 250                   | 1,250                         | 145                   |
| 8   | 1,600  | 225                   | 945                           | 155                   |
| 10  | 1,250  | 215                   | 760                           | 145                   |
| 12  | 1,050  | 210                   | 630                           | 145                   |
| 16  | 765  | 210                   | 475                           | 110                   |
| 20  | 635  | 200                   | 380                           | 110                   |

## Consejo aplicación



### ■ Profundidad escuadrado (ap)

- ap : ≤ 1,5D
- ae : ≤ 0,05D



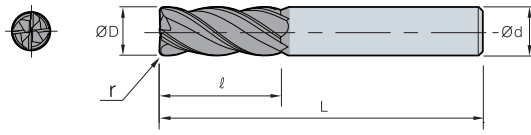
### ■ Profundidad de ranurado (ap)

- ap : ≤ 0,2D

## Alerta

- Ajuste las condiciones de corte recomendadas de acuerdo a la condición de sus máquinas, las formas/piezas a mecanizar y el tipo de mecanizado.
- Ajuste la máquina con alta rigidez y verifique que la pieza de trabajo está sujeta firmemente.
- Seleccione el refrigerante adecuado según el material y verifique la presión y la cantidad de refrigerante.
- En caso de experimentar vibraciones, reduzca las RPM y el avance en la misma proporción.

## SRES4000 (Radio)



| ØD       | Tolerancia    | R Tolerancia |
|----------|---------------|--------------|
| Ø1~Ø6    | 0.00 ~ -0.015 | ±0.01        |
| Ø6.1~Ø20 | 0.00 ~ -0.020 | ±0.01        |

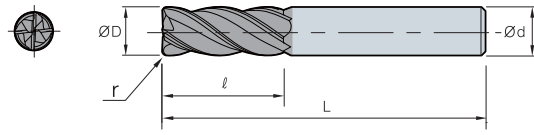


(mm)

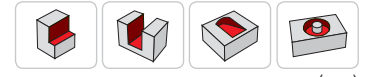
| Codigo       | ØD | Ød | ℓ  | L  | r   |
|--------------|----|----|----|----|-----|
| <b>SRES</b>  |    |    |    |    |     |
| <b>4</b>     |    |    |    |    |     |
| 4030-055-R02 | 3  | 6  | 8  | 55 | 0.2 |
| 4030-055-R03 | 3  | 6  | 8  | 55 | 0.3 |
| 4030-055-R05 | 3  | 6  | 8  | 55 | 0.5 |
| 4040-055-R02 | 4  | 6  | 10 | 55 | 0.2 |
| 4040-055-R03 | 4  | 6  | 10 | 55 | 0.3 |
| 4040-055-R05 | 4  | 6  | 10 | 55 | 0.5 |
| 4040-070-R02 | 4  | 6  | 10 | 70 | 0.2 |
| 4040-070-R03 | 4  | 6  | 10 | 70 | 0.3 |
| 4040-070-R05 | 4  | 6  | 10 | 70 | 0.5 |
| 4050-055-R02 | 5  | 6  | 15 | 55 | 0.2 |
| 4050-055-R03 | 5  | 6  | 15 | 55 | 0.3 |
| 4050-055-R05 | 5  | 6  | 15 | 55 | 0.5 |
| 4050-090-R02 | 5  | 6  | 15 | 90 | 0.2 |
| 4050-090-R03 | 5  | 6  | 15 | 90 | 0.3 |
| 4050-090-R05 | 5  | 6  | 15 | 90 | 0.5 |
| 4060-060-R03 | 6  | 6  | 15 | 60 | 0.3 |
| 4060-060-R05 | 6  | 6  | 15 | 60 | 0.5 |
| 4060-060-R08 | 6  | 6  | 15 | 60 | 0.8 |
| 4060-060-R10 | 6  | 6  | 15 | 60 | 1   |
| 4060-060-R15 | 6  | 6  | 15 | 60 | 1.5 |
| 4060-060-R20 | 6  | 6  | 15 | 60 | 2   |
| 4060-090-R03 | 6  | 6  | 15 | 90 | 0.3 |
| 4060-090-R05 | 6  | 6  | 15 | 90 | 0.5 |
| 4060-090-R08 | 6  | 6  | 15 | 90 | 0.8 |
| 4060-090-R10 | 6  | 6  | 15 | 90 | 1   |
| 4060-090-R15 | 6  | 6  | 15 | 90 | 1.5 |
| 4060-090-R20 | 6  | 6  | 15 | 90 | 2   |



# SRES4000 (Radio)



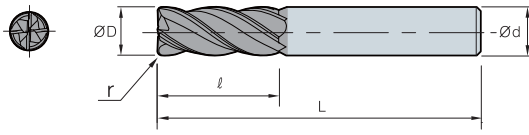
| ØD       | Tolerancia    | R Tolerancia |
|----------|---------------|--------------|
| Ø1~Ø6    | 0.00 ~ -0.015 | ±0.01        |
| Ø6.1~Ø20 | 0.00 ~ -0.020 | ±0.01        |



(mm)

| Codigo                | ØD | Ød | ℓ  | L   | r   |
|-----------------------|----|----|----|-----|-----|
| <b>SRES</b>           |    |    |    |     |     |
| <b>4</b> 4080-070-R03 | 8  | 8  | 20 | 70  | 0.3 |
| 4080-070-R05          | 8  | 8  | 20 | 70  | 0.5 |
| 4080-070-R08          | 8  | 8  | 20 | 70  | 0.8 |
| 4080-070-R10          | 8  | 8  | 20 | 70  | 1   |
| 4080-070-R15          | 8  | 8  | 20 | 70  | 1.5 |
| 4080-070-R20          | 8  | 8  | 20 | 70  | 2   |
| 4080-070-R25          | 8  | 8  | 20 | 70  | 2.5 |
| 4080-070-R30          | 8  | 8  | 20 | 70  | 3   |
| 4080-100-R03          | 8  | 8  | 20 | 100 | 0.3 |
| 4080-100-R05          | 8  | 8  | 20 | 100 | 0.5 |
| 4080-100-R08          | 8  | 8  | 20 | 100 | 0.8 |
| 4080-100-R10          | 8  | 8  | 20 | 100 | 1   |
| 4080-100-R15          | 8  | 8  | 20 | 100 | 1.5 |
| 4080-100-R20          | 8  | 8  | 20 | 100 | 2   |
| 4080-100-R25          | 8  | 8  | 20 | 100 | 2.5 |
| 4080-100-R30          | 8  | 8  | 20 | 100 | 3   |
| 4100-075-R03          | 10 | 10 | 25 | 75  | 0.3 |
| 4100-075-R05          | 10 | 10 | 25 | 75  | 0.5 |
| 4100-075-R08          | 10 | 10 | 25 | 75  | 0.8 |
| 4100-075-R10          | 10 | 10 | 25 | 75  | 1   |
| 4100-075-R15          | 10 | 10 | 25 | 75  | 1.5 |
| 4100-075-R20          | 10 | 10 | 25 | 75  | 2   |
| 4100-075-R25          | 10 | 10 | 25 | 75  | 2.5 |
| 4100-075-R30          | 10 | 10 | 25 | 75  | 3   |
| 4100-100-R03          | 10 | 10 | 25 | 100 | 0.3 |
| 4100-100-R05          | 10 | 10 | 25 | 100 | 0.5 |
| 4100-100-R08          | 10 | 10 | 25 | 100 | 0.8 |
| 4100-100-R10          | 10 | 10 | 25 | 100 | 1   |
| 4100-100-R15          | 10 | 10 | 25 | 100 | 1.5 |
| 4100-100-R20          | 10 | 10 | 25 | 100 | 2   |
| 4100-100-R25          | 10 | 10 | 25 | 100 | 2.5 |
| 4100-100-R30          | 10 | 10 | 25 | 100 | 3   |


## SRES4000 (Radio)



| ØD       | Tolerancia    | R Tolerancia |
|----------|---------------|--------------|
| Ø1~Ø6    | 0.00 ~ -0.015 | ±0.01        |
| Ø6.1~Ø20 | 0.00 ~ -0.020 | ±0.01        |

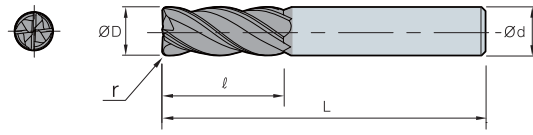


(mm)

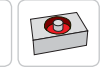
| Codigo  | ØD           | Ød | ℓ  | L  | r   |     |
|---|--------------|----|----|----|-----|-----|
| SRES<br> | 4120-080-R05 | 12 | 12 | 30 | 80  | 0.5 |
|   | 4120-080-R08 | 12 | 12 | 30 | 80  | 0.8 |
|   | 4120-080-R10 | 12 | 12 | 30 | 80  | 1   |
|   | 4120-080-R15 | 12 | 12 | 30 | 80  | 1.5 |
|   | 4120-080-R20 | 12 | 12 | 30 | 80  | 2   |
|   | 4120-080-R25 | 12 | 12 | 30 | 80  | 2.5 |
|   | 4120-080-R30 | 12 | 12 | 30 | 80  | 3   |
|   | 4120-080-R35 | 12 | 12 | 30 | 80  | 3.5 |
|   | 4120-080-R40 | 12 | 12 | 30 | 80  | 4   |
|   | 4120-110-R05 | 12 | 12 | 30 | 110 | 0.5 |
|   | 4120-110-R08 | 12 | 12 | 30 | 110 | 0.8 |
|   | 4120-110-R10 | 12 | 12 | 30 | 110 | 1   |
|   | 4120-110-R15 | 12 | 12 | 30 | 110 | 1.5 |
|   | 4120-110-R20 | 12 | 12 | 30 | 110 | 2   |
|   | 4120-110-R25 | 12 | 12 | 30 | 110 | 2.5 |
|   | 4120-110-R30 | 12 | 12 | 30 | 110 | 3   |
|   | 4120-110-R35 | 12 | 12 | 30 | 110 | 3.5 |
|   | 4120-110-R40 | 12 | 12 | 30 | 110 | 4   |
|   | 4140-090-R05 | 14 | 14 | 35 | 90  | 0.5 |
|   | 4140-090-R08 | 14 | 14 | 35 | 90  | 0.8 |
|   | 4140-090-R10 | 14 | 14 | 35 | 90  | 1   |
|   | 4140-090-R15 | 14 | 14 | 35 | 90  | 1.5 |
|   | 4140-090-R20 | 14 | 14 | 35 | 90  | 2   |
|   | 4140-090-R30 | 14 | 14 | 35 | 90  | 3   |
|   | 4140-150-R05 | 14 | 14 | 35 | 150 | 0.5 |
|   | 4140-150-R08 | 14 | 14 | 35 | 150 | 0.8 |
|   | 4140-150-R10 | 14 | 14 | 35 | 150 | 1   |
|   | 4140-150-R15 | 14 | 14 | 35 | 150 | 1.5 |
|   | 4140-150-R20 | 14 | 14 | 35 | 150 | 2   |
|   | 4140-150-R30 | 14 | 14 | 35 | 150 | 3   |



# SRES4000 (Radio)



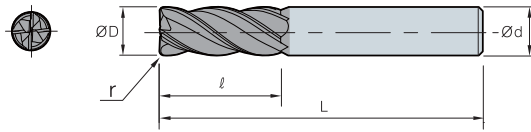
| ØD       | Tolerancia    | R Tolerancia |
|----------|---------------|--------------|
| Ø1~Ø6    | 0.00 ~ -0.015 | ±0.01        |
| Ø6.1~Ø20 | 0.00 ~ -0.020 | ±0.01        |



(mm)

| Codigo       | ØD | Ød | l  | L   | r   |
|--------------|----|----|----|-----|-----|
| <b>SRES</b>  |    |    |    |     |     |
| <b>4</b>     |    |    |    |     |     |
| 4160-100-R05 | 16 | 16 | 42 | 100 | 0.5 |
| 4160-100-R08 | 16 | 16 | 42 | 100 | 0.8 |
| 4160-100-R10 | 16 | 16 | 42 | 100 | 1   |
| 4160-100-R15 | 16 | 16 | 42 | 100 | 1.5 |
| 4160-100-R20 | 16 | 16 | 42 | 100 | 2   |
| 4160-100-R25 | 16 | 16 | 42 | 100 | 2.5 |
| 4160-100-R30 | 16 | 16 | 42 | 100 | 3   |
| 4160-100-R35 | 16 | 16 | 42 | 100 | 3.5 |
| 4160-100-R40 | 16 | 16 | 42 | 100 | 4   |
| 4160-100-R50 | 16 | 16 | 42 | 100 | 5   |
| 4160-100-R60 | 16 | 16 | 42 | 100 | 6   |
| 4160-150-R05 | 16 | 16 | 42 | 150 | 0.5 |
| 4160-150-R08 | 16 | 16 | 42 | 150 | 0.8 |
| 4160-150-R10 | 16 | 16 | 42 | 150 | 1   |
| 4160-150-R15 | 16 | 16 | 42 | 150 | 1.5 |
| 4160-150-R20 | 16 | 16 | 42 | 150 | 2   |
| 4160-150-R25 | 16 | 16 | 42 | 150 | 2.5 |
| 4160-150-R30 | 16 | 16 | 42 | 150 | 3   |
| 4160-150-R35 | 16 | 16 | 42 | 150 | 3.5 |
| 4160-150-R40 | 16 | 16 | 42 | 150 | 4   |
| 4160-150-R50 | 16 | 16 | 42 | 150 | 5   |
| 4160-150-R60 | 16 | 16 | 42 | 150 | 6   |
| 4180-100-R05 | 18 | 20 | 45 | 100 | 0.5 |
| 4180-100-R08 | 18 | 20 | 45 | 100 | 0.8 |
| 4180-100-R10 | 18 | 20 | 45 | 100 | 1   |
| 4180-100-R15 | 18 | 20 | 45 | 100 | 1.5 |
| 4180-100-R20 | 18 | 20 | 45 | 100 | 2   |
| 4180-100-R30 | 18 | 20 | 45 | 100 | 3   |
| 4180-150-R05 | 18 | 20 | 45 | 150 | 0.5 |
| 4180-150-R08 | 18 | 20 | 45 | 150 | 0.8 |
| 4180-150-R10 | 18 | 20 | 45 | 150 | 1   |
| 4180-150-R15 | 18 | 20 | 45 | 150 | 1.5 |
| 4180-150-R20 | 18 | 20 | 45 | 150 | 2   |
| 4180-150-R30 | 18 | 20 | 45 | 150 | 3   |

## SRES4000 (Radio)



| ØD       | Tolerancia    | R Tolerancia |
|----------|---------------|--------------|
| Ø1~Ø6    | 0.00 ~ -0.015 | ±0.01        |
| Ø6.1~Ø20 | 0.00 ~ -0.020 | ±0.01        |



(mm)

|          | Codigo       | ØD | Ød | ℓ  | L   | r   |
|----------|--------------|----|----|----|-----|-----|
| SRES<br> | 4200-100-R05 | 20 | 20 | 48 | 100 | 0.5 |
|          | 4200-100-R10 | 20 | 20 | 48 | 100 | 1   |
|          | 4200-100-R15 | 20 | 20 | 48 | 100 | 1.5 |
|          | 4200-100-R20 | 20 | 20 | 48 | 100 | 2   |
|          | 4200-100-R25 | 20 | 20 | 48 | 100 | 2.5 |
|          | 4200-100-R30 | 20 | 20 | 48 | 100 | 3   |
|          | 4200-100-R35 | 20 | 20 | 48 | 100 | 3.5 |
|          | 4200-100-R40 | 20 | 20 | 48 | 100 | 4   |
|          | 4200-100-R50 | 20 | 20 | 48 | 100 | 5   |
|          | 4200-100-R60 | 20 | 20 | 48 | 100 | 6   |
|          | 4200-150-R05 | 20 | 20 | 48 | 150 | 0.5 |
|          | 4200-150-R10 | 20 | 20 | 48 | 150 | 1   |
|          | 4200-150-R15 | 20 | 20 | 48 | 150 | 1.5 |
|          | 4200-150-R20 | 20 | 20 | 48 | 150 | 2   |
|          | 4200-150-R25 | 20 | 20 | 48 | 150 | 2.5 |
|          | 4200-150-R30 | 20 | 20 | 48 | 150 | 3   |
|          | 4200-150-R35 | 20 | 20 | 48 | 150 | 3.5 |
|          | 4200-150-R40 | 20 | 20 | 48 | 150 | 4   |
|          | 4200-150-R50 | 20 | 20 | 48 | 150 | 5   |
|          | 4200-150-R60 | 20 | 20 | 48 | 150 | 6   |



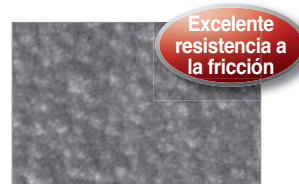
## Router Fresa enteriza para mecanizar materiales compuestos

# Composite Router Endmill **new**

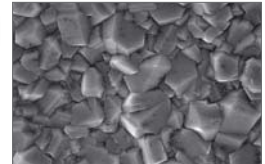
- Fresa enteriza optimizado para el maquinado de materiales compuestos en router (CFRP/GFRP)
- Excelente vida útil de la herramienta gracias al recubrimiento de diamante nanocrystalino
- Diseño de cuchilla para reducir la descamación y las rebabas
- Productividad mejorada mediante mecanizado de alta eficiencia

### Características

- Grado ND2100 con recubrimiento de diamante para el mecanizado de materiales compuestos
- Recubrimiento de diamante de alta dureza (más de 8,000 Hv)
- Recubrimiento de nano-diamante con excelente resistencia a la fricción y a la soldadura
- Mejora de la resistencia al descascarillado gracias a la aplicación del grado especializado para el recubrimiento de diamantes



Recubrimiento de nano-diamante



Recubrimiento de diamante existente

#### CCDR (Dual Helix Router Endmill)

- Diseño de doble hélice para inhibir la descamación en la parte superior y caras inferiores de las piezas de trabajo
- Fresa enteriza para desbaste, perfilado y ranurado



#### CCHR (High-performance Router Endmill)

- Filos de corte aserrados para una mayor eficiencia de mecanizado
- Fresa para desbaste, perfilado y ranurado



#### CCR (Router Endmill)

- Diseño de corte hacia abajo para bajas vibraciones y fuerza de corte
- Fresa enteriza para desbaste, perfilado y ranurado



#### CCLR (Low Helix Router Endmill)

- Menos rebabas gracias a la baja fuerza de corte axial
- Fresa enteriza para acabado, perfilado, y fabricación de ranuras ciegas

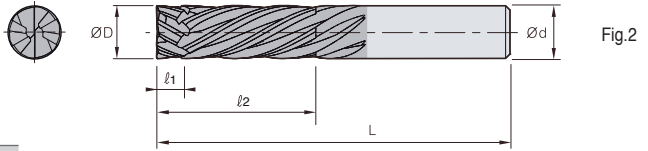
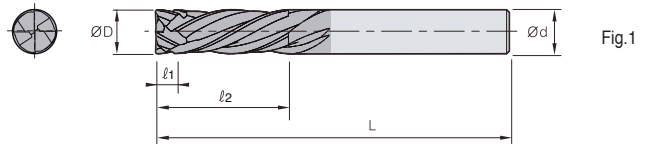


#### CCRR (Reverse Helix Router Endmill)

- Diseño de hélice inversa para evitar deslizamiento durante el curso de trabajo
- Fresa enteriza para acabado, perfilado, y fabricación de surcos pasantes



## CCDR4000/6000 (Plano)



| ØD    | Tolerancia    |
|-------|---------------|
| Ø6~12 | 0.00~-0.03 mm |

(mm)

|           | Codigo   | ØD | Ød | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L   | Fig. |
|-----------|----------|----|----|----------------|----------------|-----|------|
| CCDR<br>4 | 4060-065 | 6  | 6  | 3              | 18             | 65  | 1    |
|           | 4080-075 | 8  | 8  | 4              | 24             | 75  | 1    |
| CCDR<br>6 | 6100-085 | 10 | 10 | 5              | 30             | 85  | 2    |
|           | 6120-100 | 12 | 12 | 6              | 36             | 100 | 2    |



| ØD           | Tolerancia          |
|--------------|---------------------|
| Ø0.250~0.500 | 0.0000~-0.0012 inch |

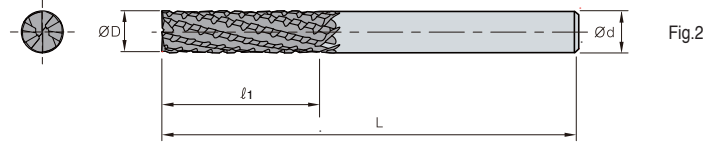
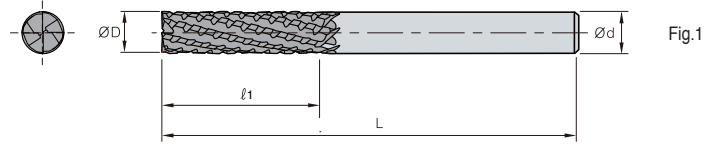
(inch)

|           | Codigo  | ØD        | Ød    | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L     | Fig. |
|-----------|---------|-----------|-------|----------------|----------------|-------|------|
| CCDR<br>4 | 402500  | 1/4 0.250 | 0.250 | 0.125          | 0.750          | 2.500 | 1    |
|           | 402500L | 1/4 0.250 | 0.250 | 0.125          | 1.500          | 4.000 | 1    |
| CCDR<br>6 | 603750  | 3/8 0.375 | 0.375 | 0.125          | 1.000          | 3.250 | 2    |
|           | 603750L | 3/8 0.375 | 0.375 | 0.125          | 1.500          | 4.000 | 2    |
|           | 605000  | 1/2 0.500 | 0.500 | 0.125          | 1.000          | 3.250 | 2    |
|           | 605000L | 1/2 0.500 | 0.500 | 0.125          | 1.500          | 4.000 | 2    |





# CCHR4000/6000 (Plano)



| ØD    | Tolerancia      |
|-------|-----------------|
| Ø6~12 | 0.00 ~ -0.05 mm |

(mm)

| Codigo           | ØD       | Ød | ℓ <sub>1</sub> | L  | Fig. |   |
|------------------|----------|----|----------------|----|------|---|
| <b>CCHR</b><br>4 | 4060-065 | 6  | 6              | 18 | 65   | 1 |
|                  | 4080-075 | 8  | 8              | 24 | 75   | 1 |
| <b>CCHR</b><br>6 | 6100-085 | 10 | 10             | 30 | 85   | 2 |
|                  | 6120-100 | 12 | 12             | 36 | 100  | 2 |

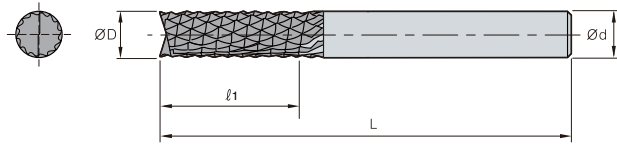


| ØD           | Tolerancia           |
|--------------|----------------------|
| Ø0.250~0.500 | 0.0000 ~ -0.002 inch |

(inch)

| Codigo           | ØD      | Ød        | ℓ <sub>1</sub> | L     | Fig.  |   |
|------------------|---------|-----------|----------------|-------|-------|---|
| <b>CCHR</b><br>4 | 402500  | 1/4 0.250 | 0.250          | 0.750 | 2.500 | 1 |
|                  | 402500L | 1/4 0.250 | 0.250          | 1.500 | 4.000 | 1 |
| <b>CCHR</b><br>6 | 603750  | 3/8 0.375 | 0.375          | 1.000 | 3.250 | 2 |
|                  | 603750L | 3/8 0.375 | 0.375          | 1.500 | 4.000 | 2 |
|                  | 605000  | 1/2 0.500 | 0.500          | 1.000 | 3.250 | 2 |
|                  | 605000L | 1/2 0.500 | 0.500          | 1.500 | 4.000 | 2 |

## CCR2000 (Plano)



| ØD    | Tolerancia       |
|-------|------------------|
| Ø4~12 | -0.02 ~ -0.08 mm |

(mm)

| Codigo | ØD       | Ød | ℓ1 | L  |     |
|--------|----------|----|----|----|-----|
| CCR    | 2040-050 | 4  | 4  | 12 | 50  |
|        | 2050-050 | 5  | 5  | 15 | 50  |
|        | 2060-065 | 6  | 6  | 18 | 65  |
|        | 2080-075 | 8  | 8  | 24 | 75  |
|        | 2100-085 | 10 | 10 | 30 | 85  |
|        | 2120-100 | 12 | 12 | 36 | 100 |



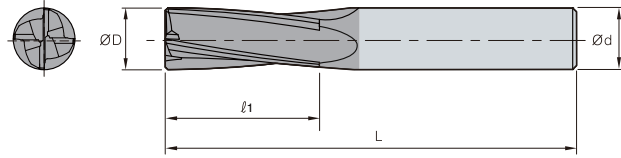
| ØD           | Tolerancia             |
|--------------|------------------------|
| Ø0.250~0.500 | -0.0008 ~ -0.0032 inch |

(inch)

| Codigo | ØD      | Ød        | ℓ1    | L     |       |
|--------|---------|-----------|-------|-------|-------|
| CCR    | 202500  | 1/4 0.250 | 0.250 | 0.750 | 2.500 |
|        | 202500L | 1/4 0.250 | 0.250 | 1.500 | 4.000 |
|        | 203750  | 3/8 0.375 | 0.375 | 1.000 | 3.250 |
|        | 203750L | 3/8 0.375 | 0.375 | 1.500 | 4.000 |
|        | 205000  | 1/2 0.500 | 0.500 | 1.000 | 3.250 |
|        | 205000L | 1/2 0.500 | 0.500 | 1.500 | 4.000 |



# CCLR4000 (Plano)



| ØD    | Tolerancia      |
|-------|-----------------|
| Ø4~12 | 0.00 ~ -0.03 mm |

(mm)

| Codigo      | ØD | Ød | ℓ1 | L   |
|-------------|----|----|----|-----|
| <b>CCLR</b> |    |    |    |     |
| 4040-050    | 4  | 4  | 12 | 50  |
| 4050-050    | 5  | 5  | 15 | 50  |
| 4060-065    | 6  | 6  | 18 | 65  |
| 4080-075    | 8  | 8  | 24 | 75  |
| 4100-085    | 10 | 10 | 30 | 85  |
| 4120-100    | 12 | 12 | 36 | 100 |

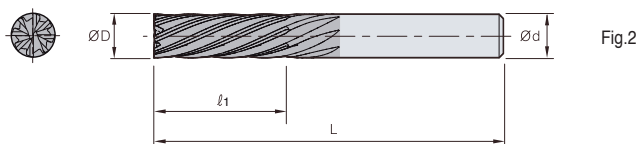
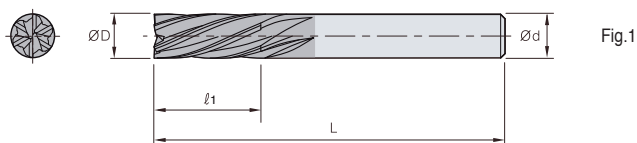


| ØD           | Tolerancia            |
|--------------|-----------------------|
| Ø0.250~0.500 | 0.0000 ~ -0.0012 inch |

(inch)

| Codigo      | ØD        | Ød    | ℓ1    | L     |
|-------------|-----------|-------|-------|-------|
| <b>CCLR</b> |           |       |       |       |
| 402500      | 1/4 0.250 | 0.250 | 0.750 | 2.500 |
| 402500L     | 1/4 0.250 | 0.250 | 1.500 | 4.000 |
| 403750      | 3/8 0.375 | 0.375 | 1.000 | 3.250 |
| 403750L     | 3/8 0.375 | 0.375 | 1.500 | 4.000 |
| 405000      | 1/2 0.500 | 0.500 | 1.000 | 3.250 |
| 405000L     | 1/2 0.500 | 0.500 | 1.500 | 4.000 |

## CCRR6000/8000 (Plano)



| ØD    | Tolerancia      |
|-------|-----------------|
| Ø6~12 | 0.00 ~ -0.03 mm |

(mm)

|           | Codigo   | ØD | Ød | ℓ1 | L   | Fig. |
|-----------|----------|----|----|----|-----|------|
| CCRR<br>6 | 6060-065 | 6  | 6  | 18 | 65  | 1    |
|           | 6080-075 | 8  | 8  | 24 | 75  | 1    |
| CCRR<br>8 | 8100-085 | 10 | 10 | 30 | 85  | 2    |
|           | 8120-100 | 12 | 12 | 36 | 100 | 2    |



| ØD           | Tolerancia            |
|--------------|-----------------------|
| Ø0.250~0.500 | 0.0000 ~ -0.0012 inch |

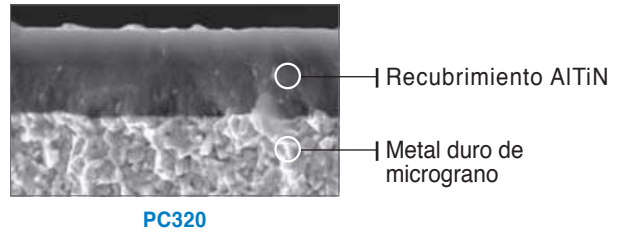
(inch)

|           | Codigo  | ØD        | Ød    | ℓ1    | L     | Fig. |
|-----------|---------|-----------|-------|-------|-------|------|
| CCRR<br>6 | 602500  | 1/4 0.250 | 0.250 | 0.750 | 2.500 | 1    |
|           | 602500L | 1/4 0.250 | 0.250 | 1.500 | 4.000 | 1    |
| CCRR<br>8 | 803750  | 3/8 0.375 | 0.375 | 1.000 | 3.250 | 2    |
|           | 803750L | 3/8 0.375 | 0.375 | 1.500 | 4.000 | 2    |
|           | 805000  | 1/2 0.500 | 0.500 | 1.000 | 3.250 | 2    |
|           | 805000L | 1/2 0.500 | 0.500 | 1.500 | 4.000 | 2    |

La pieza de trabajo que es menos de 45HRC garantiza el rendimiento estable

# I<sup>+</sup> Endmill

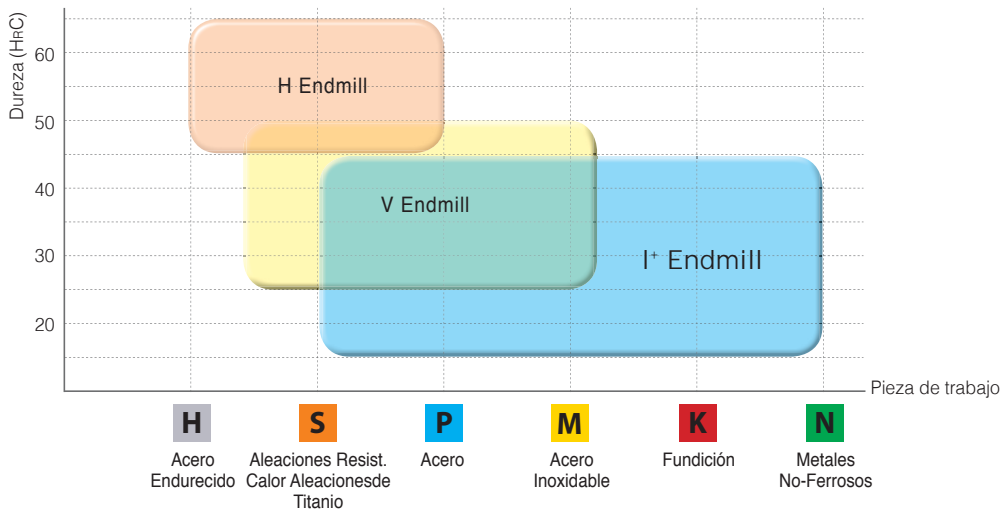
- El sustrato duro y la tecnología de recubrimiento de resistencia a desgaste aplicados
- El rango ancho de aplicación en el uso general
  - La pieza de trabajo que es menos de 45HRC garantiza el rendimiento estable
- ahorrar costos por mayor productividad



## Gama de productos

- IPBE: I Plus Endmill Esférica (Ø1~Ø20)
- IPFE: I Plus Endmill Frontal (Ø1~Ø20)
- IPRE: I Plus Endmill Radio (Ø1~Ø12)

## El Área de aplicación

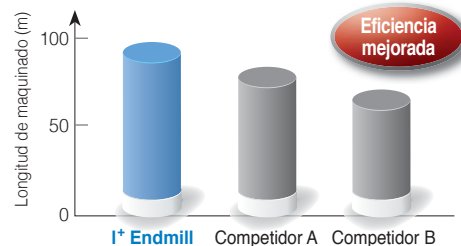


## Evaluación del desempeño

- **Pieza de trabajo** SM45C
- **Condiciones de corte** Diámetro = Ø8.0, n (min<sup>-1</sup>) = 5.173, vc (m/min) = 130.0, vf (mm/min) = 1.034, fz (mm/t) = 0.1, ap (mm) = 0.5, ae (mm) = 1.6, seco
- **Herramientas** IPBE2080-060



### Resultado de la prueba

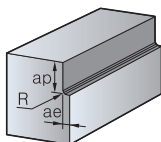


## Condiciones de corte recomendadas (plano)

### ■ IPFE2000

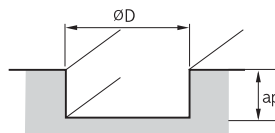
| Diámetro (ØD) | Acero de Carbono, Acero de aleación~HrC30 (SM50C, SCM, GC250, Fundición) |                    |           | Acero de aleación, Acero de alta velocidad HrC30~45 (Pre acero endurecido, STD61, NAK) |                    |           | Acero inoxidable (STS304, STS316) |                    |           |
|---------------|--|--------------------|-----------|--|--------------------|-----------|-----------------------------------|--------------------|-----------|
|               | R.P.M (min <sup>-1</sup> )   | Avance vf (mm/min) |           | R.P.M (min <sup>-1</sup> )   | Avance vf (mm/min) |           | R.P.M (min <sup>-1</sup> )        | Avance vf (mm/min) |           |
|               |  | mecanizado lateral | Mortajado |  | mecanizado lateral | Mortajado |                                   | mecanizado lateral | Mortajado |
| 1.0           | 30,000   | 600                | 480       | 20,000   | 400                | 320       | 12,600                            | 300                | 180       |
| 1.5           | 20,000   | 600                | 480       | 14,000   | 400                | 320       | 8,400                             | 300                | 180       |
| 2.0           | 15,000   | 600                | 480       | 10,000   | 400                | 400       | 6,300                             | 300                | 180       |
| 2.5           | 12,000   | 600                | 480       | 8,200  | 400                | 320       | 5,100                             | 300                | 180       |
| 3.0           | 10,000   | 600                | 480       | 7,000  | 400                | 320       | 4,200                             | 300                | 180       |
| 4.0           | 7,500  | 600                | 480       | 5,200  | 400                | 320       | 3,100                             | 300                | 180       |
| 5.0           | 6,000  | 600                | 480       | 4,200  | 400                | 320       | 2,500                             | 300                | 180       |
| 6.0           | 5,000  | 600                | 480       | 3,500  | 400                | 320       | 2,100                             | 300                | 180       |
| 8.0           | 4,000  | 520                | 410       | 2,800  | 350                | 280       | 1,600                             | 260                | 150       |
| 10.0          | 3,200  | 450                | 360       | 2,200  | 300                | 240       | 1,300                             | 230                | 130       |
| 12.0          | 2,700  | 410                | 320       | 1,900  | 270                | 210       | 1,100                             | 210                | 120       |
| 16.0          | 2,000  | 240                | 190       | 1,400  | 210                | 160       | 840                               | 160                | 100       |
| 20.0          | 1,600  | 200                | 160       | 1,100  | 170                | 130       | 680                               | 140                | 80        |

### Consejo aplicación



#### ■ La profundidad lateral (ap) y La profundidad radial (ae)

- ap: ≤ 1.5 (todos los diámetros)
- ae: ≤ 0.1D (D ≤ Ø3)  
≤ 0.2D (D > Ø3)



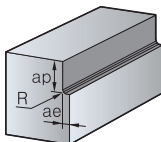
#### ■ La profundidad de mortajado (ap)

- ap: ≤ 0.1D (D ≤ Ø2)  
≤ 0.2D (D > Ø2)

### ■ IPFE4000

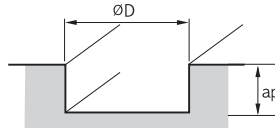
| Diámetro (ØD) | Acero de Carbono, Acero de aleación~HrC30 (SM50C, SCM, GC250, Fundición) |                    |           | Acero de aleación, Acero de alta velocidad HrC30~45 (Pre acero endurecido, STD61, NAK) |                    |           | Acero inoxidable (STS304, STS316) |                    |           |
|---------------|--|--------------------|-----------|--|--------------------|-----------|-----------------------------------|--------------------|-----------|
|               | R.P.M (min <sup>-1</sup> )   | Avance vf (mm/min) |           | R.P.M (min <sup>-1</sup> )   | Avance vf (mm/min) |           | R.P.M (min <sup>-1</sup> )        | Avance vf (mm/min) |           |
|               |  | mecanizado lateral | Mortajado |  | mecanizado lateral | Mortajado |                                   | mecanizado lateral | Mortajado |
| 1.0           | 30,000   | 900                | 720       | 20,000   | 600                | 480       | 12,600                            | 450                | 270       |
| 1.5           | 20,000   | 900                | 720       | 14,000   | 600                | 480       | 8,400                             | 450                | 270       |
| 2.0           | 15,000   | 900                | 720       | 10,000   | 600                | 480       | 6,300                             | 450                | 270       |
| 2.5           | 12,000   | 900                | 720       | 8,200  | 600                | 480       | 5,100                             | 450                | 270       |
| 3.0           | 10,000   | 900                | 720       | 7,000  | 600                | 480       | 4,200                             | 450                | 270       |
| 4.0           | 7,500  | 900                | 720       | 5,200  | 600                | 480       | 3,100                             | 450                | 270       |
| 5.0           | 6,000  | 900                | 720       | 4,200  | 600                | 480       | 2,500                             | 450                | 270       |
| 6.0           | 5,000  | 900                | 720       | 3,500  | 600                | 480       | 2,100                             | 450                | 270       |
| 8.0           | 4,000  | 780                | 620       | 2,800  | 520                | 410       | 1,600                             | 390                | 230       |
| 10.0          | 3,200  | 680                | 540       | 2,200  | 450                | 360       | 1,300                             | 340                | 200       |
| 12.0          | 2,700  | 620                | 490       | 1,900  | 410                | 320       | 1,100                             | 310                | 180       |
| 16.0          | 2,000  | 360                | 280       | 1,400  | 310                | 240       | 840                               | 240                | 140       |
| 20.0          | 1,600  | 300                | 240       | 1,100  | 250                | 200       | 680                               | 210                | 120       |

### Consejo aplicación



#### ■ La profundidad lateral (ap) y La profundidad radial (ae)

- ap: ≤ 1.5 (todos los diámetros)
- ae: ≤ 0.1D (D ≤ Ø3)  
≤ 0.2D (D > Ø3)



#### ■ La profundidad de mortajado (ap)

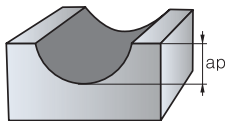
- ap: ≤ 0.1D (D ≤ Ø2)  
≤ 0.2D (D > Ø2)

**Condiciones de corte recomendadas (Esférico)**

■ IPBE2000

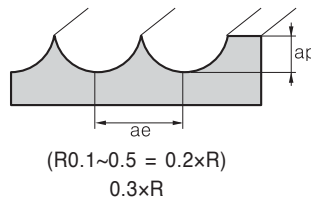
| Diámetro (ØD) | Acero de carbono (SM50C)   |                    | Acero de aleación (SCM, STD, STS, KP4M, NAK) |                    | Acero de molde ~HRC45 (STD61) |                    | Metales no ferrosos (Aluminio) |                    |
|---------------|----------------------------|--------------------|--|--------------------|-------------------------------|--------------------|--------------------------------|--------------------|
|               | R.P.M (min <sup>-1</sup> ) | Avance vf (mm/min) | R.P.M (min <sup>-1</sup> )                   | Avance vf (mm/min) | R.P.M (min <sup>-1</sup> )    | Avance vf (mm/min) | R.P.M (min <sup>-1</sup> )     | Avance vf (mm/min) |
| 1.0           | 40,000                     | 1,200              | 38,000                                       | 1,200              | 29,000                        | 900                | 40,000                         | 1,000              |
| 1.5           | 30,000                     | 1,270              | 25,500                                       | 1,100              | 19,000                        | 700                | 40,000                         | 1,360              |
| 2.0           | 24,000                     | 1,160              | 19,000                                       | 800                | 14,300                        | 600                | 40,000                         | 2,000              |
| 2.5           | 19,000                     | 1,000              | 15,300                                       | 670                | 11,500                        | 510                | 38,000                         | 2,400              |
| 3.0           | 16,000                     | 930                | 13,000                                       | 600                | 9,600                         | 460                | 32,000                         | 2,400              |
| 3.5           | 13,700                     | 930                | 11,400                                       | 580                | 8,200                         | 450                | 27,300                         | 2,400              |
| 4.0           | 12,000                     | 930                | 10,000                                       | 570                | 7,200                         | 450                | 24,000                         | 2,400              |
| 5.0           | 9,600                      | 930                | 8,000  | 560                | 5,700                         | 450                | 19,000                         | 2,400              |
| 6.0           | 8,000                      | 930                | 6,400  | 540                | 4,800                         | 450                | 16,000                         | 2,400              |
| 8.0           | 6,000                      | 900                | 4,800  | 540                | 3,600                         | 450                | 12,000                         | 2,400              |
| 10.0          | 4,800                      | 900                | 3,800  | 540                | 2,900                         | 450                | 9,600                          | 2,300              |
| 12.0          | 4,000                      | 900                | 3,200  | 540                | 2,400                         | 450                | 8,000                          | 2,100              |
| 14.0          | 3,400                      | 900                | 2,750  | 540                | 2,050                         | 450                | 6,800                          | 2,000              |
| 16.0          | 3,000                      | 900                | 2,400  | 540                | 1,800                         | 450                | 6,000                          | 2,000              |
| 20.0          | 2,400                      | 900                | 1,900  | 520                | 1,450                         | 450                | 4,800                          | 2,000              |

**Consejo aplicación**



■ La profundidad de mortajado (ap)

- ap: 0.1xR (~45HRC)
- 0.08 xR (~50HRC)



■ La profundidad lateral (ap) y La profundidad radial (ae)

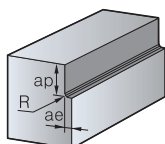
- ~0.16xR R ≤ 0.3 (~45HRC)
- ~0.25xR R ≤ 3 (~45HRC)
- ~0.17xR R ≤ 4 (~45HRC)
- ~0.05xR (~50HRC)

**Condiciones de corte recomendadas (Radio)**

■ IPRE2000

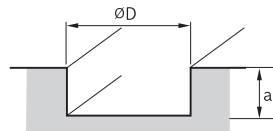
| Diámetro (ØD) | Acero de carbono, Acero de aleación ~HRC30 (SM50C, SCM, GC250, Fundición) |                    |           | Acero de aleación, Acero de alta velocidad HRC30~45 (Pre acero endurecido, STD61, NAK) |                    |           | Acero inoxidable (STS304, STS316) |                    |           |
|---------------|---|--------------------|-----------|--|--------------------|-----------|-----------------------------------|--------------------|-----------|
|               | R.P.M (min <sup>-1</sup> )  | Avance vf (mm/min) |           | R.P.M (min <sup>-1</sup> )   | Avance vf (mm/min) |           | R.P.M (min <sup>-1</sup> )        | Avance vf (mm/min) |           |
|               |   | mecanizado lateral | Mortajado |  | mecanizado lateral | Mortajado |                                   | mecanizado lateral | Mortajado |
| 2.0           | 11,000  | 180                | 180       | 7,200  | 110                | 110       | 6,000                             | 90                 | 90        |
| 3.0           | 8,500   | 200                | 160       | 5,300  | 130                | 100       | 4,400                             | 110                | 66        |
| 4.0           | 7,200   | 360                | 290       | 4,400  | 220                | 180       | 3,000                             | 180                | 110       |
| 5.0           | 6,000   | 380                | 300       | 3,600  | 230                | 180       | 2,400                             | 190                | 110       |
| 6.0           | 5,300   | 420                | 340       | 3,200  | 240                | 190       | 2,200                             | 210                | 130       |
| 8.0           | 4,000   | 450                | 360       | 2,400  | 240                | 190       | 1,600                             | 220                | 130       |
| 10.0          | 3,200   | 390                | 310       | 1,900  | 190                | 150       | 1,300                             | 190                | 110       |
| 12.0          | 2,700   | 330                | 260       | 1,600  | 160                | 130       | 1,000                             | 150                | 90        |

**Consejo aplicación**



■ La profundidad lateral (ap) y La profundidad radial (ae)

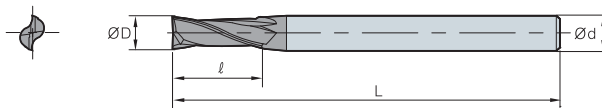
- ap: ≤ 1.5D
- ae: ≤ 0.1D



■ La profundidad de mortajado (ap)

- ap: ≤ 0.3D

## IPFE2000 (Plano)



| ØD        | Tolerancia  |
|-----------|-------------|
| Ø1~Ø12    | 0.00~ -0.02 |
| Ø12.1~Ø20 | 0.00~ -0.03 |

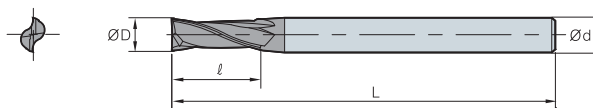


(mm)

| Codigo      | ØD   | Ød | ℓ  | L   |
|-------------|------|----|----|-----|
| <b>IPFE</b> |      |    |    |     |
| 2010-050-S3 | 1    | 3  | 3  | 50  |
| 2010-050-S4 | 1    | 4  | 3  | 50  |
| 2010-050    | 1    | 6  | 3  | 50  |
| 2015-050-S3 | 1.5  | 3  | 4  | 50  |
| 2015-050-S4 | 1.5  | 4  | 4  | 50  |
| 2015-050    | 1.5  | 6  | 4  | 50  |
| 2020-050-S3 | 2    | 3  | 6  | 50  |
| 2020-050-S4 | 2    | 4  | 6  | 50  |
| 2020-050    | 2    | 6  | 6  | 50  |
| 2025-050-S3 | 2.5  | 3  | 8  | 50  |
| 2025-050-S4 | 2.5  | 4  | 8  | 50  |
| 2025-050    | 2.5  | 6  | 8  | 50  |
| 2030-050-S3 | 3    | 3  | 8  | 50  |
| 2030-050-S4 | 3    | 4  | 8  | 50  |
| 2030-050    | 3    | 6  | 8  | 50  |
| 2035-050-S4 | 3.5  | 4  | 10 | 50  |
| 2035-050    | 3.5  | 6  | 10 | 50  |
| 2040-050-S4 | 4    | 4  | 11 | 50  |
| 2040-050    | 4    | 6  | 11 | 50  |
| 2045-050    | 4.5  | 6  | 13 | 50  |
| 2050-050    | 5    | 6  | 13 | 50  |
| 2055-050    | 5.5  | 6  | 13 | 50  |
| 2060-050    | 6    | 6  | 16 | 50  |
| 2065-060    | 6.5  | 8  | 16 | 60  |
| 2070-060    | 7    | 8  | 16 | 60  |
| 2075-060    | 7.5  | 8  | 19 | 60  |
| 2080-060    | 8    | 8  | 20 | 60  |
| 2085-075    | 8.5  | 10 | 20 | 75  |
| 2090-075    | 9    | 10 | 20 | 75  |
| 2095-075    | 9.5  | 10 | 25 | 75  |
| 2100-075    | 10   | 10 | 25 | 75  |
| 2105-075    | 10.5 | 12 | 25 | 75  |
| 2110-075    | 11   | 12 | 30 | 75  |
| 2115-075    | 11.5 | 12 | 30 | 75  |
| 2120-075    | 12   | 12 | 32 | 75  |
| 2140-100    | 14   | 16 | 40 | 100 |
| 2160-100    | 16   | 16 | 40 | 100 |
| 2180-100    | 18   | 20 | 45 | 100 |
| 2200-100    | 20   | 20 | 45 | 100 |





**IPLFE2000 (Plano Largo)**

| ØD        | Tolerancia |
|-----------|------------|
| Ø1~Ø12    | 0.00~-0.02 |
| Ø12.1~Ø20 | 0.00~-0.03 |

**Tipo de Mango largo**

(mm)

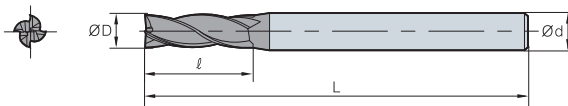
| Codigo     | ØD       | Ød | ℓ  | L   |
|------------|----------|----|----|-----|
| IPLFE<br>2 | 2060-075 | 6  | 6  | 75  |
|            | 2060-100 | 6  | 6  | 100 |
|            | 2080-075 | 8  | 8  | 75  |
|            | 2080-100 | 8  | 8  | 100 |
|            | 2100-100 | 10 | 10 | 100 |
|            | 2100-150 | 10 | 10 | 150 |
|            | 2120-100 | 12 | 12 | 100 |
|            | 2120-150 | 12 | 12 | 150 |

**Tipo de flautas largas**

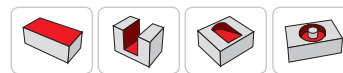
(mm)

| Codigo     | ØD              | Ød  | ℓ  | L   |
|------------|-----------------|-----|----|-----|
| IPLFE<br>2 | 2010-050-V7S4   | 1   | 4  | 50  |
|            | 2015-050-V9S4   | 1.5 | 4  | 50  |
|            | 2020-050-V12S4  | 2   | 4  | 50  |
|            | 2025-050-V12S4  | 2.5 | 4  | 50  |
|            | 2030-060-V15S6  | 3   | 6  | 60  |
|            | 2035-060-V15S6  | 3.5 | 6  | 60  |
|            | 2040-075-V20S6  | 4   | 6  | 75  |
|            | 2045-075-V20S6  | 4.5 | 6  | 75  |
|            | 2050-075-V25S6  | 5   | 6  | 75  |
|            | 2055-075-V25S6  | 5.5 | 6  | 75  |
|            | 2060-075-V30S6  | 6   | 6  | 75  |
|            | 2070-100-V30S8  | 7   | 8  | 100 |
|            | 2080-100-V40S8  | 8   | 8  | 100 |
|            | 2090-100-V40S10 | 9   | 10 | 100 |
|            | 2100-100-V40S10 | 10  | 10 | 100 |
|            | 2110-100-V40S12 | 11  | 12 | 100 |
|            | 2120-100-V50S12 | 12  | 12 | 100 |
|            | 2140-150-V50S16 | 14  | 16 | 150 |
|            | 2160-150-V60S16 | 16  | 16 | 150 |
|            | 2200-200-V90S20 | 20  | 20 | 200 |

## IPFE4000 (Plano)



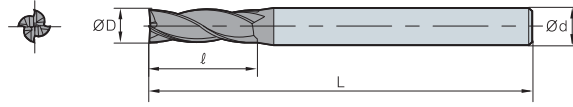
| ØD        | Tolerancia  |
|-----------|-------------|
| Ø1~Ø12    | 0.00~ -0.02 |
| Ø12.1~Ø20 | 0.00~ -0.03 |



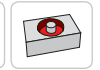
(mm)

| Codigo      | ØD   | Ød | ℓ  | L   |
|-------------|------|----|----|-----|
| <b>IPFE</b> |      |    |    |     |
| 4010-050-S3 | 1    | 3  | 3  | 50  |
| 4010-050-S4 | 1    | 4  | 3  | 50  |
| 4010-050    | 1    | 6  | 3  | 50  |
| 4015-050-S3 | 1.5  | 3  | 4  | 50  |
| 4015-050-S4 | 1.5  | 4  | 4  | 50  |
| 4015-050    | 1.5  | 6  | 4  | 50  |
| 4020-050-S3 | 2    | 3  | 6  | 50  |
| 4020-050-S4 | 2    | 4  | 6  | 50  |
| 4020-050    | 2    | 6  | 6  | 50  |
| 4025-050-S3 | 2.5  | 3  | 8  | 50  |
| 4025-050-S4 | 2.5  | 4  | 8  | 50  |
| 4025-050    | 2.5  | 6  | 8  | 50  |
| 4030-050-S3 | 3    | 3  | 8  | 50  |
| 4030-050-S4 | 3    | 4  | 8  | 50  |
| 4030-050    | 3    | 6  | 8  | 50  |
| 4035-050-S4 | 3.5  | 4  | 10 | 50  |
| 4035-050    | 3.5  | 6  | 10 | 50  |
| 4040-050-S4 | 4    | 4  | 11 | 50  |
| 4040-050    | 4    | 6  | 11 | 50  |
| 4045-050    | 4.5  | 6  | 13 | 50  |
| 4050-050    | 5    | 6  | 13 | 50  |
| 4055-050    | 5.5  | 6  | 13 | 50  |
| 4060-050    | 6    | 6  | 16 | 50  |
| 4065-060    | 6.5  | 8  | 16 | 60  |
| 4070-060    | 7    | 8  | 16 | 60  |
| 4075-060    | 7.5  | 8  | 19 | 60  |
| 4080-060    | 8    | 8  | 20 | 60  |
| 4085-075    | 8.5  | 10 | 20 | 75  |
| 4090-075    | 9    | 10 | 20 | 75  |
| 4095-075    | 9.5  | 10 | 25 | 75  |
| 4100-075    | 10   | 10 | 30 | 75  |
| 4105-075    | 10.5 | 12 | 30 | 75  |
| 4110-075    | 11   | 12 | 30 | 75  |
| 4115-075    | 11.5 | 12 | 30 | 75  |
| 4120-075    | 12   | 12 | 32 | 75  |
| 4140-100    | 14   | 16 | 40 | 100 |
| 4160-100    | 16   | 16 | 40 | 100 |
| 4180-100    | 18   | 20 | 45 | 100 |
| 4200-100    | 20   | 20 | 45 | 100 |



**IPLFE4000 (Plano Largo)**

| ØD        | Tolerancia |
|-----------|------------|
| Ø1~Ø12    | 0.00~-0.02 |
| Ø12.1~Ø20 | 0.00~-0.03 |

**Tipo de Mango largo**

(mm)

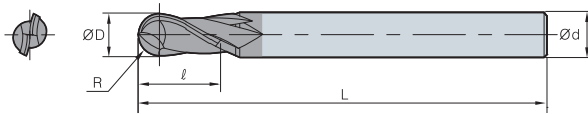
| Codigo       | ØD | Ød | ℓ  | L   |
|--------------|----|----|----|-----|
| <b>IPLFE</b> |    |    |    |     |
| 4060-075     | 6  | 6  | 16 | 75  |
| 4060-100     | 6  | 6  | 16 | 100 |
| 4080-075     | 8  | 8  | 20 | 75  |
| 4080-100     | 8  | 8  | 20 | 100 |
| 4100-100     | 10 | 10 | 30 | 100 |
| 4100-150     | 10 | 10 | 30 | 150 |
| 4120-100     | 12 | 12 | 32 | 100 |
| 4120-150     | 12 | 12 | 32 | 150 |

**Tipo de flautas largas**

(mm)

| Codigo          | ØD  | Ød | ℓ  | L   |
|-----------------|-----|----|----|-----|
| <b>IPLFE</b>    |     |    |    |     |
| 4010-050-V6S4   | 1   | 4  | 6  | 50  |
| 4015-050-V9S4   | 1.5 | 4  | 9  | 50  |
| 4020-050-V12S4  | 2   | 4  | 12 | 50  |
| 4025-050-V12S4  | 2.5 | 4  | 12 | 50  |
| 4030-060-V15S6  | 3   | 6  | 15 | 60  |
| 4035-060-V15S6  | 3.5 | 6  | 15 | 60  |
| 4040-075-V20S6  | 4   | 6  | 20 | 75  |
| 4045-075-V20S6  | 4.5 | 6  | 20 | 75  |
| 4050-075-V25S6  | 5   | 6  | 25 | 75  |
| 4055-075-V25S6  | 5.5 | 6  | 25 | 75  |
| 4060-075-V30S6  | 6   | 6  | 30 | 75  |
| 4070-100-V30S8  | 7   | 8  | 30 | 100 |
| 4080-100-V40S8  | 8   | 8  | 40 | 100 |
| 4090-100-V40S10 | 9   | 10 | 40 | 100 |
| 4100-100-V40S10 | 10  | 10 | 40 | 100 |
| 4110-100-V40S12 | 11  | 12 | 40 | 100 |
| 4120-100-V50S12 | 12  | 12 | 50 | 100 |
| 4140-150-V50S16 | 14  | 16 | 50 | 150 |
| 4160-150-V60S16 | 16  | 16 | 60 | 150 |
| 4200-200-V90S20 | 20  | 20 | 90 | 200 |

## IPBE2000 (Esférico)



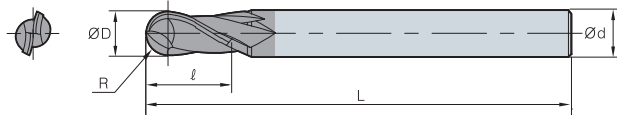
| ØD        | Tolerancia  |
|-----------|-------------|
| Ø1~Ø12    | 0.00~ -0.02 |
| Ø12.1~Ø20 | 0.00~ -0.03 |



(mm)

| Codigo      | R    | ØD  | Ød | ℓ  | L   |
|-------------|------|-----|----|----|-----|
| <b>IPBE</b> |      |     |    |    |     |
| 2010-050-S3 | 0.5  | 1   | 3  | 2  | 50  |
| 2010-050-S4 | 0.5  | 1   | 4  | 2  | 50  |
| 2010-050    | 0.5  | 1   | 6  | 2  | 50  |
| 2015-050-S3 | 0.75 | 1.5 | 3  | 3  | 50  |
| 2015-050-S4 | 0.75 | 1.5 | 4  | 3  | 50  |
| 2015-050    | 0.75 | 1.5 | 6  | 3  | 50  |
| 2020-050-S3 | 1    | 2   | 3  | 4  | 50  |
| 2020-050-S4 | 1    | 2   | 4  | 4  | 50  |
| 2020-050    | 1    | 2   | 6  | 4  | 50  |
| 2025-050-S3 | 1.25 | 2.5 | 3  | 5  | 50  |
| 2025-050-S4 | 1.25 | 2.5 | 4  | 5  | 50  |
| 2025-050    | 1.25 | 2.5 | 6  | 5  | 50  |
| 2030-050-S3 | 1.5  | 3   | 3  | 6  | 50  |
| 2030-050-S4 | 1.5  | 3   | 4  | 6  | 50  |
| 2030-050    | 1.5  | 3   | 6  | 6  | 50  |
| 2035-050-S4 | 1.75 | 3.5 | 4  | 7  | 50  |
| 2035-050    | 1.75 | 3.5 | 6  | 7  | 50  |
| 2040-050-S4 | 2    | 4   | 4  | 8  | 50  |
| 2040-050    | 2    | 4   | 6  | 8  | 50  |
| 2045-050    | 2.25 | 4.5 | 6  | 9  | 50  |
| 2050-050    | 2.5  | 5   | 6  | 10 | 50  |
| 2060-050    | 3    | 6   | 6  | 12 | 50  |
| 2070-060    | 3.5  | 7   | 8  | 14 | 60  |
| 2080-060    | 4    | 8   | 8  | 16 | 60  |
| 2090-075    | 4.5  | 9   | 10 | 18 | 75  |
| 2100-075    | 5    | 10  | 10 | 20 | 75  |
| 2120-075    | 6    | 12  | 12 | 24 | 75  |
| 2140-100    | 7    | 14  | 16 | 28 | 100 |
| 2160-100    | 8    | 16  | 16 | 32 | 100 |
| 2180-100    | 9    | 18  | 20 | 36 | 100 |
| 2200-100    | 10   | 20  | 20 | 40 | 100 |



**IPLBE2000 (Esférico Largo)**

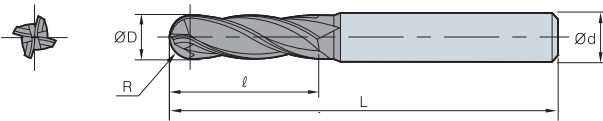
| ØD        | Tolerancia |
|-----------|------------|
| Ø1~Ø12    | 0.00~-0.02 |
| Ø12.1~Ø16 | 0.00~-0.03 |



(mm)

| Codigo     | R        | ØD   | Ød  | ℓ  | L  |     |
|------------|----------|------|-----|----|----|-----|
| IPLBE<br>2 | 2010-075 | 0.5  | 1   | 6  | 2  | 75  |
|            | 2010-100 | 0.5  | 1   | 6  | 2  | 100 |
|            | 2015-075 | 0.75 | 1.5 | 6  | 3  | 75  |
|            | 2015-100 | 0.75 | 1.5 | 6  | 3  | 100 |
|            | 2020-075 | 1    | 2   | 6  | 4  | 75  |
|            | 2020-100 | 1    | 2   | 6  | 4  | 100 |
|            | 2025-075 | 1.25 | 2.5 | 6  | 5  | 75  |
|            | 2025-100 | 1.25 | 2.5 | 6  | 5  | 100 |
|            | 2030-075 | 1.5  | 3   | 6  | 6  | 75  |
|            | 2030-100 | 1.5  | 3   | 6  | 6  | 100 |
|            | 2035-100 | 1.75 | 3.5 | 6  | 7  | 100 |
|            | 2040-075 | 2    | 4   | 6  | 8  | 75  |
|            | 2040-100 | 2    | 4   | 6  | 8  | 100 |
|            | 2050-075 | 2.5  | 5   | 6  | 10 | 75  |
|            | 2050-100 | 2.5  | 5   | 6  | 10 | 100 |
|            | 2060-075 | 3    | 6   | 6  | 12 | 75  |
|            | 2060-100 | 3    | 6   | 6  | 12 | 100 |
|            | 2060-150 | 3    | 6   | 6  | 12 | 150 |
|            | 2080-075 | 4    | 8   | 8  | 16 | 75  |
|            | 2080-100 | 4    | 8   | 8  | 16 | 100 |
|            | 2080-150 | 4    | 8   | 8  | 16 | 150 |
|            | 2100-100 | 5    | 10  | 10 | 20 | 100 |
|            | 2100-150 | 5    | 10  | 10 | 20 | 150 |
|            | 2100-200 | 5    | 10  | 10 | 20 | 200 |
|            | 2120-100 | 6    | 12  | 12 | 24 | 100 |
|            | 2120-150 | 6    | 12  | 12 | 24 | 150 |
|            | 2120-200 | 6    | 12  | 12 | 24 | 200 |
|            | 2160-150 | 8    | 16  | 16 | 32 | 150 |
|            | 2160-200 | 8    | 16  | 16 | 32 | 200 |

## IPBE4000 (Esférico)



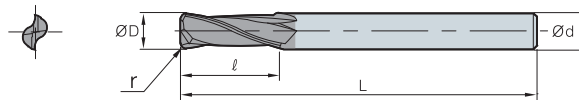
| ØD        | Tolerancia |
|-----------|------------|
| Ø1~Ø12    | 0.00~-0.02 |
| Ø12.1~Ø20 | 0.00~-0.03 |



(mm)

| Codigo      | R    | ØD  | Ød | ℓ  | L   |
|-------------|------|-----|----|----|-----|
| <b>IPBE</b> |      |     |    |    |     |
| 4010-050-S4 | 0.5  | 1   | 4  | 2  | 50  |
| 4010-050    | 0.5  | 1   | 6  | 2  | 50  |
| 4015-050-S4 | 0.75 | 1.5 | 4  | 3  | 50  |
| 4015-050    | 0.75 | 1.5 | 6  | 3  | 50  |
| 4020-050-S4 | 1    | 2   | 4  | 4  | 50  |
| 4020-050    | 1    | 2   | 6  | 4  | 50  |
| 4025-050-S4 | 1.25 | 2.5 | 4  | 5  | 50  |
| 4025-050    | 1.25 | 2.5 | 6  | 5  | 50  |
| 4030-050-S3 | 1.5  | 3   | 3  | 6  | 50  |
| 4030-050-S4 | 1.5  | 3   | 4  | 6  | 50  |
| 4030-050    | 1.5  | 3   | 6  | 6  | 50  |
| 4035-050-S4 | 1.75 | 3.5 | 4  | 7  | 50  |
| 4035-050    | 1.75 | 3.5 | 6  | 7  | 50  |
| 4040-050-S4 | 2    | 4   | 4  | 8  | 50  |
| 4040-050    | 2    | 4   | 6  | 8  | 50  |
| 4045-050    | 2.25 | 4.5 | 6  | 9  | 50  |
| 4050-050    | 2.5  | 5   | 6  | 10 | 50  |
| 4060-050    | 3    | 6   | 6  | 12 | 50  |
| 4070-060    | 3.5  | 7   | 8  | 14 | 60  |
| 4080-060    | 4    | 8   | 8  | 16 | 60  |
| 4090-075    | 4.5  | 9   | 10 | 18 | 75  |
| 4100-075    | 5    | 10  | 10 | 20 | 75  |
| 4120-075    | 6    | 12  | 12 | 24 | 75  |
| 4140-100    | 7    | 14  | 16 | 28 | 100 |
| 4160-100    | 8    | 16  | 16 | 32 | 100 |
| 4180-100    | 9    | 18  | 20 | 36 | 100 |
| 4200-100    | 10   | 20  | 20 | 40 | 100 |



**IPRE2000 (Radio)**

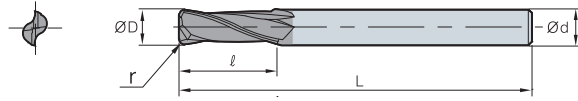
| ØD     | Tolerancia |
|--------|------------|
| Ø1~Ø12 | 0.00~-0.02 |



(mm)

| Codigo          | ØD              | Ød  | l  | L  | r   |     |
|-----------------|-----------------|-----|----|----|-----|-----|
| <b>IPRE</b><br> | 2010-050-R01    | 1   | 4  | 3  | 50  | 0.1 |
|                 | 2010-050-R02    | 1   | 4  | 3  | 50  | 0.2 |
|                 | 2010-050-R03    | 1   | 4  | 3  | 50  | 0.3 |
|                 | 2015-050-R02    | 1.5 | 4  | 4  | 50  | 0.2 |
|                 | 2015-050-R03    | 1.5 | 4  | 4  | 50  | 0.3 |
|                 | 2020-050-R02    | 2   | 4  | 6  | 50  | 0.2 |
|                 | 2020-050-R03    | 2   | 4  | 6  | 50  | 0.3 |
|                 | 2020-050-R05    | 2   | 4  | 6  | 50  | 0.5 |
|                 | 2025-050-R02    | 2.5 | 4  | 8  | 50  | 0.2 |
|                 | 2030-050-R02-S3 | 3   | 3  | 8  | 50  | 0.2 |
|                 | 2030-050-R03-S3 | 3   | 3  | 8  | 50  | 0.3 |
|                 | 2030-050-R05-S3 | 3   | 3  | 8  | 50  | 0.5 |
|                 | 2030-050-R10-S3 | 3   | 3  | 8  | 50  | 1   |
|                 | 2030-050-R02    | 3   | 4  | 8  | 50  | 0.2 |
|                 | 2030-050-R03    | 3   | 4  | 8  | 50  | 0.3 |
|                 | 2030-050-R05    | 3   | 4  | 8  | 50  | 0.5 |
|                 | 2030-050-R10    | 3   | 4  | 8  | 50  | 1   |
|                 | 2040-050-R02    | 4   | 4  | 10 | 50  | 0.2 |
|                 | 2040-050-R03    | 4   | 4  | 10 | 50  | 0.3 |
|                 | 2040-050-R05    | 4   | 4  | 10 | 50  | 0.5 |
|                 | 2040-050-R10    | 4   | 4  | 10 | 50  | 1   |
|                 | 2040-050-R15    | 4   | 4  | 10 | 50  | 1.5 |
|                 | 2050-050-R02    | 5   | 6  | 13 | 50  | 0.2 |
|                 | 2050-050-R03    | 5   | 6  | 13 | 50  | 0.3 |
|                 | 2050-050-R05    | 5   | 6  | 13 | 50  | 0.5 |
|                 | 2050-050-R10    | 5   | 6  | 13 | 50  | 1   |
|                 | 2060-050-R02    | 6   | 6  | 15 | 50  | 0.2 |
|                 | 2060-050-R03    | 6   | 6  | 15 | 50  | 0.3 |
|                 | 2060-050-R05    | 6   | 6  | 15 | 50  | 0.5 |
|                 | 2060-050-R10    | 6   | 6  | 15 | 50  | 1   |
| 2060-050-R15    | 6               | 6   | 15 | 50 | 1.5 |     |
| 2060-050-R20    | 6               | 6   | 15 | 50 | 2   |     |

## IPRE2000 (Radio)



| ØD     | Tolerancia |
|--------|------------|
| Ø1~Ø12 | 0.00~-0.02 |

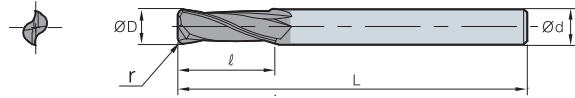


(mm)

| Codigo       | ØD           | Ød | l  | L  | r  |     |
|--------------|--------------|----|----|----|----|-----|
| IPRE         | 2080-060-R03 | 8  | 8  | 20 | 60 | 0.3 |
|              | 2080-060-R05 | 8  | 8  | 20 | 60 | 0.5 |
|              | 2080-060-R10 | 8  | 8  | 20 | 60 | 1   |
|              | 2080-060-R15 | 8  | 8  | 20 | 60 | 1.5 |
|              | 2080-060-R20 | 8  | 8  | 20 | 60 | 2   |
|              | 2080-060-R25 | 8  | 8  | 20 | 60 | 2.5 |
|              | 2080-060-R30 | 8  | 8  | 20 | 60 | 3   |
|              | 2100-075-R03 | 10 | 10 | 25 | 75 | 0.3 |
|              | 2100-075-R05 | 10 | 10 | 25 | 75 | 0.5 |
|              | 2100-075-R10 | 10 | 10 | 25 | 75 | 1   |
|              | 2100-075-R15 | 10 | 10 | 25 | 75 | 1.5 |
|              | 2100-075-R20 | 10 | 10 | 25 | 75 | 2   |
|              | 2100-075-R25 | 10 | 10 | 25 | 75 | 2.5 |
|              | 2100-075-R30 | 10 | 10 | 25 | 75 | 3   |
|              | 2120-075-R03 | 12 | 12 | 30 | 75 | 0.3 |
|              | 2120-075-R05 | 12 | 12 | 30 | 75 | 0.5 |
|              | 2120-075-R10 | 12 | 12 | 30 | 75 | 1   |
|              | 2120-075-R15 | 12 | 12 | 30 | 75 | 1.5 |
|              | 2120-075-R20 | 12 | 12 | 30 | 75 | 2   |
|              | 2120-075-R25 | 12 | 12 | 30 | 75 | 2.5 |
| 2120-075-R30 | 12           | 12 | 30 | 75 | 3  |     |





**IPLRE2000 (Largo radio)**

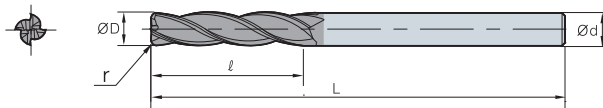
| ØD     | Tolerancia |
|--------|------------|
| Ø3~Ø12 | 0.00~-0.02 |



(mm)

| Codigo       | ØD           | Ød | ℓ  | L   | r   |     |
|--------------|--------------|----|----|-----|-----|-----|
| IPLRE<br>2   | 2030-075-R03 | 3  | 3  | 8   | 75  | 0.3 |
|              | 2030-075-R05 | 3  | 3  | 8   | 75  | 0.5 |
|              | 2030-075-R10 | 3  | 3  | 8   | 75  | 1   |
|              | 2040-075-R03 | 4  | 4  | 10  | 75  | 0.3 |
|              | 2040-075-R05 | 4  | 4  | 10  | 75  | 0.5 |
|              | 2040-075-R10 | 4  | 4  | 10  | 75  | 1   |
|              | 2040-075-R15 | 4  | 4  | 10  | 75  | 1.5 |
|              | 2060-100-R03 | 6  | 6  | 15  | 100 | 0.3 |
|              | 2060-100-R05 | 6  | 6  | 15  | 100 | 0.5 |
|              | 2060-100-R10 | 6  | 6  | 15  | 100 | 1   |
|              | 2060-100-R15 | 6  | 6  | 15  | 100 | 1.5 |
|              | 2060-100-R20 | 6  | 6  | 15  | 100 | 2   |
|              | 2080-100-R03 | 8  | 8  | 20  | 100 | 0.3 |
|              | 2080-100-R05 | 8  | 8  | 20  | 100 | 0.5 |
|              | 2080-100-R10 | 8  | 8  | 20  | 100 | 1   |
|              | 2080-100-R15 | 8  | 8  | 20  | 100 | 1.5 |
|              | 2080-100-R20 | 8  | 8  | 20  | 100 | 2   |
|              | 2080-100-R25 | 8  | 8  | 20  | 100 | 2.5 |
|              | 2080-100-R30 | 8  | 8  | 20  | 100 | 3   |
|              | 2100-100-R03 | 10 | 10 | 25  | 100 | 0.3 |
|              | 2100-100-R05 | 10 | 10 | 25  | 100 | 0.5 |
|              | 2100-100-R10 | 10 | 10 | 25  | 100 | 1   |
|              | 2100-100-R15 | 10 | 10 | 25  | 100 | 1.5 |
|              | 2100-100-R20 | 10 | 10 | 25  | 100 | 2   |
|              | 2100-100-R25 | 10 | 10 | 25  | 100 | 2.5 |
|              | 2100-100-R30 | 10 | 10 | 25  | 100 | 3   |
|              | 2120-100-R03 | 12 | 12 | 30  | 100 | 0.3 |
|              | 2120-100-R05 | 12 | 12 | 30  | 100 | 0.5 |
|              | 2120-100-R10 | 12 | 12 | 30  | 100 | 1   |
|              | 2120-100-R15 | 12 | 12 | 30  | 100 | 1.5 |
|              | 2120-100-R20 | 12 | 12 | 30  | 100 | 2   |
|              | 2120-100-R25 | 12 | 12 | 30  | 100 | 2.5 |
| 2120-100-R30 | 12           | 12 | 30 | 100 | 3   |     |

## IPRE4000 (Radio)



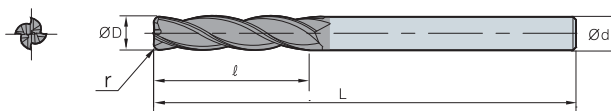
| ØD     | Tolerancia |
|--------|------------|
| Ø2-Ø12 | 0.00~-0.02 |



(mm)

| Codigo            | ØD  | Ød | ℓ  | L  | r   |
|-------------------|-----|----|----|----|-----|
| IPRE 4020-050-R02 | 2   | 4  | 6  | 50 | 0.2 |
| 4020-050-R03      | 2   | 4  | 6  | 50 | 0.3 |
| 4020-050-R05      | 2   | 4  | 6  | 50 | 0.5 |
| 4025-050-R02      | 2.5 | 4  | 8  | 50 | 0.2 |
| 4030-050-R02-S3   | 3   | 3  | 8  | 50 | 0.2 |
| 4030-050-R03-S3   | 3   | 3  | 8  | 50 | 0.3 |
| 4030-050-R05-S3   | 3   | 3  | 8  | 50 | 0.5 |
| 4030-050-R10-S3   | 3   | 3  | 8  | 50 | 1   |
| 4030-050-R02      | 3   | 4  | 8  | 50 | 0.2 |
| 4030-050-R03      | 3   | 4  | 8  | 50 | 0.3 |
| 4030-050-R05      | 3   | 4  | 8  | 50 | 0.5 |
| 4030-050-R10      | 3   | 4  | 8  | 50 | 1   |
| 4040-050-R02      | 4   | 4  | 10 | 50 | 0.2 |
| 4040-050-R03      | 4   | 4  | 10 | 50 | 0.3 |
| 4040-050-R05      | 4   | 4  | 10 | 50 | 0.5 |
| 4040-050-R10      | 4   | 4  | 10 | 50 | 1   |
| 4040-050-R15      | 4   | 4  | 10 | 50 | 1.5 |
| 4050-050-R02      | 5   | 6  | 13 | 50 | 0.2 |
| 4050-050-R03      | 5   | 6  | 13 | 50 | 0.3 |
| 4050-050-R05      | 5   | 6  | 13 | 50 | 0.5 |
| 4050-050-R10      | 5   | 6  | 13 | 50 | 1   |
| 4060-050-R02      | 6   | 6  | 15 | 50 | 0.2 |
| 4060-050-R03      | 6   | 6  | 15 | 50 | 0.3 |
| 4060-050-R05      | 6   | 6  | 15 | 50 | 0.5 |
| 4060-050-R10      | 6   | 6  | 15 | 50 | 1   |
| 4060-050-R15      | 6   | 6  | 15 | 50 | 1.5 |
| 4060-050-R20      | 6   | 6  | 15 | 50 | 2   |
| 4080-060-R03      | 8   | 8  | 20 | 60 | 0.3 |
| 4080-060-R05      | 8   | 8  | 20 | 60 | 0.5 |
| 4080-060-R10      | 8   | 8  | 20 | 60 | 1   |
| 4080-060-R15      | 8   | 8  | 20 | 60 | 1.5 |
| 4080-060-R20      | 8   | 8  | 20 | 60 | 2   |
| 4080-060-R25      | 8   | 8  | 20 | 60 | 2.5 |
| 4080-060-R30      | 8   | 8  | 20 | 60 | 3   |
| 4100-075-R03      | 10  | 10 | 25 | 75 | 0.3 |
| 4100-075-R05      | 10  | 10 | 25 | 75 | 0.5 |
| 4100-075-R10      | 10  | 10 | 25 | 75 | 1   |
| 4100-075-R15      | 10  | 10 | 25 | 75 | 1.5 |
| 4100-075-R20      | 10  | 10 | 25 | 75 | 2   |
| 4100-075-R25      | 10  | 10 | 25 | 75 | 2.5 |
| 4100-075-R30      | 10  | 10 | 25 | 75 | 3   |
| 4120-075-R03      | 12  | 12 | 30 | 75 | 0.3 |
| 4120-075-R05      | 12  | 12 | 30 | 75 | 0.5 |
| 4120-075-R10      | 12  | 12 | 30 | 75 | 1   |
| 4120-075-R15      | 12  | 12 | 30 | 75 | 1.5 |
| 4120-075-R20      | 12  | 12 | 30 | 75 | 2   |
| 4120-075-R25      | 12  | 12 | 30 | 75 | 2.5 |
| 4120-075-R30      | 12  | 12 | 30 | 75 | 3   |




**IPLRE4000 (Largo radio)**

| ØD     | Tolerancia |
|--------|------------|
| Ø3-Ø12 | 0.00~-0.02 |



(mm)

| Codigo  | ØD           | Ød | ℓ  | L   | r   |     |
|---|--------------|----|----|-----|-----|-----|
| <b>IPLRE</b><br> | 4030-075-R03 | 3  | 3  | 8   | 75  | 0.3 |
|   | 4030-075-R05 | 3  | 3  | 8   | 75  | 0.5 |
|   | 4030-075-R10 | 3  | 3  | 8   | 75  | 1   |
|   | 4040-075-R03 | 4  | 4  | 10  | 75  | 0.3 |
|   | 4040-075-R05 | 4  | 4  | 10  | 75  | 0.5 |
|   | 4040-075-R10 | 4  | 4  | 10  | 75  | 1   |
|   | 4040-075-R15 | 4  | 4  | 10  | 75  | 1.5 |
|   | 4060-100-R03 | 6  | 6  | 15  | 100 | 0.3 |
|   | 4060-100-R05 | 6  | 6  | 15  | 100 | 0.5 |
|   | 4060-100-R10 | 6  | 6  | 15  | 100 | 1   |
|   | 4060-100-R15 | 6  | 6  | 15  | 100 | 1.5 |
|   | 4060-100-R20 | 6  | 6  | 15  | 100 | 2   |
|   | 4080-100-R03 | 8  | 8  | 20  | 100 | 0.3 |
|   | 4080-100-R05 | 8  | 8  | 20  | 100 | 0.5 |
|   | 4080-100-R10 | 8  | 8  | 20  | 100 | 1   |
|   | 4080-100-R15 | 8  | 8  | 20  | 100 | 1.5 |
|   | 4080-100-R20 | 8  | 8  | 20  | 100 | 2   |
|   | 4080-100-R25 | 8  | 8  | 20  | 100 | 2.5 |
|   | 4080-100-R30 | 8  | 8  | 20  | 100 | 3   |
|   | 4100-100-R03 | 10 | 10 | 25  | 100 | 0.3 |
|   | 4100-100-R05 | 10 | 10 | 25  | 100 | 0.5 |
|   | 4100-100-R10 | 10 | 10 | 25  | 100 | 1   |
|   | 4100-100-R15 | 10 | 10 | 25  | 100 | 1.5 |
|   | 4100-100-R20 | 10 | 10 | 25  | 100 | 2   |
|   | 4100-100-R25 | 10 | 10 | 25  | 100 | 2.5 |
|   | 4100-100-R30 | 10 | 10 | 25  | 100 | 3   |
|   | 4120-100-R03 | 12 | 12 | 30  | 100 | 0.3 |
|   | 4120-100-R05 | 12 | 12 | 30  | 100 | 0.5 |
|   | 4120-100-R10 | 12 | 12 | 30  | 100 | 1   |
|   | 4120-100-R15 | 12 | 12 | 30  | 100 | 1.5 |
|   | 4120-100-R20 | 12 | 12 | 30  | 100 | 2   |
|   | 4120-100-R25 | 12 | 12 | 30  | 100 | 2.5 |
| 4120-100-R30  | 12           | 12 | 30 | 100 | 3   |     |

# F Información Técnica para Z<sup>+</sup> Endmill

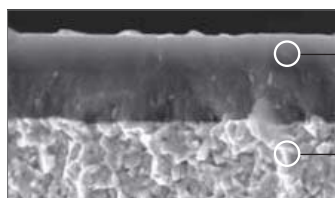
Fresa entera extremadamente eficiente y económica para maquinados generales

## Z<sup>+</sup> Endmill

- Amplia gama de aplicaciones desde desbaste hasta acabado en varios tipos de materiales de dureza inferior a HRC47
- Mayor vida útil de la herramienta gracias a un nuevo sustrato y capas de recubrimiento avanzadas
- Prevención de astillado y mayor vida útil gracias al diseño optimizado del filo de corte

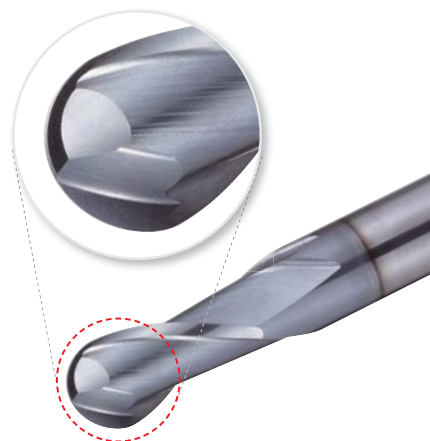
### Características

- Amplia gama de materiales de piezas de trabajo: acero al carbono, acero aleado, hierro fundido, etc
- Vida útil prolongada de la herramienta - Se aplica un sustrato recién inventado y capas de revestimiento de alta tecnología
- Mayor productividad: amplio rango de aplicaciones desde desbaste hasta acabado



PC320U

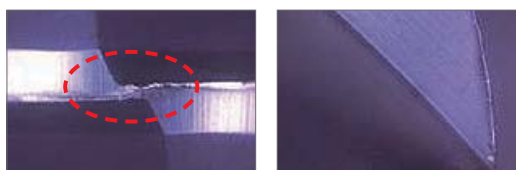
- Capa de revestimiento AlCrSiN  
: Recubrimiento lubricante hace posible mecanizado de alta temperatura/alta velocidad
- Sustrato ultra fino  
: Sustrato con excelente resistencia al desgaste



Filo en buen estado

Z<sup>+</sup> Endmill

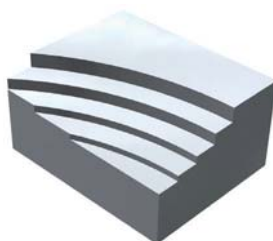
Rigidez de corte excepcional



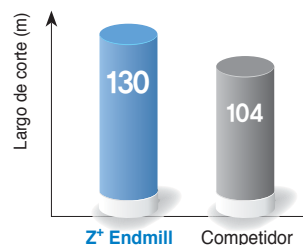
competidor

### Ejemplo de Aplicaciones

- **Pieza de trabajo** Acero de carbono (C45, ~HRC20)
- **Condición de corte**  $vc$  (m/min) = 180,  $fz$  (mm/t) = 0.05,  $ap$  (mm) = 8, seco
- **Herramientas** ZPFE4080-060

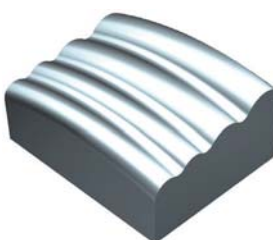


#### Resultado de la prueba

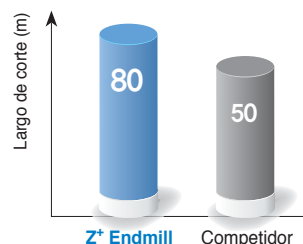


25% más

- **Pieza de trabajo** Acero de carbono (C45, ~HRC20)
- **Condición de corte**  $vc$  (m/min) = 130,  $fz$  (mm/t) = 0.1,  $ap$  (mm) = 0.5, seco
- **Herramientas** ZPBE2080-100



#### Resultado de la prueba



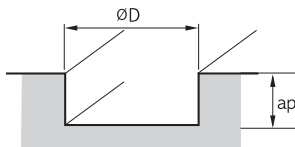
33% más



**Condiciones de corte recomendadas (ZPFE2000/ZPSFE2000 Plano)**

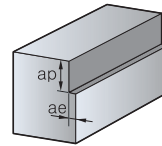
| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | Acero aleado y al carbono<br>(Por debajo de HRC30) |                       | Acero pre-endurecido, Acero de molde<br>(HRC30~47) |                       | Acero inoxidable |                       |
|---|--|-----------------------|--|-----------------------|------------------|-----------------------|
|   | RPM<br>n (min-1)                                   | Avance<br>vf (mm/min) | RPM<br>n (min-1)                                   | Avance<br>vf (mm/min) | RPM<br>n (min-1) | Avance<br>vf (mm/min) |
| 1   | 19,745   | 175                   | 13,057   | 100                   | 10,500           | 70                    |
| 2   | 11,560   | 190                   | 7,560  | 120                   | 6,300            | 90                    |
| 3   | 8,920  | 210                   | 5,560  | 140                   | 4,620            | 120                   |
| 4   | 7,560  | 300                   | 4,620  | 180                   | 3,880            | 150                   |
| 5   | 6,300  | 320                   | 3,780  | 190                   | 3,160            | 160                   |
| 6   | 5,560  | 350                   | 3,360  | 220                   | 2,840            | 180                   |
| 8   | 4,200  | 380                   | 2,520  | 200                   | 2,100            | 180                   |
| 10  | 3,260  | 330                   | 2,000  | 160                   | 1,680            | 160                   |
| 12  | 2,740  | 280                   | 1,680  | 130                   | 1,360            | 130                   |
| 16  | 2,200  | 220                   | 1,360  | 110                   | 1,060            | 110                   |

**Consejo aplicación**



■ Profundidad de ranurado (ap)

- $D \leq \varnothing 2.5$  (ap = 0.3D)
- $D > \varnothing 2.5$  (ap = 0.5D)



■ Profundidad escuadrado (ap)

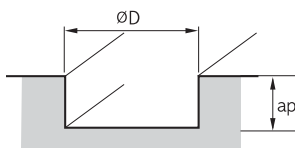
- $D \leq \varnothing 2.5$  (ap = 1.5D, ae = 0.05D)
- $D > \varnothing 2.5$  (ap = 1.5D, ae = 0.1D)

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

**Condiciones de corte recomendadas (ZPFE4000/ZPSFE4000 Plano)**

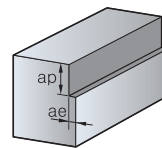
| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | Acero aleado y al carbono<br>(Por debajo de HRC30) |                       | Acero pre-endurecido, Acero de molde<br>(HRC30~47) |                       | Acero inoxidable |                       |
|---|--|-----------------------|--|-----------------------|------------------|-----------------------|
|   | RPM<br>n (min-1)                                   | Avance<br>vf (mm/min) | RPM<br>n (min-1)                                   | Avance<br>vf (mm/min) | RPM<br>n (min-1) | Avance<br>vf (mm/min) |
| 2   | 11,560   | 280                   | 7,560  | 170                   | 6,300            | 140                   |
| 3   | 8,920  | 320                   | 5,560  | 200                   | 4,620            | 170                   |
| 4   | 7,560  | 570                   | 4,620  | 350                   | 3,880            | 280                   |
| 5   | 6,300  | 600                   | 3,780  | 360                   | 3,160            | 300                   |
| 6   | 5,560  | 660                   | 3,360  | 410                   | 2,840            | 330                   |
| 8   | 4,200  | 710                   | 2,520  | 380                   | 2,100            | 350                   |
| 10  | 3,260  | 610                   | 2,000  | 300                   | 1,680            | 300                   |
| 12  | 2,740  | 520                   | 1,680  | 250                   | 1,360            | 240                   |
| 16  | 2,200  | 410                   | 1,360  | 200                   | 1,100            | 200                   |

**Consejo aplicación**



■ Profundidad de ranurado (ap)

- $D \leq \varnothing 2.5$  (ap = 0.3D)
- $D > \varnothing 2.5$  (ap = 0.5D)



■ Profundidad escuadrado (ap)

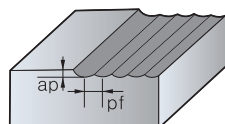
- $D \leq \varnothing 2.5$  (ap = 1.5D, ae = 0.05D)
- $D > \varnothing 2.5$  (ap = 1.5D, ae = 0.1D)

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## Condiciones de corte recomendadas (ZPBE2000 Esférico)

| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | Acero aleado y al carbono<br>(Por debajo de HRC30) |                       | Acero pre-endurecido, Acero de molde<br>(HRC30~47) |                       |
|---|--|-----------------------|--|-----------------------|
|   | RPM<br>n (min-1)                                   | Avance<br>vf (mm/min) | RPM<br>n (min-1)                                   | Avance<br>vf (mm/min) |
| 1   | 30,000   | 2,880                 | 30,000   | 2,520                 |
| 1.2   | 30,000   | 3,060                 | 28,800   | 2,580                 |
| 1.5   | 30,000   | 3,240                 | 28,800   | 2,700                 |
| 2   | 29,820   | 3,420                 | 28,680   | 2,880                 |
| 3   | 19,860   | 3,600                 | 19,080   | 3,180                 |
| 4   | 14,940   | 3,600                 | 14,340   | 3,180                 |
| 5   | 11,160   | 3,480                 | 10,680   | 2,940                 |
| 6   | 8,340  | 2,910                 | 8,040  | 2,460                 |
| 8   | 6,660  | 2,520                 | 6,420  | 2,100                 |
| 10  | 5,580  | 2,220                 | 5,340  | 1,860                 |
| 12  | 4,170  | 1,770                 | 4,008  | 1,500                 |

### Consejo aplicación



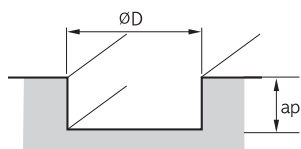
- $ap = 0.03D$
- $pf = 0.05D$

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

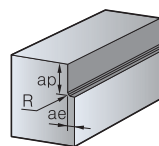
## Condiciones de corte recomendadas (ZPRE2000 Radio)

| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | Acero aleado y al carbono<br>(Por debajo de HRC30) |                       | Acero pre-endurecido, Acero de molde<br>(HRC30~47) |                       | Acero inoxidable |                       |
|---|--|-----------------------|--|-----------------------|------------------|-----------------------|
|   | RPM<br>n (min-1)                                   | Avance<br>vf (mm/min) | RPM<br>n (min-1)                                   | Avance<br>vf (mm/min) | RPM<br>n (min-1) | Avance<br>vf (mm/min) |
| 6   | 5,300  | 420                   | 3,200  | 240                   | 2,400            | 180                   |
| 8   | 4,000  | 450                   | 2,700  | 210                   | 2,040            | 150                   |
| 10  | 3,200  | 390                   | 2,400  | 180                   | 1,600            | 120                   |
| 12  | 2,700  | 330                   | 2,040  | 150                   | 1,300            | 100                   |
| 14  | 2,400  | 270                   | 1,600  | 120                   | 1,000            | 70                    |
| 16  | 2,040  | 200                   | 1,300  | 100                   | 1,300            | 60                    |

### Consejo aplicación



- Profundidad de ranurado ( $ap$ )
- $ap: \leq 0.3D$



- Profundidad escuadrado ( $ap$ )
- $ap: \leq 1.5D$
- $ae: \leq 0.1D$

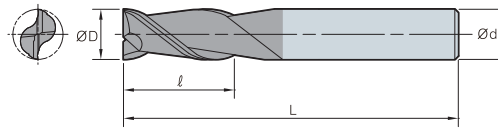
\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## Alerta

- Ajuste las condiciones de corte recomendadas correctamente, de acuerdo con las condiciones de sus máquinas, Las formas objetivo, y su propósito para el mecanizado
- La pieza de trabajo debe sujetarse rígidamente. En caso de vibraciones, reduzca las RPM y la velocidad de avance en la misma proporción
- En caso de sobresalir sobre 3D, reducir las RPM y la velocidad de alimentación



# ZPFE2000 (Plano)



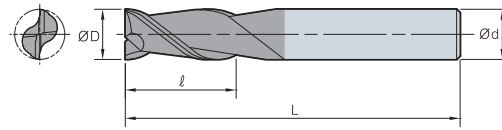
| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |



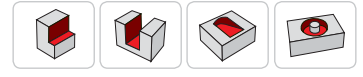
(mm)

| Codigo        | ØD   | Ød | ℓ  | L   |
|---------------|------|----|----|-----|
| <b>ZPFE</b>   |      |    |    |     |
| 2010-050-S4   | 1.0  | 4  | 3  | 50  |
| 2015-050-S4   | 1.5  | 4  | 4  | 50  |
| 2020-050-S4   | 2.0  | 4  | 6  | 50  |
| 2025-050-V6S4 | 2.5  | 4  | 6  | 50  |
| 2025-050-V8S4 | 2.5  | 4  | 8  | 50  |
| 2030-050-S4   | 3.0  | 4  | 9  | 50  |
| 2030-050      | 3.0  | 6  | 9  | 50  |
| 2035-050-S4   | 3.5  | 4  | 9  | 50  |
| 2035-050      | 3.5  | 6  | 9  | 50  |
| 2040-050-S4   | 4.0  | 4  | 11 | 50  |
| 2040-050      | 4.0  | 6  | 11 | 50  |
| 2045-050      | 4.5  | 6  | 11 | 50  |
| 2050-050      | 5.0  | 6  | 13 | 50  |
| 2060-050      | 6.0  | 6  | 16 | 50  |
| 2065-060      | 6.5  | 8  | 16 | 60  |
| 2070-060      | 7.0  | 8  | 20 | 60  |
| 2075-060      | 7.5  | 8  | 20 | 60  |
| 2080-060      | 8.0  | 8  | 20 | 60  |
| 2085-075      | 8.5  | 10 | 23 | 75  |
| 2090-075      | 9.0  | 10 | 23 | 75  |
| 2095-075      | 9.5  | 10 | 25 | 75  |
| 2100-075      | 10.0 | 10 | 25 | 75  |
| 2105-075      | 10.5 | 12 | 26 | 75  |
| 2110-075      | 11.0 | 12 | 28 | 75  |
| 2120-075      | 12.0 | 12 | 30 | 75  |
| 2140-100      | 14.0 | 14 | 34 | 100 |
| 2150-090      | 15.0 | 16 | 36 | 90  |
| 2160-100      | 16.0 | 16 | 36 | 100 |
| 2170-100      | 17.0 | 20 | 40 | 100 |
| 2180-100      | 18.0 | 18 | 40 | 100 |
| 2190-100      | 19.0 | 20 | 40 | 100 |
| 2200-100      | 20.0 | 20 | 40 | 100 |

## ZPSFE2000 (Plano Corto)



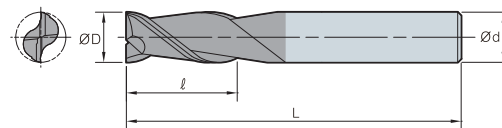
| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |



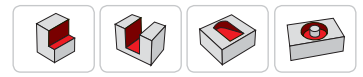
(mm)

| Codigo      | ØD   | Ød | ℓ  | L   |
|-------------|------|----|----|-----|
| ZPSFE       |      |    |    |     |
| 2010-050-S4 | 1.0  | 4  | 2  | 50  |
| 2015-050-S4 | 1.5  | 4  | 2  | 50  |
| 2020-050-S4 | 2.0  | 4  | 3  | 50  |
| 2025-050-S4 | 2.5  | 4  | 4  | 50  |
| 2030-050-S4 | 3.0  | 4  | 5  | 50  |
| 2040-050-S4 | 4.0  | 4  | 6  | 50  |
| 2050-050    | 5.0  | 6  | 8  | 50  |
| 2060-050    | 6.0  | 6  | 9  | 50  |
| 2070-050    | 7.0  | 8  | 10 | 50  |
| 2080-050    | 8.0  | 8  | 12 | 50  |
| 2100-075    | 10.0 | 10 | 15 | 75  |
| 2120-075    | 12.0 | 12 | 18 | 75  |
| 2160-100    | 16.0 | 16 | 24 | 100 |

## ZPLFE2000 (Plano Largo)



| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |



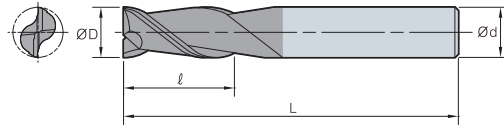
(mm)

| Codigo         | ØD   | Ød | ℓ  | L   |
|----------------|------|----|----|-----|
| ZPLFE          |      |    |    |     |
| 2020-075-S4    | 2.0  | 4  | 6  | 75  |
| 2030-075-S4    | 3.0  | 4  | 9  | 75  |
| 2030-075       | 3.0  | 6  | 12 | 75  |
| 2040-075-S4    | 4.0  | 4  | 11 | 75  |
| 2050-075       | 5.0  | 6  | 20 | 75  |
| 2060-100       | 6.0  | 6  | 16 | 100 |
| 2060-100-V20S6 | 6.0  | 6  | 20 | 100 |
| 2080-075       | 8.0  | 8  | 20 | 75  |
| 2080-100       | 8.0  | 8  | 25 | 100 |
| 2100-100       | 10.0 | 10 | 30 | 100 |
| 2120-100       | 12.0 | 12 | 35 | 100 |
| 2160-150       | 16.0 | 16 | 36 | 150 |
| 2200-150       | 20.0 | 20 | 45 | 150 |





# ZPLFE2000 (Flauta Largo)



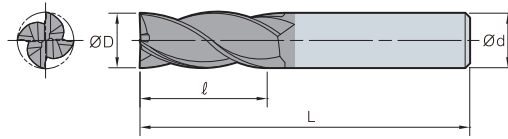
| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |



(mm)

| Codigo               | ØD   | Ød | ℓ  | L   |
|----------------------|------|----|----|-----|
| ZPLFE 2020-075-V15S4 | 2.0  | 4  | 15 | 75  |
| 2030-075-V25S4       | 3.0  | 4  | 25 | 75  |
| 2040-075-V30S4       | 4.0  | 4  | 30 | 75  |
| 2050-075-V30S6       | 5.0  | 6  | 30 | 75  |
| 2060-075-V35S6       | 6.0  | 6  | 35 | 75  |
| 2080-100-V40S8       | 8.0  | 8  | 40 | 100 |
| 2100-100-V45S10      | 10.0 | 10 | 45 | 100 |
| 2120-100-V50S12      | 12.0 | 12 | 50 | 100 |
| 2140-100-V55S14      | 14.0 | 14 | 55 | 100 |
| 2160-150-V50S16      | 16.0 | 16 | 50 | 150 |
| 2160-150-V60S16      | 16.0 | 16 | 60 | 150 |
| 2180-150-V65S18      | 18.0 | 18 | 65 | 150 |
| 2200-150-V70S20      | 20.0 | 20 | 70 | 150 |

## ZPFE4000 (Plano)



| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |

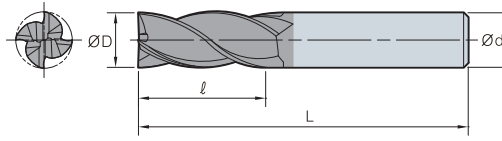


(mm)

| Codigo                 | ØD   | Ød | ℓ  | L   |
|------------------------|------|----|----|-----|
| <b>ZPFE</b>            |      |    |    |     |
| <b>4010-050-S4</b>     | 1.0  | 4  | 3  | 50  |
| <b>4015-050-S4</b>     | 1.5  | 4  | 5  | 50  |
| <b>4015-050</b>        | 1.5  | 6  | 5  | 50  |
| <b>4020-050-S4</b>     | 2.0  | 4  | 6  | 50  |
| <b>4020-050</b>        | 2.0  | 6  | 6  | 50  |
| <b>4025-050-S4</b>     | 2.5  | 4  | 8  | 50  |
| <b>4025-050</b>        | 2.5  | 6  | 8  | 50  |
| <b>4030-050</b>        | 3.0  | 6  | 6  | 50  |
| <b>4030-050-S4</b>     | 3.0  | 4  | 9  | 50  |
| <b>4030-050-V9S6</b>   | 3.0  | 6  | 9  | 50  |
| <b>4035-050-S4</b>     | 3.5  | 4  | 11 | 50  |
| <b>4035-050</b>        | 3.5  | 6  | 9  | 50  |
| <b>4040-050-S4</b>     | 4.0  | 4  | 11 | 50  |
| <b>4040-050</b>        | 4.0  | 6  | 11 | 50  |
| <b>4045-050</b>        | 4.5  | 6  | 11 | 50  |
| <b>4050-050</b>        | 5.0  | 6  | 8  | 50  |
| <b>4050-050-V13S6</b>  | 5.0  | 6  | 13 | 50  |
| <b>4055-050</b>        | 5.5  | 6  | 16 | 50  |
| <b>4060-050</b>        | 6.0  | 6  | 16 | 50  |
| <b>4065-060</b>        | 6.5  | 8  | 16 | 60  |
| <b>4070-060</b>        | 7.0  | 8  | 20 | 60  |
| <b>4075-060</b>        | 7.5  | 8  | 20 | 60  |
| <b>4080-060</b>        | 8.0  | 8  | 20 | 60  |
| <b>4085-075</b>        | 8.5  | 10 | 23 | 75  |
| <b>4090-075</b>        | 9.0  | 10 | 23 | 75  |
| <b>4095-075</b>        | 9.5  | 10 | 23 | 75  |
| <b>4100-075</b>        | 10.0 | 10 | 25 | 75  |
| <b>4110-075</b>        | 11.0 | 12 | 28 | 75  |
| <b>4120-075</b>        | 12.0 | 12 | 30 | 75  |
| <b>4130-100</b>        | 13.0 | 14 | 32 | 100 |
| <b>4140-075</b>        | 14.0 | 14 | 32 | 75  |
| <b>4140-100</b>        | 14.0 | 14 | 34 | 100 |
| <b>4150-100</b>        | 15.0 | 16 | 36 | 100 |
| <b>4160-100</b>        | 16.0 | 16 | 36 | 100 |
| <b>4160-100-V40S16</b> | 16.0 | 16 | 40 | 100 |
| <b>4160-100-V45S16</b> | 16.0 | 16 | 45 | 100 |
| <b>4170-100-S18</b>    | 17.0 | 18 | 38 | 100 |
| <b>4180-100-S18</b>    | 18.0 | 18 | 45 | 100 |
| <b>4200-100-S20</b>    | 20.0 | 20 | 45 | 100 |



# ZPSFE4000 (Plano Corto)



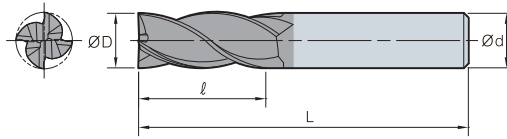
| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |



(mm)

| Codigo       | ØD   | Ød | ℓ  | L   |
|--------------|------|----|----|-----|
| <b>ZPSFE</b> |      |    |    |     |
| 4010-050-S4  | 1.0  | 4  | 2  | 50  |
| 4015-050-S4  | 1.5  | 4  | 2  | 50  |
| 4020-050-S4  | 2.0  | 4  | 3  | 50  |
| 4025-050-S4  | 2.5  | 4  | 4  | 50  |
| 4030-050-S4  | 3.0  | 4  | 5  | 50  |
| 4040-050-S4  | 4.0  | 4  | 6  | 50  |
| 4050-050     | 5.0  | 6  | 8  | 50  |
| 4060-050     | 6.0  | 6  | 9  | 50  |
| 4070-050     | 7.0  | 8  | 10 | 50  |
| 4080-050     | 8.0  | 8  | 12 | 50  |
| 4100-075     | 10.0 | 10 | 15 | 75  |
| 4120-075     | 12.0 | 12 | 18 | 75  |
| 4160-100     | 16.0 | 16 | 24 | 100 |

## ZPLFE4000 (Plano Largo)



| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |

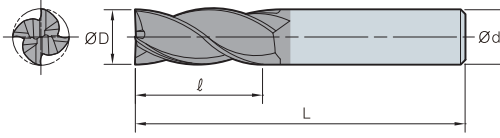
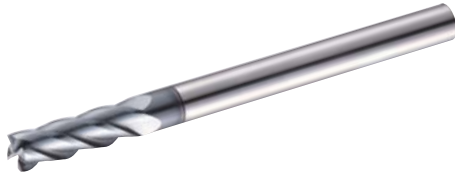


(mm)

| Codigo          | ØD   | Ød | ℓ  | L   |
|-----------------|------|----|----|-----|
| ZPLFE           |      |    |    |     |
| 4020-075-S4     | 2.0  | 4  | 10 | 75  |
| 4030-075-S4     | 3.0  | 4  | 12 | 75  |
| 4040-075-S4     | 4.0  | 4  | 11 | 75  |
| 4040-050-V15S4  | 4.0  | 4  | 15 | 75  |
| 4050-075        | 5.0  | 6  | 20 | 75  |
| 4060-075        | 6.0  | 6  | 16 | 75  |
| 4060-075-V20S6  | 6.0  | 6  | 20 | 75  |
| 4080-075        | 8.0  | 8  | 20 | 75  |
| 4080-100-S8     | 8.0  | 8  | 25 | 100 |
| 4100-100        | 10.0 | 10 | 30 | 100 |
| 4100-100-V35S10 | 10.0 | 10 | 35 | 100 |
| 4120-100        | 12.0 | 12 | 35 | 100 |
| 4160-150        | 16.0 | 16 | 36 | 150 |
| 4200-150        | 20.0 | 20 | 45 | 150 |



# ZPLFE4000 (Flauta Largo)



| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |

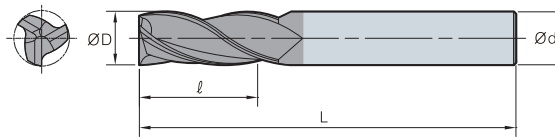


(mm)

| Codigo          | ØD   | Ød | ℓ  | L   |
|-----------------|------|----|----|-----|
| <b>ZPLFE</b>    |      |    |    |     |
| 4010-050-V04S4  | 1.0  | 4  | 4  | 50  |
| 4020-050-V10S4  | 2.0  | 4  | 10 | 50  |
| 4030-060-V15S4  | 3.0  | 4  | 15 | 60  |
| 4030-060-V16S6  | 3.0  | 6  | 16 | 60  |
| 4040-060-V20S4  | 4.0  | 4  | 20 | 60  |
| 4040-075-V20S6  | 4.0  | 6  | 20 | 75  |
| 4040-075-V30S4  | 4.0  | 4  | 30 | 75  |
| 4050-075-V25S6  | 5.0  | 6  | 25 | 75  |
| 4050-075-V30S6  | 5.0  | 6  | 30 | 75  |
| 4060-075-V30S6  | 6.0  | 6  | 30 | 75  |
| 4060-075-V35S6  | 6.0  | 6  | 35 | 75  |
| 4080-100-V35S8  | 8.0  | 8  | 35 | 100 |
| 4080-100-V40S8  | 8.0  | 8  | 40 | 100 |
| 4100-100-V45S10 | 10.0 | 10 | 45 | 100 |
| 4100-100-V50S10 | 10.0 | 10 | 50 | 100 |
| 4120-100-V45S12 | 12.0 | 12 | 45 | 100 |
| 4120-100-V50S12 | 12.0 | 12 | 50 | 100 |
| 4140-100-V45S14 | 14.0 | 14 | 45 | 100 |
| 4160-150-V50S16 | 16.0 | 16 | 50 | 150 |
| 4160-150-V60S16 | 16.0 | 16 | 60 | 150 |
| 4160-150-V70S16 | 16.0 | 16 | 70 | 150 |
| 4180-150-V70S18 | 18.0 | 18 | 70 | 150 |
| 4200-150-V70S20 | 20.0 | 20 | 70 | 150 |



## ZPFE3000 (Plano)



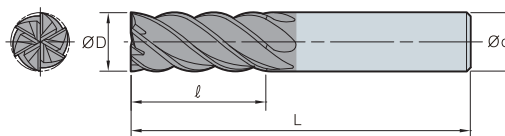
| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |



(mm)

| Codigo    | ØD          | Ød   | ℓ  | L  |     |
|-----------|-------------|------|----|----|-----|
| ZPFE<br>3 | 3020-050-S4 | 2.0  | 4  | 6  | 50  |
|           | 3030-050-S4 | 3.0  | 4  | 9  | 50  |
|           | 3040-050-S4 | 4.0  | 4  | 11 | 50  |
|           | 3050-050    | 5.0  | 6  | 13 | 50  |
|           | 3060-050    | 6.0  | 6  | 16 | 50  |
|           | 3065-060    | 6.5  | 8  | 16 | 60  |
|           | 3080-060    | 8.0  | 8  | 20 | 60  |
|           | 3095-075    | 9.5  | 10 | 24 | 75  |
|           | 3100-075    | 10.0 | 10 | 25 | 75  |
|           | 3120-075    | 12.0 | 12 | 30 | 75  |
|           | 3106-100    | 16.0 | 16 | 36 | 100 |
|           | 3180-100    | 18.0 | 18 | 40 | 100 |
|           | 3200-100    | 20.0 | 20 | 45 | 100 |
|           | 3250-100    | 25.0 | 25 | 50 | 100 |

## ZPFE6000 (Plano)



| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |

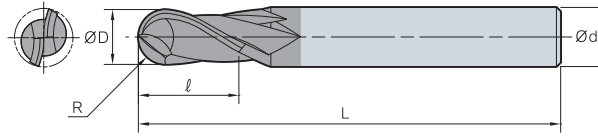


(mm)

| Codigo    | ØD       | Ød   | ℓ  | L  |     |
|-----------|----------|------|----|----|-----|
| ZPFE<br>6 | 6060-050 | 6.0  | 6  | 15 | 50  |
|           | 6080-060 | 8.0  | 8  | 20 | 60  |
|           | 6100-075 | 10.0 | 10 | 25 | 75  |
|           | 6120-075 | 12.0 | 12 | 30 | 75  |
|           | 6160-100 | 16.0 | 16 | 36 | 100 |
|           | 6200-100 | 20.0 | 20 | 45 | 100 |



# ZPBE2000 (Esférico)



| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |

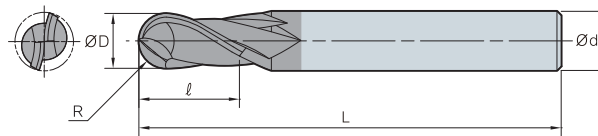
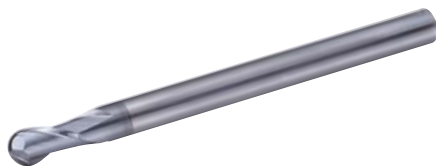


(mm)

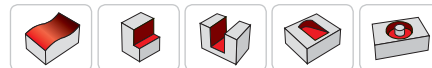
| Codigo      | R    | ØD   | Ød | ℓ   | L   |
|-------------|------|------|----|-----|-----|
| <b>ZPBE</b> |      |      |    |     |     |
| 2008-050-S4 | 0.4  | 0.8  | 4  | 1.6 | 50  |
| 2009-050-S4 | 0.5  | 0.9  | 4  | 1.8 | 50  |
| 2010-050-S4 | 0.5  | 1.0  | 4  | 2   | 50  |
| 2015-050-S4 | 0.8  | 1.5  | 4  | 3   | 50  |
| 2020-050-S4 | 1.0  | 2.0  | 4  | 4   | 50  |
| 2020-050    | 1.0  | 2.0  | 6  | 4   | 50  |
| 2025-050-S4 | 1.3  | 2.5  | 4  | 5   | 50  |
| 2030-050-S4 | 1.5  | 3.0  | 4  | 6   | 50  |
| 2030-050    | 1.5  | 3.0  | 6  | 6   | 50  |
| 2040-050-S4 | 2.0  | 4.0  | 4  | 8   | 50  |
| 2040-050    | 2.0  | 4.0  | 6  | 8   | 50  |
| 2050-050    | 2.5  | 5.0  | 6  | 10  | 50  |
| 2060-050    | 3.0  | 6.0  | 6  | 12  | 50  |
| 2070-060    | 3.5  | 7.0  | 8  | 14  | 60  |
| 2080-060    | 4.0  | 8.0  | 8  | 14  | 60  |
| 2090-075    | 4.5  | 9.0  | 10 | 16  | 75  |
| 2100-075    | 5.0  | 10.0 | 10 | 18  | 75  |
| 2110-075    | 5.5  | 11.0 | 12 | 20  | 75  |
| 2120-075    | 6.0  | 12.0 | 12 | 22  | 75  |
| 2130-090    | 6.5  | 13.0 | 14 | 26  | 90  |
| 2140-090    | 7.0  | 14.0 | 14 | 26  | 90  |
| 2150-090    | 7.5  | 15.0 | 16 | 30  | 90  |
| 2160-100    | 8.0  | 16.0 | 16 | 30  | 100 |
| 2200-100    | 10.0 | 20.0 | 20 | 38  | 100 |



## ZPLBE2000 (Esférico Largo)



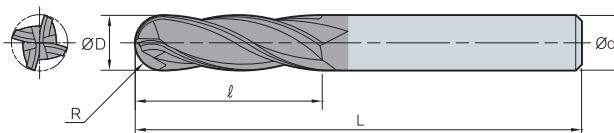
| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |



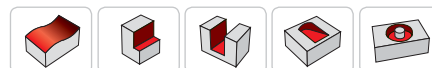
(mm)

| Codigo       | R   | ØD   | Ød | ℓ  | L   |
|--------------|-----|------|----|----|-----|
| <b>ZPLBE</b> |     |      |    |    |     |
| 2020-075-S4  | 1.0 | 2.0  | 4  | 4  | 75  |
| 2030-075-S4  | 1.5 | 3.0  | 4  | 6  | 75  |
| 2030-075     | 1.5 | 3.0  | 6  | 6  | 75  |
| 2040-075-S4  | 2.0 | 4.0  | 4  | 8  | 75  |
| 2040-075     | 2.0 | 4.0  | 6  | 8  | 75  |
| 2050-075     | 2.5 | 5.0  | 6  | 10 | 75  |
| 2060-075     | 3.0 | 6.0  | 6  | 12 | 75  |
| 2080-100     | 4.0 | 8.0  | 8  | 14 | 100 |
| 2100-100     | 5.0 | 10.0 | 10 | 18 | 100 |
| 2120-100     | 6.0 | 12.0 | 12 | 20 | 100 |

## ZPBE4000 (Esférico)



| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |



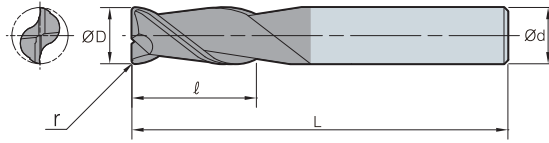
(mm)

| Codigo      | R    | ØD   | Ød | ℓ  | L   |
|-------------|------|------|----|----|-----|
| <b>ZPBE</b> |      |      |    |    |     |
| 4020-050-S4 | 1.0  | 2.0  | 4  | 4  | 50  |
| 4025-050-S4 | 1.3  | 2.5  | 4  | 5  | 50  |
| 4030-050-S4 | 1.5  | 3.0  | 4  | 6  | 50  |
| 4030-050    | 1.5  | 3.0  | 6  | 6  | 50  |
| 4040-050-S4 | 2.0  | 4.0  | 4  | 8  | 50  |
| 4040-050    | 2.0  | 4.0  | 6  | 8  | 50  |
| 4050-050    | 2.5  | 5.0  | 6  | 10 | 50  |
| 4060-050    | 3.0  | 6.0  | 6  | 12 | 50  |
| 4070-060    | 3.5  | 7.0  | 8  | 14 | 60  |
| 4080-060    | 4.0  | 8.0  | 8  | 14 | 60  |
| 4090-075    | 4.5  | 9.0  | 10 | 16 | 75  |
| 4100-075    | 5.0  | 10.0 | 10 | 18 | 75  |
| 4110-075    | 5.5  | 11.0 | 12 | 20 | 75  |
| 4120-075    | 6.0  | 12.0 | 12 | 22 | 75  |
| 4140-075    | 7.0  | 14.0 | 14 | 24 | 75  |
| 4160-100    | 8.0  | 16.0 | 16 | 30 | 100 |
| 4200-100    | 10.0 | 20.0 | 20 | 38 | 100 |

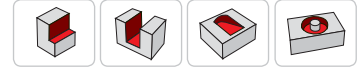




# ZPRE2000 (Radio)



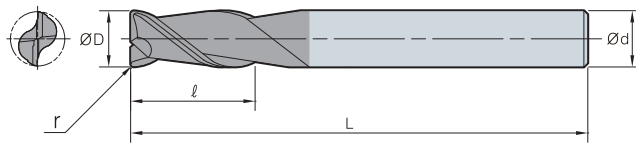
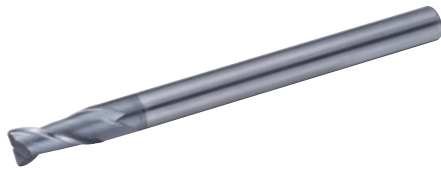
| ØD     | Tolerancia |
|--------|------------|
| ~Ø11.9 | 0.00~-0.02 |
| Ø12~   | 0.00~-0.03 |



(mm)

| Codigo          | ØD   | Ød | l  | L   | r   |
|-----------------|------|----|----|-----|-----|
| <b>ZPRE</b>     |      |    |    |     |     |
| 2010-050-S4-R02 | 1.0  | 4  | 3  | 50  | 0.2 |
| 2020-050-S4-R02 | 2.0  | 4  | 6  | 50  | 0.2 |
| 2030-050-S4-R02 | 3.0  | 4  | 9  | 50  | 0.2 |
| 2030-050-R02    | 3.0  | 6  | 9  | 50  | 0.2 |
| 2030-050-S4-R03 | 3.0  | 4  | 9  | 50  | 0.3 |
| 2030-050-R03    | 3.0  | 6  | 9  | 50  | 0.3 |
| 2030-050-S4-R05 | 3.0  | 4  | 9  | 50  | 0.5 |
| 2030-050-R05    | 3.0  | 6  | 9  | 50  | 0.5 |
| 2040-050-S4-R02 | 4.0  | 4  | 11 | 50  | 0.2 |
| 2040-050-R02    | 4.0  | 6  | 11 | 50  | 0.2 |
| 2040-050-S4-R03 | 4.0  | 4  | 11 | 50  | 0.3 |
| 2040-050-R03    | 4.0  | 6  | 11 | 50  | 0.3 |
| 2040-050-S4-R05 | 4.0  | 4  | 11 | 50  | 0.5 |
| 2040-050-R05    | 4.0  | 6  | 11 | 50  | 0.5 |
| 2040-050-S4-R10 | 4.0  | 4  | 11 | 50  | 1.0 |
| 2050-050-R02    | 5.0  | 6  | 13 | 50  | 0.2 |
| 2050-050-R03    | 5.0  | 6  | 13 | 50  | 0.3 |
| 2050-050-R05    | 5.0  | 6  | 13 | 50  | 0.5 |
| 2050-050-R010   | 5.0  | 6  | 13 | 50  | 1.0 |
| 2060-050-R05    | 6.0  | 6  | 16 | 50  | 0.5 |
| 2060-050-R10    | 6.0  | 6  | 16 | 50  | 1.0 |
| 2060-050-R15    | 6.0  | 6  | 16 | 50  | 1.5 |
| 2060-050-R20    | 6.0  | 6  | 16 | 50  | 2.0 |
| 2080-060-R03    | 8.0  | 8  | 20 | 60  | 0.3 |
| 2080-060-R05    | 8.0  | 8  | 20 | 60  | 0.5 |
| 2080-060-R10    | 8.0  | 8  | 20 | 60  | 1.0 |
| 2080-060-R15    | 8.0  | 8  | 20 | 60  | 1.5 |
| 2080-060-R20    | 8.0  | 8  | 20 | 60  | 2.0 |
| 2100-075-R03    | 10.0 | 10 | 25 | 75  | 0.3 |
| 2100-075-R05    | 10.0 | 10 | 25 | 75  | 0.5 |
| 2100-075-R10    | 10.0 | 10 | 25 | 75  | 1.0 |
| 2100-075-R15    | 10.0 | 10 | 25 | 75  | 1.5 |
| 2100-075-R20    | 10.0 | 10 | 25 | 75  | 2.0 |
| 2100-075-R30    | 10.0 | 10 | 25 | 75  | 3.0 |
| 2120-075-R05    | 12.0 | 12 | 30 | 75  | 0.5 |
| 2120-075-R10    | 12.0 | 12 | 30 | 75  | 1.0 |
| 2120-075-R15    | 12.0 | 12 | 30 | 75  | 1.5 |
| 2120-075-R20    | 12.0 | 12 | 30 | 75  | 2.0 |
| 2120-075-R30    | 12.0 | 12 | 30 | 75  | 3.0 |
| 2160-100-R10    | 16.0 | 16 | 36 | 100 | 1.0 |
| 2160-100-R20    | 16.0 | 16 | 36 | 100 | 2.0 |
| 2160-100-R30    | 16.0 | 16 | 36 | 100 | 3.0 |

## ZPLRE2000 (Largo Radio)



| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |

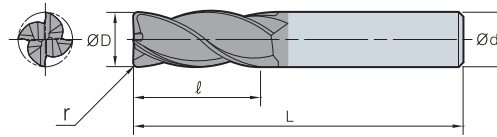


(mm)

| Codigo       | ØD   | Ød | ℓ  | L   | r   |
|--------------|------|----|----|-----|-----|
| ZPLRE        |      |    |    |     |     |
| 2060-075-R05 | 6.0  | 6  | 16 | 75  | 0.5 |
| 2060-075-R10 | 6.0  | 6  | 16 | 75  | 1.0 |
| 2060-075-R15 | 6.0  | 6  | 16 | 75  | 1.5 |
| 2080-100-R05 | 8.0  | 8  | 20 | 100 | 0.5 |
| 2080-100-R10 | 8.0  | 8  | 20 | 100 | 1.0 |
| 2080-100-R15 | 8.0  | 8  | 20 | 100 | 1.5 |
| 2100-100-R05 | 10.0 | 10 | 25 | 100 | 0.5 |
| 2100-100-R10 | 10.0 | 10 | 25 | 100 | 1.0 |
| 2100-100-R15 | 10.0 | 10 | 25 | 100 | 1.5 |
| 2100-100-R20 | 10.0 | 10 | 25 | 100 | 2.0 |
| 2120-100-R05 | 12.0 | 12 | 30 | 100 | 0.5 |
| 2120-100-R10 | 12.0 | 12 | 30 | 100 | 1.0 |
| 2120-100-R15 | 12.0 | 12 | 30 | 100 | 1.5 |
| 2120-100-R20 | 12.0 | 12 | 30 | 100 | 2.0 |
| 2160-150-R05 | 16.0 | 16 | 36 | 150 | 0.5 |
| 2160-150-R10 | 16.0 | 16 | 36 | 150 | 1.0 |
| 2160-150-R15 | 16.0 | 16 | 36 | 150 | 1.5 |
| 2160-150-R20 | 16.0 | 16 | 36 | 150 | 2.0 |



# ZPRE4000 (Radio)



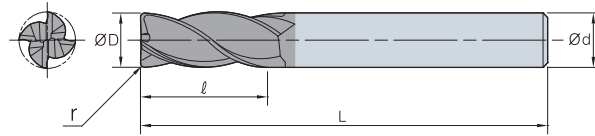
| ØD     | Tolerancia  |
|--------|-------------|
| ~Ø11.9 | 0.00~ -0.02 |
| Ø12~   | 0.00~ -0.03 |



(mm)

| Codigo                   | ØD   | Ød | ℓ  | L   | r   |
|--------------------------|------|----|----|-----|-----|
| <b>ZPRE</b>              |      |    |    |     |     |
| <b>4</b> 4015-050-S4-R02 | 1.5  | 4  | 5  | 50  | 0.2 |
| 4020-050-S4-R02          | 2.0  | 4  | 6  | 50  | 0.2 |
| 4030-050-S4-R02          | 3.0  | 4  | 9  | 50  | 0.2 |
| 4030-050-S4-R03          | 3.0  | 4  | 9  | 50  | 0.3 |
| 4030-050-S4-R05          | 3.0  | 4  | 9  | 50  | 0.5 |
| 4040-050-S4-R02          | 4.0  | 4  | 11 | 50  | 0.2 |
| 4040-050-S4-R03          | 4.0  | 4  | 11 | 50  | 0.3 |
| 4040-050-S4-R05          | 4.0  | 4  | 11 | 50  | 0.5 |
| 4040-050-S4-R10          | 4.0  | 4  | 11 | 50  | 1.0 |
| 4045-050-R10             | 4.5  | 6  | 12 | 50  | 1.0 |
| 4050-050-R02             | 5.0  | 6  | 13 | 50  | 0.2 |
| 4050-050-R05             | 5.0  | 6  | 13 | 50  | 0.5 |
| 4050-050-R10             | 5.0  | 6  | 13 | 50  | 1.0 |
| 4050-050-R15             | 5.0  | 6  | 13 | 50  | 1.5 |
| 4060-050-R05             | 6.0  | 6  | 16 | 50  | 0.5 |
| 4060-050-R10             | 6.0  | 6  | 16 | 50  | 1.0 |
| 4060-050-R15             | 6.0  | 6  | 16 | 50  | 1.5 |
| 4080-060-R03             | 8.0  | 8  | 20 | 60  | 0.3 |
| 4080-060-R05             | 8.0  | 8  | 20 | 60  | 0.5 |
| 4080-060-R10             | 8.0  | 8  | 20 | 60  | 1.0 |
| 4080-060-R15             | 8.0  | 8  | 20 | 60  | 1.5 |
| 4080-060-R20             | 8.0  | 8  | 20 | 60  | 2.0 |
| 4100-075-R03             | 10.0 | 10 | 25 | 75  | 0.3 |
| 4100-075-R05             | 10.0 | 10 | 25 | 75  | 0.5 |
| 4100-075-R10             | 10.0 | 10 | 25 | 75  | 1.0 |
| 4100-075-R15             | 10.0 | 10 | 25 | 75  | 1.5 |
| 4100-075-R20             | 10.0 | 10 | 25 | 75  | 2.0 |
| 4100-075-R25             | 10.0 | 10 | 25 | 75  | 2.5 |
| 4100-075-R30             | 10.0 | 10 | 25 | 75  | 3.0 |
| 4120-075-R05             | 12.0 | 12 | 30 | 75  | 0.5 |
| 4120-075-R10             | 12.0 | 12 | 30 | 75  | 1.0 |
| 4120-075-R15             | 12.0 | 12 | 30 | 75  | 1.5 |
| 4120-075-R20             | 12.0 | 12 | 30 | 75  | 2.0 |
| 4120-075-R25             | 12.0 | 12 | 30 | 75  | 2.5 |
| 4120-075-R30             | 12.0 | 12 | 30 | 75  | 3.0 |
| 4160-100-R05             | 16.0 | 16 | 36 | 100 | 0.5 |
| 4160-100-R10             | 16.0 | 16 | 36 | 100 | 1.0 |
| 4160-100-R20             | 16.0 | 16 | 36 | 100 | 2.0 |
| 4160-100-R30             | 16.0 | 16 | 36 | 100 | 3.0 |

## ZPLRE4000 (Largo Radio)



| ØD     | Tolerancia |
|--------|------------|
| ~Ø11.9 | 0.00~-0.02 |
| Ø12~   | 0.00~-0.03 |



(mm)

| Codigo       | ØD           | Ød   | ℓ  | L   | r   |     |
|--------------|--------------|------|----|-----|-----|-----|
| ZPLRE<br>4   | 4060-075-R05 | 6.0  | 6  | 16  | 75  | 0.5 |
|              | 4060-075-R10 | 6.0  | 6  | 16  | 75  | 1.0 |
|              | 4060-075-R15 | 6.0  | 6  | 16  | 75  | 1.5 |
|              | 4080-100-R05 | 8.0  | 8  | 20  | 100 | 0.5 |
|              | 4080-100-R10 | 8.0  | 8  | 20  | 100 | 1.0 |
|              | 4080-100-R15 | 8.0  | 8  | 20  | 100 | 1.5 |
|              | 4080-100-R20 | 8.0  | 8  | 20  | 100 | 2.0 |
|              | 4100-100-R05 | 10.0 | 10 | 25  | 100 | 0.5 |
|              | 4100-100-R10 | 10.0 | 10 | 25  | 100 | 1.0 |
|              | 4100-100-R15 | 10.0 | 10 | 25  | 100 | 1.5 |
|              | 4100-100-R20 | 10.0 | 10 | 25  | 100 | 2.0 |
|              | 4120-100-R05 | 12.0 | 12 | 30  | 100 | 0.5 |
|              | 4120-100-R10 | 12.0 | 12 | 30  | 100 | 1.0 |
|              | 4120-100-R15 | 12.0 | 12 | 30  | 100 | 1.5 |
|              | 4120-100-R20 | 12.0 | 12 | 30  | 100 | 2.0 |
|              | 4120-100-R30 | 12.0 | 12 | 30  | 100 | 3.0 |
|              | 4160-150-R05 | 16.0 | 16 | 36  | 150 | 0.5 |
|              | 4160-150-R10 | 16.0 | 16 | 36  | 150 | 1.0 |
|              | 4160-150-R15 | 16.0 | 16 | 36  | 150 | 1.5 |
|              | 4160-150-R20 | 16.0 | 16 | 36  | 150 | 2.0 |
| 4160-150-R30 | 16.0         | 16   | 36 | 150 | 3.0 |     |

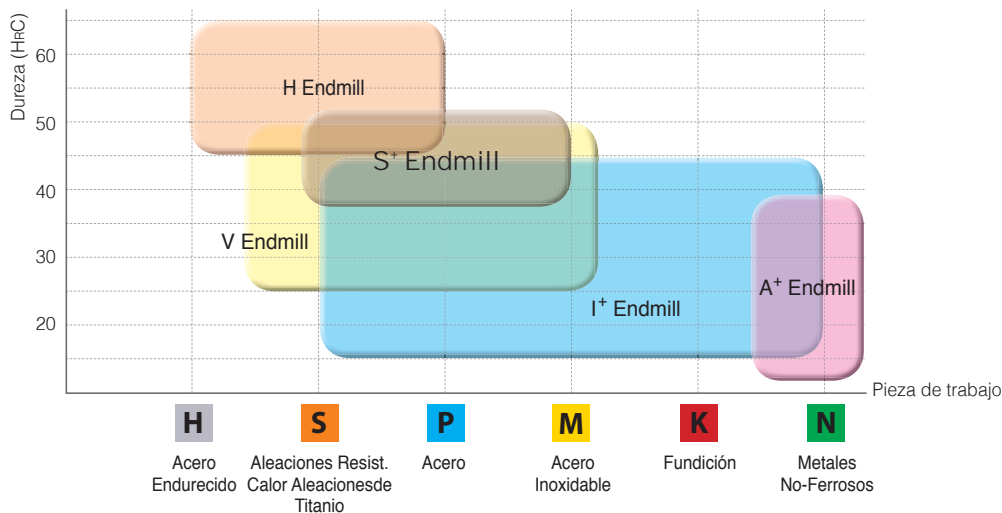


Fresa enteriza para acero inoxidable

# S<sup>+</sup> Endmill

- Filo robusto asegura una larga vida útil de la herramienta
- Recubrimiento especial con alta resistencia a la oxidación
- El alto ángulo de incidencia y el desahogo curvilíneo de la viruta permiten una óptima evacuación
- Geometría especial del filo evita el endurecimiento (temple) de las herramientas
- Maquinabilidad óptima en el mecanizado de acero inoxidable
- Disponible para acero, acero de aleación y el mecanizado de acero endurecido
- Disponible para múltiples operaciones (escuadrado, ranurado y rampa, etc.)

## El Área de aplicación



## Evaluación del desempeño

- **Pieza de trabajo** STS304
- **Condiciones de corte** Diámetro = Ø8.0, n (min<sup>-1</sup>) = 4.000, vc (m/min) = 100, vf (mm/min) = 480, fz (mm/t) = 0.04, ap (mm) = 8, ae (mm) = 0.8, seco
- **Herramientas** SPFE4080-060

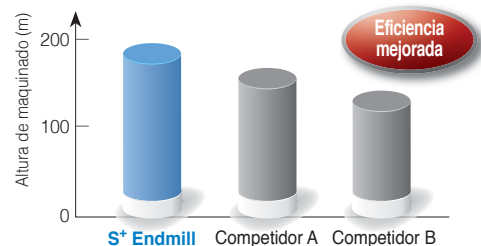


S<sup>+</sup> Endmill

Competidor A

Competidor B

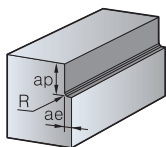
### Resultado de la prueba



## Condiciones de corte recomendadas

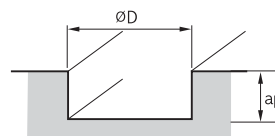
| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | Acero inoxidable STS            |                       | Aleaciones de titanio /Inconel  |                       | Acero (SS, SM)<br>(por debajo de HRC 25) |                       | Acero aleado (SCM)<br>(HRC 25~35) |                       | Acero endurecido (STD)<br>(HRC 40~50) |                       |
|---|---------------------------------|-----------------------|---------------------------------|-----------------------|--|-----------------------|-----------------------------------|-----------------------|---------------------------------------|-----------------------|
|   | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> )          | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> )   | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> )       | Avance<br>vf (mm/min) |
| 2   | 5,500                           | 240                   | 2,600                           | 90                    | 9,000                                    | 540                   | 6,000                             | 3,200                 | 4,000                                 | 240                   |
| 4   | 4,000                           | 260                   | 2,000                           | 90                    | 6,600                                    | 600                   | 4,500                             | 340                   | 3,000                                 | 280                   |
| 6   | 3,000                           | 360                   | 1,200                           | 90                    | 4,800                                    | 720                   | 3,000                             | 360                   | 2,500                                 | 280                   |
| 8   | 2,000                           | 390                   | 1,000                           | 100                   | 3,600                                    | 750                   | 2,200                             | 460                   | 2,000                                 | 300                   |
| 10  | 1,700                           | 410                   | 800                             | 120                   | 2,800                                    | 750                   | 1,800                             | 460                   | 1,500                                 | 300                   |
| 12  | 1,500                           | 380                   | 700                             | 100                   | 2,400                                    | 710                   | 1,500                             | 410                   | 1,200                                 | 280                   |
| 14  | 1,200                           | 320                   | 600                             | 95                    | 2,200                                    | 660                   | 1,300                             | 370                   | 1,000                                 | 270                   |
| 16  | 1,000                           | 270                   | 500                             | 90                    | 1,800                                    | 490                   | 1,100                             | 320                   | 800                                   | 230                   |
| 20  | 750                             | 250                   | 400                             | 85                    | 900                                      | 270                   | 900                               | 270                   | 600                                   | 200                   |

## Consejo aplicación



### ■ Profundidad escuadrado (ap) y profundidad radial (ae)

- Acero normal, acero de aleación, acero inoxidable: ap = 1.5D, ae = 0.1D
- Aleación de titanio, Inconel, acero endurecido: ap = 1.5D, ae = 0.05D



### ■ Profundidad de ranurado (ap)

- Acero normal, acero de aleación: ap = 1.0D
- Acero inoxidable: ap = 0.3D
- Aleación de titanio, Inconel, Acero endurecido: ap = 0.2D

## Mecanizado de acero inoxidable

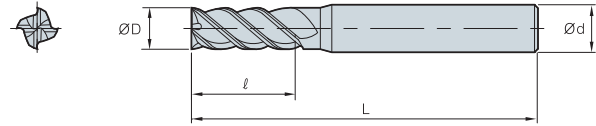
- La baja conductividad térmica de la aleación de acero inoxidable provoca la conducción de calor a la herramienta y la fractura y astillado
- El acero inoxidable presenta alta resistencia de corte y causa mucho desgaste en las herramientas de corte.
- El mecanizado de alta temperatura en aleación de acero inoxidable reduce las condiciones de corte y disminuye la calidad de la rugosidad de la superficie

## Resolución de problemas para el acero inoxidable

- Obtención de bajas condiciones de corte
- Profundizando en la capa endurecida por el trabajo y utilizando herramientas con filo afilado
- Use refrigerante



## SPFE4000 (Plano)

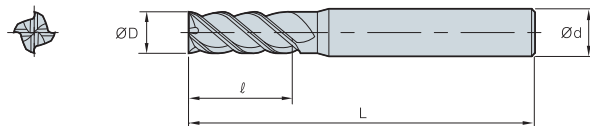


| ØD     | Tolerancia |
|--------|------------|
| Ø1~Ø12 | 0.00~-0.02 |

| Codigo |             | ØD   | Ød | ℓ  | L  |
|--------|-------------|------|----|----|----|
| SPFE   | 4010-050    | 1.0  | 4  | 3  | 50 |
|        | 4015-050    | 1.5  | 4  | 4  | 50 |
|        | 4020-050    | 2.0  | 4  | 6  | 50 |
|        | 4025-050    | 2.5  | 4  | 8  | 50 |
|        | 4030-050    | 3.0  | 4  | 9  | 50 |
|        | 4030-050-S6 | 3.0  | 6  | 9  | 50 |
|        | 4040-050    | 4.0  | 4  | 11 | 50 |
|        | 4040-050-S6 | 4.0  | 6  | 11 | 50 |
|        | 4050-050    | 5.0  | 6  | 13 | 50 |
|        | 4060-050    | 6.0  | 6  | 16 | 50 |
|        | 4080-060    | 8.0  | 8  | 20 | 60 |
|        | 4100-075    | 10.0 | 10 | 30 | 75 |
|        | 4120-075    | 12.0 | 12 | 32 | 75 |

(mm)

## SPLFE4000 (Plano Largo)



| ØD     | Tolerancia |
|--------|------------|
| Ø1~Ø12 | 0.00~-0.02 |

| Codigo |             | ØD   | Ød | ℓ  | L   |
|--------|-------------|------|----|----|-----|
| SPLFE  | 4010-050    | 1.0  | 4  | 4  | 50  |
|        | 4015-050    | 1.5  | 4  | 6  | 50  |
|        | 4020-050    | 2.0  | 4  | 8  | 50  |
|        | 4025-050    | 2.5  | 4  | 10 | 50  |
|        | 4030-050-S6 | 3.0  | 6  | 12 | 50  |
|        | 4040-050-S6 | 4.0  | 6  | 16 | 50  |
|        | 4050-060    | 5.0  | 6  | 20 | 60  |
|        | 4060-060    | 6.0  | 6  | 24 | 60  |
|        | 4080-075    | 8.0  | 8  | 35 | 75  |
|        | 4100-100    | 10.0 | 10 | 45 | 100 |
|        | 4120-100    | 12.0 | 12 | 45 | 100 |

(mm)



# F Información Técnica para R<sup>+</sup> Endmill

## Fresa de desbaste de alta eficiencia

# R<sup>+</sup> Endmill **new**

- Diseño de filos rentable para el mecanizado de desbaste
- Filos de corte especialmente diseñados para disminuir la carga mecánica, así como un espaciado irregular entre canales y ángulos de ataque irregulares que disminuyen la carga de corte.

### Característica

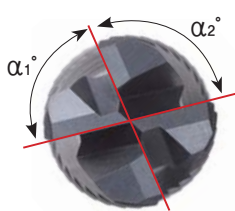
- Excelente eficiencia de mecanizado: diseño especial para corte de medio a desbaste
- Mayor vida útil de corte: costo de la herramienta mejorado gracias a los nuevos grados aplicados
- Mayor rendimiento de corte - Diseño de cuchilla ideal para desbaste



#### Fuerza de corte más baja Corte más suave

- Ideal para corte medio a corte basto
- Diseño de filo especial

- Bordes dentados
- 3 Combo R



- Espaciado irregular de la flauta para prevenir golpeteo ( $\alpha_1 \neq \alpha_2$ )



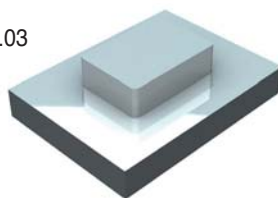
- Ángulos de ataque irregulares para dispersar la fuerza de corte ( $\beta_1 \neq \beta_2$ )

### sistema de grados

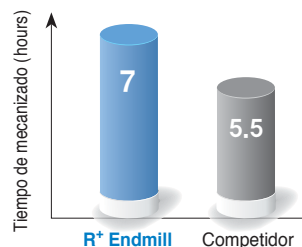
| Desbaste - carburo |                             | HSS - desbaste |                           |
|--------------------|-----------------------------|----------------|---------------------------|
| FN30T              | Carburo, sin recubrimiento  | HN30T          | HSS PM, sin recubrimiento |
| PC10T              | Carburo, TiCN recubierto    | HN20T          | HSS, sin recubrimiento    |
| PC20T              | Carburo, TiN recubierto     | HC10T          | HSS, TiCN recubierto      |
| PC30T              | Carburo, TiAlN recubierto   | HC20T          | HSS, TiN recubierto       |
| PC40T              | Carburo, TiAlCrN recubierto | HC30T          | HSS PM, TiAlN recubierto  |

### Ejemplos de aplicación

- **Pieza de trabajo** molde
- **Condiciones de corte**  $vc$  (m/min) = 57,  $fz$  (mm/t) = 0.03  
 $ap$  (mm) = 8, seco
- **Herramientas** RPE4080-075-FF

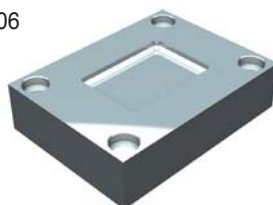


#### Resultado de la prueba

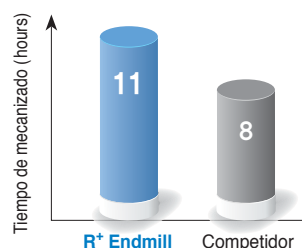


30% mayor duración

- **Pieza de trabajo** molde
- **Condiciones de corte**  $vc$  (m/min) = 68,  $fz$  (mm/t) = 0.06  
 $ap$  (mm) = 8, seco
- **Herramientas** RPE4080-063-FP-H



#### Resultado de la prueba



40% mayor duración



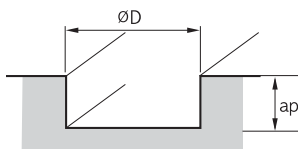


## Condiciones de corte recomendadas (RPAE)

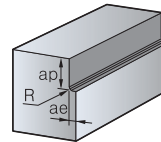
\* Para Carburo

| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | Aluminio, metales no ferrosos |                       | Aluminio, metales no ferrosos |                       |
|---|-------------------------------|-----------------------|-------------------------------|-----------------------|
|   | RPM<br>n (min-1)              | Avance<br>vf (mm/min) | RPM<br>n (min-1)              | Avance<br>vf (mm/min) |
| 6   | 13,000                        | 1,125                 | 13,000                        | 1,400                 |
| 8   | 10,400                        | 1,300                 | 10,400                        | 1,600                 |
| 10  | 10,400                        | 1,585                 | 10,400                        | 2,000                 |
| 12  | 10,400                        | 1,950                 | 10,400                        | 1,650                 |
| 14  | 7,800                         | 1,675                 | 7,800                         | 2,050                 |
| 16  | 7,800                         | 1,755                 | 7,800                         | 2,250                 |
| 18  | 5,200                         | 1,300                 | 5,200                         | 1,700                 |
| 20  | 5,200                         | 1,495                 | 5,200                         | 1,800                 |
| 25  | 5,000                         | 1,495                 | 5,000                         | 1,800                 |

### Consejo aplicación



- Profundidad de ranurado (ap)
  - $ap : \leq 0.2D$



- Profundidad escuadrado (ap)
  - $ap : \leq 1.5D$
  - $ae : \leq 0.15D$

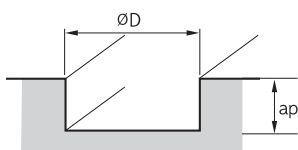
\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## Condiciones de corte recomendadas (RP(L)E-FP-H)

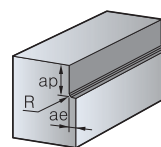
\* Para Carburo

| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | Acero aleado, acero al carbono (≤ HRC25) |                       | Acero aleado, acero al carbono, acero pre-endurecido (HRC25~HRC40) |                       | Acero aleado, acero al carbono (≤ HRC25) |                       | Acero aleado, acero al carbono, acero pre-endurecido (HRC25~HRC40) |                       |
|---|--|-----------------------|--|-----------------------|--|-----------------------|--|-----------------------|
|   | RPM<br>n (min-1)                         | Avance<br>vf (mm/min) | RPM<br>n (min-1)   | Avance<br>vf (mm/min) | RPM<br>n (min-1)                         | Avance<br>vf (mm/min) | RPM<br>n (min-1)   | Avance<br>vf (mm/min) |
| 6   | 12,000                                   | 1,550                 | 10,600   | 1,100                 | 15,800                                   | 2,570                 | 14,300   | 1,850                 |
| 8   | 9,000                                    | 1,650                 | 8,100  | 1,180                 | 11,900                                   | 2,700                 | 10,700   | 1,950                 |
| 10  | 7,200                                    | 1,650                 | 6,400  | 1,180                 | 9,500                                    | 2,700                 | 8,500  | 1,950                 |
| 12  | 6,000                                    | 1,540                 | 5,400  | 1,140                 | 8,000                                    | 2,570                 | 7,100  | 1,850                 |
| 14  | 5,200                                    | 1,540                 | 4,750  | 1,095                 | 7,000                                    | 2,510                 | 6,250  | 1,800                 |
| 16  | 4,500                                    | 1,540                 | 4,100  | 1,050                 | 6,000                                    | 2,450                 | 5,400  | 1,750                 |
| 18  | 4,400                                    | 1,435                 | 3,650  | 975                   | 5,400                                    | 2,295                 | 4,850  | 1,625                 |
| 20  | 3,600                                    | 1,330                 | 3,200  | 900                   | 4,800                                    | 2,140                 | 4,300  | 1,500                 |
| 25  | 3,200                                    | 1,200                 | 2,800  | 850                   | 4,400                                    | 2,000                 | 3,800  | 1,400                 |

### Consejo aplicación



- Profundidad de ranurado (ap)
  - $ap : \leq 1.0D$  (≤ HRC25)
  - $\leq 0.8D$  (HRC25~40)



- Profundidad escuadrado (ap)
  - $ap : \leq 1.0D$
  - $ae : \leq 0.5D$  (≤ HRC25)
  - $\leq 0.35D$  (HRC25~40)

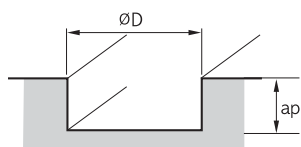
\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## Condiciones de corte recomendadas (RPE-XG)

\* Para Carburo

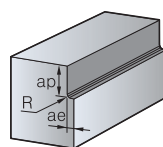
| Pieza de trabajo<br>Condición | Acero aleado, acero al carbono<br>( $\leq$ HRC25) |                       | Acero aleado, acero al carbono,<br>acero pre-endurecido<br>(HRC25~HRC40) |                       | Acero aleado, acero al carbono<br>( $\leq$ HRC25) |                       | Acero aleado, acero al carbono,<br>acero pre-endurecido<br>(HRC25~HRC40) |                       |
|-------------------------------|---|-----------------------|--|-----------------------|---|-----------------------|--|-----------------------|
|                               | RPM<br>n (min-1)                                  | Avance<br>vf (mm/min) | RPM<br>n (min-1)   | Avance<br>vf (mm/min) | RPM<br>n (min-1)                                  | Avance<br>vf (mm/min) | RPM<br>n (min-1)   | Avance<br>vf (mm/min) |
| Diámetro ( $\varnothing$ )    |   |                       |  |                       |   |                       |  |                       |
| 6                             | 12,000  | 1,090                 | 10,600   | 770                   | 15,800  | 1,800                 | 14,300   | 1,300                 |
| 8                             | 9,000   | 1,160                 | 8,100  | 830                   | 11,900  | 1,890                 | 10,700   | 1,370                 |
| 10                            | 7,200   | 1,160                 | 6,400  | 830                   | 9,500   | 1,890                 | 8,500  | 1,370                 |
| 12                            | 6,000   | 1,080                 | 5,400  | 800                   | 8,000   | 1,800                 | 7,100  | 1,300                 |
| 14                            | 5,200   | 1,080                 | 4,750  | 770                   | 7,000   | 1,760                 | 6,250  | 1,260                 |
| 16                            | 4,500   | 1,080                 | 4,100  | 740                   | 6,000   | 1,720                 | 5,400  | 1,230                 |
| 18                            | 4,400   | 1,000                 | 3,650  | 680                   | 5,400   | 1,610                 | 4,850  | 1,140                 |
| 20                            | 3,600   | 930                   | 3,200  | 630                   | 4,800   | 1,500                 | 4,300  | 1,050                 |
| 25                            | 3,200   | 840                   | 2,800  | 600                   | 4,400   | 1,400                 | 3,800  | 980                   |

### Consejo aplicación



#### Profundidad de ranurado (ap)

- $ap: \leq 1.0D$  ( $\leq$  HRC25)
- $\leq 0.8D$  (HRC25~40)



#### Profundidad escuadrado (ap)

- $ap: \leq 1.0D$
- $ae: \leq 0.5D$  ( $\leq$  HRC25)
- $\leq 0.35D$  (HRC25~40)

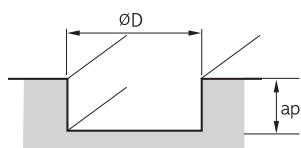
\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## Condiciones de corte recomendadas (RPE-FP-L)

\* Para Carburo

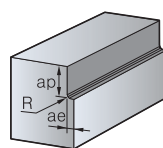
| Pieza de trabajo<br>Condición | Acero aleado, acero al carbono<br>( $\leq$ HRC35) |                       | Acero pre-endurecido<br>(HRC35~HRC45) |                       | Acero de alta dureza<br>(HRC45~HRC55) |                       |
|-------------------------------|---|-----------------------|---------------------------------------|-----------------------|---------------------------------------|-----------------------|
|                               | RPM<br>n (min-1)                                  | Avance<br>vf (mm/min) | RPM<br>n (min-1)                      | Avance<br>vf (mm/min) | RPM<br>n (min-1)                      | Avance<br>vf (mm/min) |
| Diámetro ( $\varnothing$ )    |   |                       |                                       |                       |                                       |                       |
| 6                             | 12,400  | 840                   | 8,400                                 | 570                   | 3,400                                 | 260                   |
| 8                             | 9,200   | 840                   | 6,300                                 | 570                   | 2,400                                 | 240                   |
| 10                            | 7,600   | 840                   | 5,100                                 | 570                   | 2,000                                 | 290                   |
| 12                            | 6,000   | 840                   | 4,200                                 | 570                   | 1,680                                 | 260                   |
| 14                            | 5,200   | 840                   | 3,600                                 | 570                   | 1,400                                 | 200                   |
| 16                            | 4,800   | 760                   | 3,300                                 | 510                   | 1,200                                 | 160                   |
| 18                            | 4,400   | 720                   | 2,700                                 | 420                   | 1,100                                 | 150                   |
| 20                            | 3,600   | 560                   | 2,400                                 | 360                   | 1,000                                 | 150                   |
| 25                            | 3,200   | 620                   | 2,160                                 | 410                   | 900                                   | 160                   |

### Consejo aplicación



#### Profundidad de ranurado (ap)

- $ap: \leq 0.3D$  ( $\leq$  HRC45)
- $\leq 0.05D$  (HRC45~55)



#### Profundidad escuadrado (ap)

- $ap: \leq 1.0D$
- $ae: \leq 0.3D$  ( $\leq$  HRC45)
- $\leq 0.05D$  (HRC45~55)

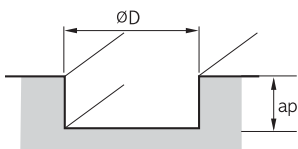
\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## Condiciones de corte recomendadas (RPE-RG)

\* Para Carburo

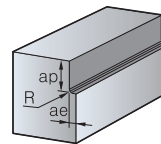
| Pieza de trabajo<br>Condición | Acero aleado, acero al carbono (≤ HRC25) |                    | Acero aleado, acero al carbono, acero pre-endurecido (HRC25~HRC40) |                    | Acero aleado, acero al carbono (≤ HRC25) |                    | Acero aleado, acero al carbono, acero pre-endurecido (HRC25~HRC40) |                    |
|-------------------------------|--|--------------------|--|--------------------|--|--------------------|--|--------------------|
|                               | RPM n (min-1)                            | Avance vf (mm/min) | RPM n (min-1)  | Avance vf (mm/min) | RPM n (min-1)                            | Avance vf (mm/min) | RPM n (min-1)  | Avance vf (mm/min) |
| 6                             | 12,000                                   | 1,240              | 10,600   | 880                | 15,800                                   | 2,060              | 14,300   | 1,480              |
| 8                             | 9,000                                    | 1,320              | 8,100  | 940                | 11,900                                   | 2,160              | 10,700   | 1,560              |
| 10                            | 7,200                                    | 1,320              | 6,400  | 940                | 9,500                                    | 2,160              | 8,500  | 1,560              |
| 12                            | 6,000                                    | 1,230              | 5,400  | 910                | 8,000                                    | 2,060              | 7,100  | 1,480              |
| 14                            | 5,200                                    | 1,230              | 4,750  | 880                | 7,000                                    | 2,010              | 6,250  | 1,440              |
| 16                            | 4,500                                    | 1,230              | 4,100  | 840                | 6,000                                    | 1,960              | 5,400  | 1,400              |
| 18                            | 4,400                                    | 1,150              | 3,650  | 780                | 5,400                                    | 1,840              | 4,850  | 1,300              |
| 20                            | 3,600                                    | 1,060              | 3,200  | 720                | 4,800                                    | 1,710              | 4,300  | 1,200              |
| 25                            | 3,200                                    | 960                | 2,800  | 680                | 4,400                                    | 1,600              | 3,800  | 1,120              |

### Consejo aplicación



■ Profundidad de ranurado (ap)

- ap: ≤ 1.0D (≤ HRC25)
- ap: ≤ 0.8D (HRC25~40)



■ Profundidad escuadrado (ap)

- ap: ≤ 1.0D
- ae: ≤ 0.5D (≤ HRC25)
- ae: ≤ 0.35D (HRC25~40)

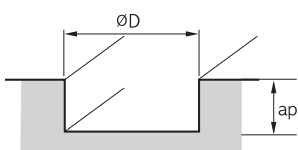
\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## Condiciones de corte recomendadas (RPE-FF, FP, RG)

\* Para acero rápido

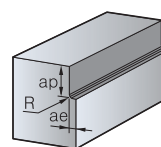
| Pieza de trabajo<br>Condición | Acero aleado, acero al carbono, acero rápido |                    | Acero aleado, acero al carbono, acero rápido (≤ HRC20) |                    | Acero aleado, acero al carbono, acero rápido (HRC20~HRC30) |                    | Acero aleado, acero al carbono, acero rápido (HRC30~HRC40) |                    |
|-------------------------------|--|--------------------|--|--------------------|--|--------------------|--|--------------------|
|                               | RPM n (min-1)                                | Avance vf (mm/min) | RPM n (min-1)  | Avance vf (mm/min) | RPM n (min-1)  | Avance vf (mm/min) | RPM n (min-1)  | Avance vf (mm/min) |
| 6                             | 2,700  | 200                | 2,100  | 155                | 1,500  | 100                | 1,250  | 90                 |
| 8                             | 2,300  | 250                | 1,800  | 200                | 1,300  | 140                | 1,000  | 110                |
| 10                            | 1,800  | 360                | 1,400  | 275                | 1,000  | 170                | 850  | 140                |
| 12                            | 1,500  | 360                | 1,150  | 290                | 850  | 200                | 700  | 155                |
| 14                            | 1,300  | 360                | 1,000  | 290                | 720  | 200                | 600  | 155                |
| 16                            | 1,150  | 360                | 900  | 290                | 625  | 200                | 520  | 155                |
| 18                            | 1,000  | 360                | 850  | 290                | 580  | 200                | 470  | 155                |
| 20                            | 920  | 370                | 720  | 290                | 500  | 200                | 420  | 155                |
| 22                            | 850  | 370                | 620  | 290                | 450  | 200                | 380  | 155                |
| 25                            | 750  | 360                | 570  | 275                | 400  | 190                | 340  | 155                |

### Consejo aplicación



■ Profundidad de ranurado (ap)

- ap: ≤ 0.15D



■ Profundidad escuadrado (ap)

- ap: ≤ 1.5D (All dia.)
- ae: ≤ 0.5D (All dia.)

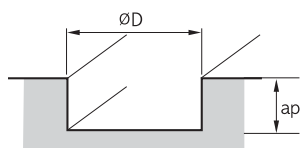
\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## Condiciones de corte recomendadas (RPE-RG)

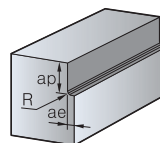
\* Para acero rápido con cobalto

| Pieza de trabajo<br>Condición | Acero aleado, acero al carbono, acero rápido |                    | Acero aleado, acero al carbono, acero rápido (≤ HRC20) |                    | Acero aleado, acero al carbono, acero rápido (HRC20~HRC30) |                    | Acero aleado, acero al carbono, acero rápido (HRC30~HRC40) |                    |
|-------------------------------|--|--------------------|--|--------------------|--|--------------------|--|--------------------|
|                               | RPM n (min-1)                                | Avance vf (mm/min) | RPM n (min-1)  | Avance vf (mm/min) | RPM n (min-1)  | Avance vf (mm/min) | RPM n (min-1)  | Avance vf (mm/min) |
| 6                             | 1,800  | 80                 | 1,600  | 60                 | 1,200  | 55                 | 800  | 30                 |
| 8                             | 1,400  | 105                | 1,100  | 75                 | 900  | 65                 | 560  | 45                 |
| 10                            | 1,100  | 150                | 900  | 120                | 800  | 110                | 450  | 60                 |
| 12                            | 900  | 180                | 800  | 140                | 630  | 110                | 400  | 70                 |
| 14                            | 800  | 180                | 700  | 140                | 560  | 110                | 350  | 70                 |
| 16                            | 700  | 180                | 560  | 140                | 450  | 110                | 280  | 70                 |
| 18                            | 630  | 180                | 500  | 140                | 400  | 110                | 250  | 70                 |
| 20                            | 560  | 180                | 450  | 140                | 400  | 110                | 220  | 70                 |
| 22                            | 500  | 220                | 450  | 170                | 350  | 140                | 220  | 70                 |
| 25                            | 450  | 220                | 400  | 170                | 310  | 140                | 180  | 85                 |
| 28                            | 400  | 210                | 350  | 160                | 280  | 130                | 160  | 85                 |
| 30                            | 350  | 210                | 310  | 160                | 250  | 130                | 160  | 85                 |
| 32                            | 350  | 210                | 280  | 160                | 220  | 130                | 140  | 85                 |
| 36                            | 310  | 210                | 250  | 160                | 200  | 130                | 120  | 85                 |
| 40                            | 280  | 200                | 220  | 150                | 180  | 120                | 110  | 80                 |
| 50                            | 220  | 200                | 180  | 170                | 160  | 140                | 90   | 80                 |

### Consejo aplicación



- Profundidad de ranurado (ap)
- ap: ≤ 0.15D

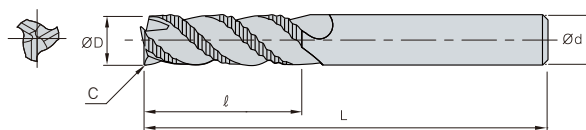


- Profundidad escuadrado (ap)
- ap: ≤ 1.5D
- ae: ≤ 0.1D

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

# RPAE (Filo dentado para desbaste de aluminio)

Carburo



| ØD       | Tolerancia   |
|----------|--------------|
| Ø6 ~ Ø25 | 0.00 ~ -0.05 |

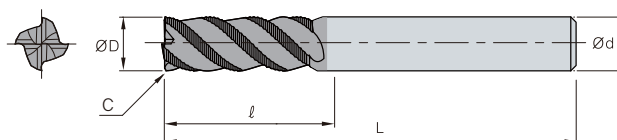


(mm)

| Codigo      | ØD   | Ød | l  | L   | C   |
|-------------|------|----|----|-----|-----|
| <b>RPAE</b> |      |    |    |     |     |
| 3060-063    | 6.0  | 6  | 18 | 63  | 0.3 |
| 3070-063    | 7.0  | 8  | 23 | 63  | 0.3 |
| 3080-063    | 8.0  | 8  | 23 | 63  | 0.3 |
| 3090-080    | 9.0  | 10 | 30 | 80  | 0.3 |
| 3100-080    | 10.0 | 10 | 30 | 80  | 0.3 |
| 3110-080    | 11.0 | 12 | 32 | 80  | 0.5 |
| 3120-080    | 12.0 | 12 | 32 | 80  | 0.5 |
| 3140-080    | 14.0 | 14 | 32 | 80  | 0.5 |
| 3160-105    | 16.0 | 16 | 48 | 105 | 0.5 |
| 3180-105    | 18.0 | 18 | 48 | 105 | 0.5 |
| 3200-105    | 20.0 | 20 | 50 | 105 | 0.5 |
| 3250-105    | 25.0 | 25 | 50 | 105 | 0.5 |

# RPE-FP-H (Fresa enteriza de paso estrecho para desbaste)

Carburo. Amplio ángulo de inclinación y espaciado irregular de los canales/filos de corte.



| ØD       | Tolerancia   |
|----------|--------------|
| Ø5 ~ Ø20 | 0.00 ~ -0.05 |

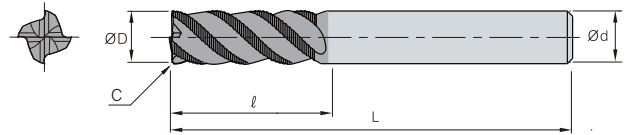


(mm)

| Codigo         | ØD   | Ød | l  | L   | C   |
|----------------|------|----|----|-----|-----|
| <b>RPE</b>     |      |    |    |     |     |
| 4050-057-FP-H  | 5.0  | 6  | 13 | 57  | 0.3 |
| 4060-057-FP-H  | 6.0  | 6  | 13 | 57  | 0.5 |
| 4080-063-FP-H  | 8.0  | 8  | 19 | 63  | 0.5 |
| 4100-072-FP-H  | 10.0 | 10 | 22 | 72  | 0.5 |
| 4120-082-FP-H  | 12.0 | 12 | 26 | 82  | 0.5 |
| 4140-082-FP-H  | 14.0 | 16 | 26 | 82  | 0.6 |
| 4160-092-FP-H  | 16.0 | 16 | 32 | 92  | 0.6 |
| 4180-092-FP-H  | 18.0 | 20 | 32 | 92  | 0.6 |
| 4200-0104-FP-H | 20.0 | 20 | 38 | 104 | 0.6 |

## RPLE-FP-H (Fresa enteriza de vástago largo de paso estrecho para desbaste)

Carburo. Amplio ángulo de inclinación y espaciado irregular de los canales/filos de corte.



| ØD       | Tolerancia   |
|----------|--------------|
| Ø5 ~ Ø20 | 0.00 ~ -0.05 |

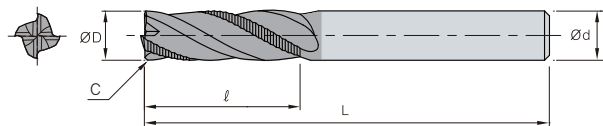


(mm)

| Codigo    | ØD            | Ød   | ℓ  | L  | C   |     |
|-----------|---------------|------|----|----|-----|-----|
| RPLE<br>4 | 4050-063-FP-H | 5.0  | 6  | 19 | 63  | 0.3 |
|           | 4060-063-FP-H | 6.0  | 8  | 19 | 63  | 0.5 |
|           | 4080-072-FP-H | 8.0  | 8  | 28 | 72  | 0.5 |
|           | 4100-082-FP-H | 10.0 | 10 | 34 | 82  | 0.5 |
|           | 4120-097-FP-H | 12.0 | 12 | 40 | 97  | 0.5 |
|           | 4140-097-FP-H | 14.0 | 16 | 40 | 97  | 0.6 |
|           | 4160-108-FP-H | 16.0 | 16 | 48 | 108 | 0.6 |
|           | 4180-108-FP-H | 18.0 | 20 | 48 | 108 | 0.6 |
|           | 4200-122-FP-H | 20.0 | 20 | 56 | 122 | 0.6 |

## RPE-XG (Fresa enteriza para acabado y desbaste)

Carburo



| ØD       | Tolerancia   |
|----------|--------------|
| Ø6 ~ Ø20 | 0.00 ~ -0.05 |



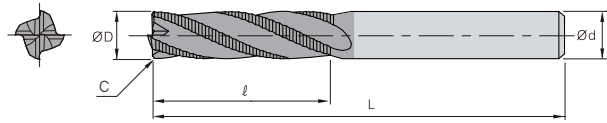
(mm)

| Codigo   | ØD          | Ød   | ℓ  | L  | C   |      |
|----------|-------------|------|----|----|-----|------|
| RPE<br>4 | 4060-052-XG | 6.0  | 6  | 14 | 52  | 0.25 |
|          | 4070-063-XG | 7.0  | 8  | 18 | 63  | 0.3  |
|          | 4080-063-XG | 8.0  | 8  | 18 | 63  | 0.3  |
|          | 4090-080-XG | 9.0  | 10 | 22 | 80  | 0.3  |
|          | 4100-080-XG | 10.0 | 10 | 22 | 80  | 0.3  |
|          | 4110-080-XG | 11.0 | 12 | 26 | 80  | 0.4  |
|          | 4120-080-XG | 12.0 | 12 | 26 | 80  | 0.4  |
|          | 4140-080-XG | 14.0 | 14 | 30 | 80  | 0.4  |
|          | 4160-105-XG | 16.0 | 16 | 34 | 105 | 0.6  |
|          | 4180-105-XG | 18.0 | 18 | 38 | 105 | 0.6  |
|          | 4200-105-XG | 20.0 | 20 | 42 | 105 | 0.6  |



## RPE-FP-L (Fresa enteriza de paso estrecho para desbaste)

Carburo. Espaciado irregular de los canales/filos de corte.



| ØD       | Tolerancia   |
|----------|--------------|
| Ø5 ~ Ø20 | 0.00 ~ -0.05 |

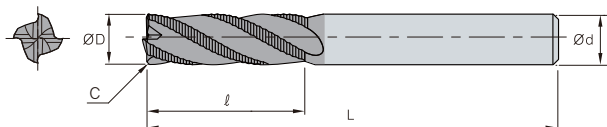


(mm)

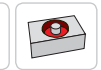
| Codigo        | ØD   | Ød | ℓ  | L   | C   |
|---------------|------|----|----|-----|-----|
| <b>RPE</b>    |      |    |    |     |     |
| 4050-060-FP-L | 5.0  | 6  | 13 | 60  | 0.3 |
| 4060-080-FP-L | 6.0  | 8  | 13 | 80  | 0.5 |
| 4080-080-FP-L | 8.0  | 8  | 19 | 80  | 0.5 |
| 4100-080-FP-L | 10.0 | 10 | 22 | 80  | 0.5 |
| 4120-080-FP-L | 12.0 | 12 | 26 | 80  | 0.5 |
| 4140-085-FP-L | 14.0 | 16 | 26 | 85  | 0.6 |
| 4160-100-FP-L | 16.0 | 16 | 32 | 100 | 0.6 |
| 4180-100-FP-L | 18.0 | 20 | 32 | 100 | 0.6 |
| 4200-105-FP-L | 20.0 | 20 | 38 | 105 | 0.6 |

## RPE-RG (Fresa enteriza estándar para desbaste)

Carburo



| ØD       | Tolerancia   |
|----------|--------------|
| Ø5 ~ Ø20 | 0.00 ~ -0.05 |

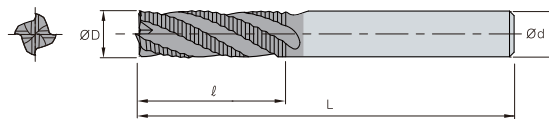


(mm)

| Codigo      | ØD   | Ød | ℓ  | L   | C   |
|-------------|------|----|----|-----|-----|
| <b>RPE</b>  |      |    |    |     |     |
| 4050-050-RG | 5.0  | 6  | 13 | 50  | 0.3 |
| 4060-050-RG | 6.0  | 6  | 16 | 50  | 0.3 |
| 4080-060-RG | 8.0  | 8  | 20 | 60  | 0.3 |
| 4100-075-RG | 10.0 | 10 | 25 | 75  | 0.3 |
| 4120-080-RG | 12.0 | 12 | 30 | 80  | 0.4 |
| 4140-100-RG | 14.0 | 16 | 35 | 100 | 0.6 |
| 4160-100-RG | 16.0 | 16 | 40 | 100 | 0.6 |
| 4180-110-RG | 18.0 | 20 | 40 | 110 | 0.6 |
| 4200-110-RG | 20.0 | 20 | 45 | 110 | 0.6 |

## RPE-RG (Fresa enteriza de cuatro filos de corte para desbaste)

Acero rápido



| ØD       | Tolerancia |
|----------|------------|
| Ø6 ~ Ø20 | ±0.1       |

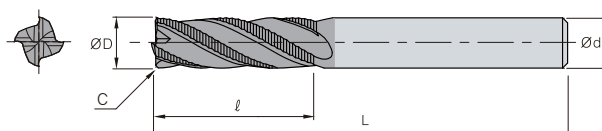


(mm)

| Codigo      | ØD   | Ød | ℓ  | L   |
|-------------|------|----|----|-----|
| <b>RPE</b>  |      |    |    |     |
| 4060-060-RG | 6.0  | 6  | 20 | 60  |
| 4070-070-RG | 7.0  | 10 | 20 | 70  |
| 4080-075-RG | 8.0  | 10 | 25 | 75  |
| 4090-075-RG | 9.0  | 10 | 30 | 75  |
| 4100-085-RG | 10.0 | 10 | 35 | 85  |
| 4120-100-RG | 12.0 | 12 | 40 | 100 |
| 4140-100-RG | 14.0 | 16 | 40 | 100 |
| 4160-110-RG | 16.0 | 16 | 50 | 110 |
| 4180-110-RG | 18.0 | 20 | 50 | 110 |
| 4200-125-RG | 20.0 | 20 | 60 | 125 |

## RPE-FF (Fresa enteriza de paso estrecho para desbaste)

Acero rápido. Espaciado irregular de los canales/filos de corte.



| ØD       | Tolerancia |
|----------|------------|
| Ø6 ~ Ø20 | ±0.1       |



(mm)

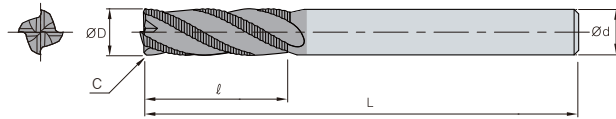
| Codigo      | ØD   | Ød | ℓ  | L   | C   |
|-------------|------|----|----|-----|-----|
| <b>RPE</b>  |      |    |    |     |     |
| 4060-060-FF | 6.0  | 6  | 20 | 60  | 0.5 |
| 4070-070-FF | 7.0  | 10 | 20 | 70  | 0.5 |
| 4080-075-FF | 8.0  | 10 | 25 | 75  | 0.5 |
| 4090-075-FF | 9.0  | 10 | 30 | 75  | 0.5 |
| 4100-085-FF | 10.0 | 10 | 35 | 85  | 0.5 |
| 4120-100-FF | 12.0 | 12 | 40 | 100 | 0.6 |
| 4140-100-FF | 14.0 | 12 | 40 | 100 | 0.6 |
| 4160-110-FF | 16.0 | 16 | 50 | 110 | 0.6 |
| 4180-110-FF | 18.0 | 16 | 50 | 110 | 0.6 |
| 4200-125-FF | 20.0 | 20 | 60 | 125 | 0.6 |





**RPE-FP** (Fresa entera de paso estrecho para desbaste)

Acero rápido. Espaciado irregular de los canales/filos de corte.



| ØD            | Tolerancia   |
|---------------|--------------|
| Ø6 ~ Ø12.0    | 0.00 ~ -0.05 |
| Ø12.1 ~ Ø20.0 | 0.00 ~ -0.1  |

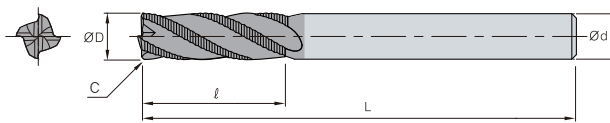


(mm)

| Codigo               | ØD   | Ød | ℓ  | L   | C   |
|----------------------|------|----|----|-----|-----|
| <b>RPE</b>           |      |    |    |     |     |
| <b>4</b> 4060-080-FP | 6.0  | 6  | 13 | 80  | 0.5 |
| 4070-080-FP          | 7.0  | 10 | 16 | 80  | 0.5 |
| 4080-085-FP          | 8.0  | 10 | 19 | 85  | 0.5 |
| 4090-095-FP          | 9.0  | 10 | 19 | 95  | 0.5 |
| 4100-100-FP          | 10.0 | 10 | 22 | 100 | 0.5 |
| 4120-110-FP          | 12.0 | 12 | 26 | 110 | 0.6 |
| 4140-110-FP          | 14.0 | 12 | 26 | 110 | 0.6 |
| 4160-125-FP          | 16.0 | 16 | 32 | 125 | 0.6 |
| 4180-125-FP          | 18.0 | 16 | 32 | 125 | 0.6 |
| 4200-140-FP          | 20.0 | 20 | 38 | 140 | 0.6 |

## RPE-RG (Fresa enteriza de desbaste)

HSS



| ØD       | Tolerancia |
|----------|------------|
| Ø6 ~ Ø50 | ±0.1       |



(mm)

| Codigo      | ØD   | Ød | ℓ  | L   |
|-------------|------|----|----|-----|
| RPE         |      |    |    |     |
| 4060-060-RG | 6.0  | 6  | 15 | 60  |
| 4070-065-RG | 7.0  | 8  | 20 | 65  |
| 4080-065-RG | 8.0  | 8  | 20 | 65  |
| 4090-075-RG | 9.0  | 10 | 25 | 75  |
| 4100-075-RG | 10.0 | 10 | 25 | 75  |
| 4110-080-RG | 11.0 | 12 | 30 | 80  |
| 4120-080-RG | 12.0 | 12 | 30 | 80  |
| 4130-090-RG | 13.0 | 12 | 35 | 90  |
| 4140-090-RG | 14.0 | 12 | 35 | 90  |
| 4150-095-RG | 15.0 | 12 | 40 | 95  |
| 4160-095-RG | 16.0 | 16 | 40 | 95  |
| 4170-095-RG | 17.0 | 16 | 40 | 95  |
| 4180-105-RG | 18.0 | 16 | 40 | 105 |
| 4190-110-RG | 19.0 | 16 | 45 | 110 |
| 4200-110-RG | 20.0 | 20 | 45 | 110 |
| 4210-110-RG | 21.0 | 20 | 45 | 110 |
| 4220-110-RG | 22.0 | 20 | 45 | 110 |
| 4230-110-RG | 23.0 | 20 | 45 | 110 |
| 4240-120-RG | 24.0 | 25 | 50 | 120 |
| 4250-120-RG | 25.0 | 25 | 50 | 120 |
| 4260-120-RG | 26.0 | 25 | 50 | 120 |
| 4270-125-RG | 27.0 | 25 | 55 | 125 |
| 4280-125-RG | 28.0 | 25 | 55 | 125 |
| 4300-125-RG | 30.0 | 25 | 55 | 125 |
| 4320-145-RG | 32.0 | 32 | 60 | 145 |
| 4340-145-RG | 34.0 | 32 | 60 | 145 |
| 4350-145-RG | 35.0 | 32 | 60 | 145 |
| 4360-145-RG | 36.0 | 32 | 60 | 145 |
| 4380-150-RG | 38.0 | 32 | 65 | 150 |
| 4400-150-RG | 40.0 | 32 | 65 | 150 |
| 4420-155-RG | 42.0 | 42 | 65 | 155 |
| 4440-155-RG | 44.0 | 42 | 65 | 155 |
| 4450-160-RG | 45.0 | 42 | 70 | 160 |
| 4460-160-RG | 46.0 | 42 | 70 | 160 |
| 4500-160-RG | 50.0 | 42 | 70 | 160 |



Fresas enterizas para mecanizado de aluminio

# A+ Endmill

- Fresas enterizas para mecanizado de aluminio y todo tipo de aplicaciones: de desbaste a acabado.
- Solución optimizada para aplicación de aluminio: selección variada de herramientas para distintos tipos de mecanizado.
- Alto rendimiento: diseño de alta tecnología de los filos de corte y de los canales.

## Características

**APFE**

**Filos de corte agudos y ángulo de incidencia doble**

- Carga de corte reducida
- Se inhibe la rotura de los filos de corte gracias a su diseño reforzado

**Canales con forma de "U" y pulido de excelente acabado superficial**

- Evacuación de viruta eficiente gracias a los canales anchos
- Se inhibe la aparición del filo de aportación gracias a la superficie pulida de los filos de corte

**AFE**

**Filos de corte agudos**

- Vida útil larga y mejorado el rendimiento de la herramienta
- Carga de corte reducida

**Superficie de los canales pulida**

- Filo de aportación inhibido
- La inhibición de los filos de aportación ayuda a reducir la carga de corte

**RPAE**

**Filo de corte con ranuras ondulantes**

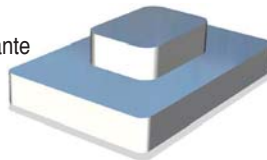
- Carga de corte menor
- Evacuación de viruta eficiente a través de las ranuras que actúan como rompevirutas

**Filo de corte agudo**

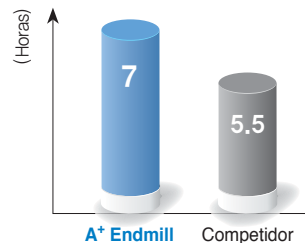
- Carga de corte reducida
- Reducción de la carga mecánica también a la maquinaria

## Ejemplos de aplicación

- **Pieza de trabajo** Mandril (A7075)
- **Condiciones de corte**  $vc$  (m/min) = 200,  $fz$  (mm/t) = 0.05  
 $ap$  (mm) = 8,  $ae$  (mm) = 2, con refrigerante
- **Herramientas** APFE3080-060



■ Resultado de la prueba

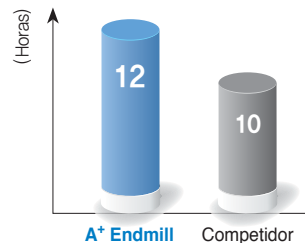


30% mayor duración

- **Pieza de trabajo** Fresado de la parte interior de smartphone (Al60 series)
- **Condiciones de corte**  $vc$  (m/min) = 65,  $fz$  (mm/t) = 0.02  
 $ap$  (mm) = 1,  $ae$  (mm) = 1, con refrigerante
- **Herramientas** AFE3010-050-V3S6

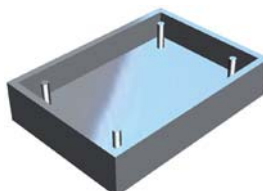


■ Resultado de la prueba

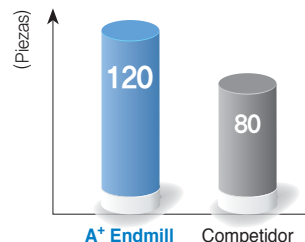


20% mayor duración

- **Pieza de trabajo** Desbaste de superficie rectangular (Al70 series)
- **Condiciones de corte**  $vc$  (m/min) = 330,  $fz$  (mm/t) = 0.05  
 $ap$  (mm) = 15,  $ae$  (mm) = 1.5, seco
- **Herramientas** RPAE3100-080



■ Resultado de la prueba



50% más

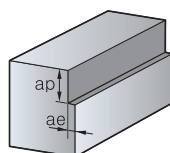


# F Información Técnica para A<sup>+</sup> Endmill

## Condiciones de corte recomendadas (APFE/AFE)

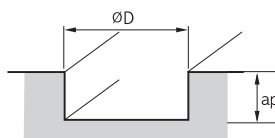
| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | Escuadrado                   |                    |                                      |                    | Ranurado                     |                    |                                      |                    |
|---|------------------------------|--------------------|--------------------------------------|--------------------|------------------------------|--------------------|--------------------------------------|--------------------|
|   | Aleación de aluminio (A7075) |                    | Molde de aleación de aluminio (AC4B) |                    | Aleación de aluminio (A7075) |                    | Molde de aleación de aluminio (AC4B) |                    |
|   | RPM n (min <sup>-1</sup> )   | Avance vf (mm/min) | RPM n (min <sup>-1</sup> )           | Avance vf (mm/min) | RPM n (min <sup>-1</sup> )   | Avance vf (mm/min) | RPM n (min <sup>-1</sup> )           | Avance vf (mm/min) |
| 1   | 40,000                       | 480                | 40,000                               | 368                | 40,000                       | 368                | 40,000                               | 280                |
| 2   | 40,000                       | 880                | 38,000                               | 680                | 38,000                       | 680                | 32,000                               | 440                |
| 3   | 32,000                       | 1,120              | 25,000                               | 760                | 25,000                       | 760                | 21,000                               | 480                |
| 4   | 24,000                       | 1,200              | 19,000                               | 800                | 19,000                       | 800                | 13,000                               | 520                |
| 5   | 19,000                       | 1,280              | 15,000                               | 880                | 15,000                       | 800                | 13,000                               | 560                |
| 6   | 16,000                       | 1,520              | 13,000                               | 960                | 13,000                       | 880                | 11,000                               | 600                |
| 8   | 12,000                       | 1,520              | 9,500                                | 960                | 9,500                        | 960                | 8,000                                | 640                |
| 10  | 9,500                        | 1,520              | 7,600                                | 960                | 7,600                        | 960                | 6,400                                | 640                |
| 12  | 8,000                        | 1,520              | 6,400                                | 960                | 6,400                        | 960                | 5,300                                | 640                |
| 16  | 6,000                        | 1,520              | 4,800                                | 960                | 4,800                        | 800                | 4,000                                | 576                |
| 20  | 4,800                        | 1,200              | 3,800                                | 800                | 3,800                        | 776                | 3,200                                | 528                |

### Consejo aplicación



#### Profundidad escuadrado (ap)

- ap :  $\leq 2,0D$
- ae :  $\leq 0,2D (D < \varnothing 3)$   
:  $\leq 0,5D (D \geq \varnothing 3)$



#### Profundidad de ranurado (ap)

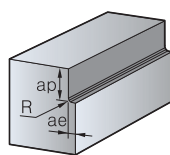
- ap :  $\leq D$  (Máx 12 mm)

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción

## Condiciones de corte recomendadas (RPAE/APRE)

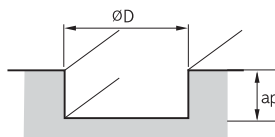
| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | Escuadrado                   |                    |                                      |                    | Ranurado                     |                    |                                      |                    |
|---|------------------------------|--------------------|--------------------------------------|--------------------|------------------------------|--------------------|--------------------------------------|--------------------|
|   | Aleación de aluminio (A7075) |                    | Molde de aleación de aluminio (AC4B) |                    | Aleación de aluminio (A7075) |                    | Molde de aleación de aluminio (AC4B) |                    |
|   | RPM n (min <sup>-1</sup> )   | Avance vf (mm/min) | RPM n (min <sup>-1</sup> )           | Avance vf (mm/min) | RPM n (min <sup>-1</sup> )   | Avance vf (mm/min) | RPM n (min <sup>-1</sup> )           | Avance vf (mm/min) |
| 4   | 20,000                       | 8,000              | 16,000                               | 6,400              | 15,000                       | 5,000              | 12,000                               | 4,000              |
| 5   | 16,000                       | 6,500              | 12,800                               | 5,200              | 12,000                       | 4,000              | 9,600                                | 3,200              |
| 6   | 13,500                       | 6,000              | 10,800                               | 4,800              | 10,500                       | 3,800              | 8,400                                | 3,100              |
| 8   | 10,500                       | 4,700              | 8,400                                | 3,800              | 8,000                        | 3,000              | 6,400                                | 2,400              |
| 10  | 8,500                        | 3,800              | 6,800                                | 3,100              | 6,500                        | 2,500              | 5,200                                | 2,000              |
| 12  | 6,800                        | 3,050              | 5,500                                | 2,500              | 5,250                        | 2,000              | 4,200                                | 1,600              |
| 14  | 5,800                        | 2,600              | 4,700                                | 2,100              | 4,500                        | 1,700              | 3,600                                | 1,400              |
| 16  | 5,200                        | 2,350              | 4,200                                | 1,900              | 4,000                        | 1,500              | 3,200                                | 1,200              |
| 18  | 4,700                        | 2,100              | 3,800                                | 1,700              | 3,550                        | 1,300              | 2,900                                | 1,100              |
| 20  | 4,200                        | 1,900              | 3,400                                | 1,600              | 3,200                        | 1,200              | 2,600                                | 1,000              |
| 25  | 3,400                        | 1,500              | 2,800                                | 1,200              | 2,550                        | 1,000              | 2,100                                | 800                |

### Consejo aplicación



#### Profundidad escuadrado (ap)

- ap :  $\leq 1,5D$
- ae :  $\leq 0,5D$



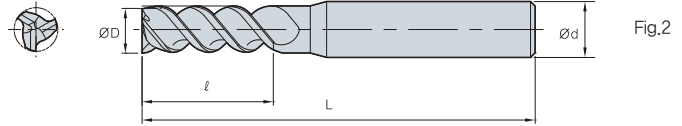
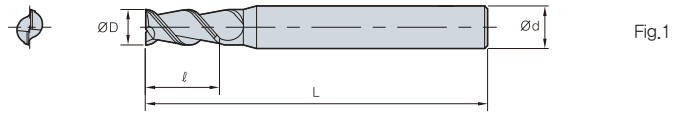
#### Profundidad de ranurado (ap)

- ap :  $\leq 1,5D$

\* La pieza de trabajo debe sujetarse rígidamente. En caso de vibración, reduzca R.P.M y la velocidad de avance en la misma proporción



# APFE2000/3000 (Plano)



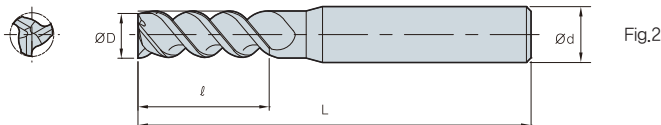
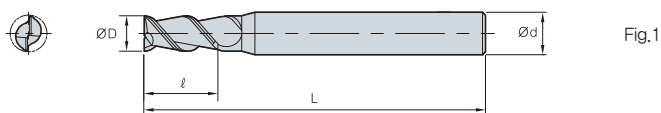
| ØD         | Tolerancia   |
|------------|--------------|
| Ø1 ~ Ø6    | 0.00 ~ 0.02  |
| Ø6.1 ~ Ø8  | 0.00 ~ 0.025 |
| Ø8.1 ~ Ø20 | 0.00 ~ 0.03  |



(mm)

|          | Codigo      | ØD   | Ød | ℓ   | L   | Fig. |
|----------|-------------|------|----|-----|-----|------|
| APFE<br> | 2010-050-S6 | 1    | 6  | 3   | 50  | 1    |
|          | 2015-050-S6 | 1.5  | 6  | 4   | 50  | 1    |
|          | 2020-050-S4 | 2    | 4  | 6   | 50  | 1    |
|          | 2025-050    | 2.5  | 6  | 8   | 50  | 1    |
|          | 2030-050    | 3.0  | 6  | 9   | 50  | 1    |
|          | 2040-050    | 4.0  | 6  | 12  | 50  | 1    |
|          | 2050-050    | 5.0  | 6  | 15  | 50  | 1    |
|          | 2060-050    | 6.0  | 6  | 18  | 50  | 1    |
|          | 2080-060    | 8.0  | 8  | 20  | 60  | 1    |
|          | 2100-075    | 10.0 | 10 | 30  | 75  | 1    |
|          | 2120-075    | 12.0 | 12 | 32  | 75  | 1    |
|          | 2160-100    | 16.0 | 16 | 45  | 100 | 1    |
| 2200-100 | 20.0        | 20   | 45 | 100 | 1   |      |
| APFE<br> | 3010-050-S4 | 1    | 4  | 3   | 50  | 2    |
|          | 3015-050-S4 | 1.5  | 4  | 4   | 50  | 2    |
|          | 3020-050-S4 | 2    | 4  | 6   | 50  | 2    |
|          | 3025-050    | 2.5  | 6  | 8   | 50  | 2    |
|          | 3030-050    | 3.0  | 6  | 9   | 50  | 2    |
|          | 3040-050    | 4.0  | 6  | 12  | 50  | 2    |
|          | 3050-050    | 5.0  | 6  | 15  | 50  | 2    |
|          | 3060-050    | 6.0  | 6  | 18  | 50  | 2    |
|          | 3080-060    | 8.0  | 8  | 20  | 60  | 2    |
|          | 3100-075    | 10.0 | 10 | 30  | 75  | 2    |
|          | 3120-075    | 12.0 | 12 | 32  | 75  | 2    |
|          | 3160-100    | 16.0 | 16 | 45  | 100 | 2    |
| 3200-100 | 20.0        | 20   | 45 | 100 | 2   |      |

## APMFE2000/3000 (Medio Plana)



| ØD         | Tolerancia   |
|------------|--------------|
| Ø1 ~ Ø6    | 0.00 ~ 0.02  |
| Ø6.1 ~ Ø8  | 0.00 ~ 0.025 |
| Ø8.1 ~ Ø20 | 0.00 ~ 0.03  |



(mm)

|            | Codigo   | ØD   | Ød | ℓ  | L   | Fig. |
|------------|----------|------|----|----|-----|------|
| APMFE<br>2 | 2030-060 | 3.0  | 6  | 11 | 60  | 1    |
|            | 2040-060 | 4.0  | 6  | 14 | 60  | 1    |
|            | 2050-060 | 5.0  | 6  | 17 | 60  | 1    |
|            | 2060-065 | 6.0  | 6  | 22 | 65  | 1    |
|            | 2080-065 | 8.0  | 8  | 25 | 65  | 1    |
|            | 2100-080 | 10.0 | 10 | 37 | 80  | 1    |
|            | 2120-080 | 12.0 | 12 | 40 | 80  | 1    |
|            | 2160-110 | 16.0 | 16 | 55 | 110 | 1    |
|            | 2200-125 | 20.0 | 20 | 60 | 125 | 1    |
| APMFE<br>3 | 3030-060 | 3.0  | 6  | 11 | 60  | 2    |
|            | 3040-060 | 4.0  | 6  | 14 | 60  | 2    |
|            | 3050-060 | 5.0  | 6  | 17 | 60  | 2    |
|            | 3060-065 | 6.0  | 6  | 22 | 65  | 2    |
|            | 3080-065 | 8.0  | 8  | 25 | 65  | 2    |
|            | 3100-080 | 10.0 | 10 | 37 | 80  | 2    |
|            | 3120-080 | 12.0 | 12 | 40 | 80  | 2    |
|            | 3160-110 | 16.0 | 16 | 55 | 110 | 2    |
|            | 3200-125 | 20.0 | 20 | 60 | 125 | 2    |



# APLFE2000/3000 (Plano Largo)

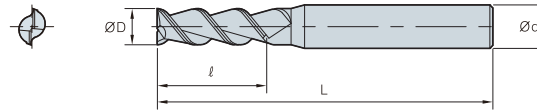


Fig.1

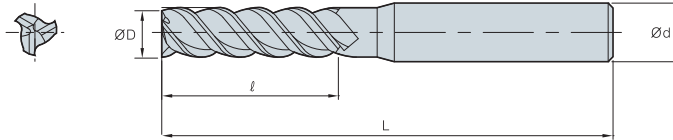


Fig.2



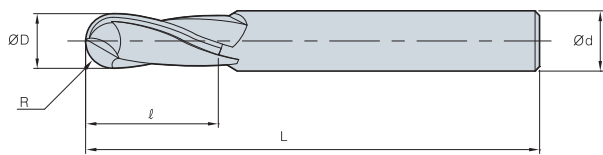
| ØD         | Tolerancia   |
|------------|--------------|
| Ø1 ~ Ø6    | 0.00 ~ 0.02  |
| Ø6.1 ~ Ø8  | 0.00 ~ 0.025 |
| Ø8.1 ~ Ø20 | 0.00 ~ 0.03  |



(mm)

|            | Codigo   | ØD   | Ød | ℓ  | L   | Fig. |
|------------|----------|------|----|----|-----|------|
| APLFE<br>2 | 2030-060 | 3.0  | 6  | 12 | 60  | 1    |
|            | 2040-060 | 4.0  | 6  | 16 | 60  | 1    |
|            | 2050-060 | 5.0  | 6  | 20 | 60  | 1    |
|            | 2060-075 | 6.0  | 6  | 25 | 75  | 1    |
|            | 2080-075 | 8.0  | 8  | 32 | 75  | 1    |
|            | 2100-100 | 10.0 | 10 | 45 | 100 | 1    |
|            | 2120-100 | 12.0 | 12 | 45 | 100 | 1    |
|            | 2160-150 | 16.0 | 16 | 65 | 150 | 1    |
|            | 2200-150 | 20.0 | 20 | 75 | 150 | 1    |
| APLFE<br>3 | 3030-060 | 3.0  | 6  | 12 | 60  | 2    |
|            | 3040-060 | 4.0  | 6  | 16 | 60  | 2    |
|            | 3050-060 | 5.0  | 6  | 20 | 60  | 2    |
|            | 3060-075 | 6.0  | 6  | 25 | 75  | 2    |
|            | 3080-075 | 8.0  | 8  | 32 | 75  | 2    |
|            | 3100-100 | 10.0 | 10 | 45 | 100 | 2    |
|            | 3120-100 | 12.0 | 12 | 45 | 100 | 2    |
|            | 3160-150 | 16.0 | 16 | 65 | 150 | 2    |
|            | 3200-150 | 20.0 | 20 | 75 | 150 | 2    |

## APBE2000 (Esférico)



| ØD         | Tolerancia   |
|------------|--------------|
| Ø1 ~ Ø6    | 0.00 ~ 0.02  |
| Ø6.1 ~ Ø8  | 0.00 ~ 0.025 |
| Ø8.1 ~ Ø20 | 0.00 ~ 0.03  |



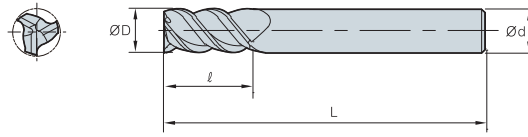
(mm)

| Codigo      | R    | ØD   | Ød | ℓ  | L  |
|-------------|------|------|----|----|----|
| <b>APBE</b> |      |      |    |    |    |
| 2010-050    | 0.5  | 1.0  | 4  | 2  | 50 |
| 2015-050    | 0.75 | 1.5  | 4  | 3  | 50 |
| 2020-050    | 1.0  | 2.0  | 4  | 4  | 50 |
| 2025-050    | 1.25 | 2.5  | 4  | 5  | 50 |
| 2030-050    | 1.5  | 3.0  | 4  | 6  | 50 |
| 2035-050    | 1.75 | 3.5  | 4  | 7  | 50 |
| 2040-050    | 2.0  | 4.0  | 4  | 8  | 50 |
| 2045-050    | 2.25 | 4.5  | 6  | 9  | 50 |
| 2050-050    | 2.5  | 5.0  | 6  | 10 | 50 |
| 2055-050    | 2.75 | 5.5  | 6  | 11 | 50 |
| 2060-050    | 3.0  | 6.0  | 6  | 12 | 50 |
| 2080-060    | 4.0  | 8.0  | 8  | 16 | 60 |
| 2100-075    | 5.0  | 10.0 | 10 | 20 | 75 |
| 2120-075    | 6.0  | 12.0 | 12 | 24 | 75 |





# AFE3000 (Plano Corto)



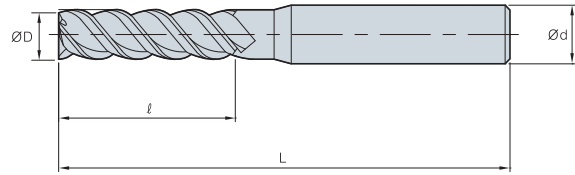
| ØD          | Tolerancia   |
|-------------|--------------|
| Ø1 ~ Ø12    | 0.00 ~ -0.02 |
| Ø12.1 ~ Ø20 | 0.00 ~ -0.03 |



(mm)

| Codigo                 | ØD  | Ød | ℓ   | L  |
|------------------------|-----|----|-----|----|
| <b>AFE</b>             |     |    |     |    |
| <b>3010-040-V2S6</b>   | 1   | 6  | 2   | 40 |
| <b>3010-040-V2.5S6</b> | 1   | 6  | 2.5 | 40 |
| <b>3015-040-V3S6</b>   | 1.5 | 6  | 3   | 40 |
| <b>3020-040-V3S6</b>   | 2   | 6  | 3   | 40 |
| <b>3030-045-V4S6</b>   | 3   | 6  | 4   | 45 |
| <b>3030-045-V8S6</b>   | 3   | 6  | 8   | 45 |
| <b>3040-045-V5S6</b>   | 4   | 6  | 5   | 45 |
| <b>3040-045-V8S6</b>   | 4   | 6  | 8   | 45 |
| <b>3040-045-V11S6</b>  | 4   | 6  | 11  | 45 |
| <b>3050-045-V6S6</b>   | 5   | 6  | 6   | 45 |
| <b>3060-050-V7S6</b>   | 6   | 6  | 7   | 50 |
| <b>3060-050-V13S6</b>  | 6   | 6  | 13  | 50 |
| <b>3080-060-V9S8</b>   | 8   | 8  | 9   | 60 |
| <b>3080-060-V19S8</b>  | 8   | 8  | 19  | 60 |
| <b>3100-065-V11S10</b> | 10  | 10 | 11  | 65 |
| <b>3100-065-V22S10</b> | 10  | 10 | 22  | 65 |
| <b>3120-070-V13S12</b> | 12  | 12 | 13  | 70 |
| <b>3120-070-V26S12</b> | 12  | 12 | 26  | 70 |
| <b>3160-090-V18S16</b> | 16  | 16 | 18  | 90 |
| <b>3160-090-V32S16</b> | 16  | 16 | 32  | 90 |
| <b>3200-090-V22S20</b> | 20  | 20 | 22  | 90 |
| <b>3200-090-V38S20</b> | 20  | 20 | 38  | 90 |

## AFE3000 (Plano)



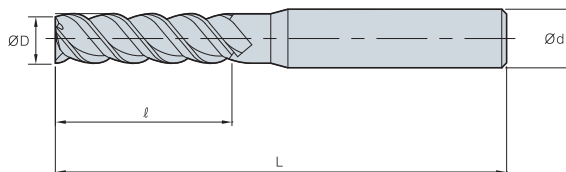
| ØD          | Tolerancia   |
|-------------|--------------|
| Ø1 ~ Ø12    | 0.00 ~ -0.02 |
| Ø12.1 ~ Ø20 | 0.00 ~ -0.03 |



(mm)

| Codigo                 | ØD  | Ød | ℓ  | L   |
|------------------------|-----|----|----|-----|
| <b>AFE</b>             |     |    |    |     |
| <b>3010-050-V3S6</b>   | 1   | 6  | 3  | 50  |
| <b>3015-050-V5S6</b>   | 1.5 | 6  | 5  | 50  |
| <b>3020-050-V6S6</b>   | 2   | 6  | 6  | 50  |
| <b>3030-055-V11S6</b>  | 3   | 6  | 11 | 55  |
| <b>3040-055-V13S6</b>  | 4   | 6  | 13 | 55  |
| <b>3050-055-V17S6</b>  | 5   | 6  | 17 | 55  |
| <b>3060-060-V17S6</b>  | 6   | 6  | 17 | 60  |
| <b>3080-070-V22S8</b>  | 8   | 8  | 22 | 70  |
| <b>3100-075-V27S10</b> | 10  | 10 | 27 | 75  |
| <b>3120-080-V32S12</b> | 12  | 12 | 32 | 80  |
| <b>3160-100-V42S16</b> | 16  | 16 | 42 | 100 |
| <b>3200-100-V48S20</b> | 20  | 20 | 48 | 100 |



**AFE3000 (Plano Largo)**

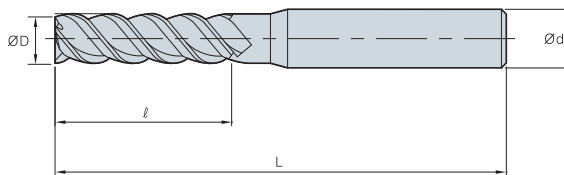
| ØD          | Tolerancia   |
|-------------|--------------|
| Ø1 ~ Ø12    | 0.00 ~ -0.02 |
| Ø12.1 ~ Ø20 | 0.00 ~ -0.03 |



(mm)

| Codigo                 | ØD  | Ød | ℓ  | L   |
|------------------------|-----|----|----|-----|
| <b>AFE</b>             |     |    |    |     |
| <b>3</b> 3010-060-V4S6 | 1   | 6  | 4  | 60  |
| 3010-060-V6S6          | 1   | 6  | 6  | 60  |
| 3015-060-V6S6          | 1.5 | 6  | 6  | 60  |
| 3015-060-V8S6          | 1.5 | 6  | 8  | 60  |
| 3015-060-V10S6         | 1.5 | 6  | 10 | 60  |
| 3020-060-V8S6          | 2   | 6  | 8  | 60  |
| 3020-060-V10S6         | 2   | 6  | 10 | 60  |
| 3020-060-V12S6         | 2   | 6  | 12 | 60  |
| 3030-065-V15S6         | 3   | 6  | 15 | 65  |
| 3030-070-V20S6         | 3   | 6  | 20 | 70  |
| 3030-075-V25S6         | 3   | 6  | 25 | 75  |
| 3030-080-V30S6         | 3   | 6  | 30 | 80  |
| 3040-065-V16S6         | 4   | 6  | 16 | 65  |
| 3040-070-V20S6         | 4   | 6  | 20 | 70  |
| 3040-075-V26S6         | 4   | 6  | 26 | 75  |
| 3040-080-V30S6         | 4   | 6  | 30 | 80  |
| 3060-060-V22S6         | 6   | 6  | 22 | 60  |
| 3060-070-V25S6         | 6   | 6  | 25 | 70  |
| 3060-075-V30S6         | 6   | 6  | 30 | 75  |
| 3060-080-V35S6         | 6   | 6  | 35 | 80  |
| 3060-090-V42S6         | 6   | 6  | 42 | 90  |
| 3060-100-V50S6         | 6   | 6  | 50 | 100 |
| 3080-080-V28S8         | 8   | 8  | 28 | 80  |
| 3080-080-V30S8         | 8   | 8  | 30 | 80  |
| 3080-085-V35S8         | 8   | 8  | 35 | 85  |
| 3080-090-V40S8         | 8   | 8  | 40 | 90  |
| 3080-095-V45S8         | 8   | 8  | 45 | 95  |
| 3080-100-V50S8         | 8   | 8  | 50 | 100 |
| 3080-105-V55S8         | 8   | 8  | 55 | 105 |
| 3080-110-V65S8         | 8   | 8  | 65 | 110 |

## AFE3000 (Plano Largo)



| ØD          | Tolerancia   |
|-------------|--------------|
| Ø1 ~ Ø12    | 0.00 ~ -0.02 |
| Ø12.1 ~ Ø20 | 0.00 ~ -0.03 |

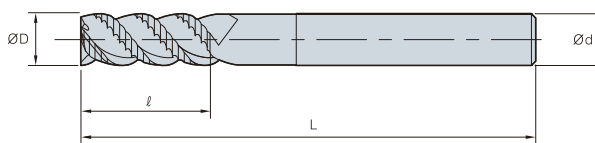


(mm)

| Codigo                   | ØD | Ød | ℓ   | L   |
|--------------------------|----|----|-----|-----|
| <b>AFE</b>               |    |    |     |     |
| <b>3</b> 3100-090-V32S10 | 10 | 10 | 32  | 90  |
| 3100-090-V35S10          | 10 | 10 | 35  | 90  |
| 3100-090-V40S10          | 10 | 10 | 40  | 90  |
| 3100-100-V45S10          | 10 | 10 | 45  | 100 |
| 3100-100-V50S10          | 10 | 10 | 50  | 100 |
| 3100-110-V55S10          | 10 | 10 | 55  | 110 |
| 3100-110-V60S10          | 10 | 10 | 60  | 110 |
| 3100-120-V65S10          | 10 | 10 | 65  | 120 |
| 3120-095-V40S12          | 12 | 12 | 40  | 95  |
| 3120-100-V45S12          | 12 | 12 | 45  | 100 |
| 3120-100-V50S12          | 12 | 12 | 50  | 100 |
| 3120-110-V55S12          | 12 | 12 | 55  | 110 |
| 3120-110-V60S12          | 12 | 12 | 60  | 110 |
| 3120-120-V65S12          | 12 | 12 | 65  | 120 |
| 3120-120-V70S12          | 12 | 12 | 70  | 120 |
| 3120-135-V75S12          | 12 | 12 | 75  | 135 |
| 3160-105-V52S16          | 16 | 16 | 52  | 105 |
| 3160-110-V55S16          | 16 | 16 | 55  | 110 |
| 3160-130-V65S16          | 16 | 16 | 65  | 130 |
| 3160-150-V75S16          | 16 | 16 | 75  | 150 |
| 3160-160-V85S16          | 16 | 16 | 85  | 160 |
| 3160-180-V95S16          | 16 | 16 | 95  | 180 |
| 3160-190-V105S16         | 16 | 16 | 105 | 190 |
| 3160-200-V115S16         | 16 | 16 | 115 | 200 |
| 3200-110-V55S20          | 20 | 20 | 55  | 110 |
| 3200-130-V65S20          | 20 | 20 | 65  | 130 |
| 3200-150-V75S20          | 20 | 20 | 75  | 150 |
| 3200-160-V85S20          | 20 | 20 | 85  | 160 |
| 3200-180-V95S20          | 20 | 20 | 95  | 180 |
| 3200-190-V105S20         | 20 | 20 | 105 | 190 |
| 3200-200-V115S20         | 20 | 20 | 115 | 200 |
| 3200-220-V125S20         | 20 | 20 | 125 | 220 |



## APRE3000 (Desbaste)



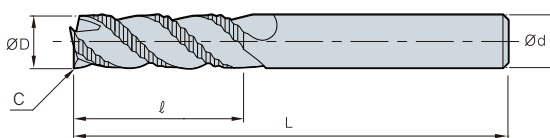
| ØD         | Tolerancia   |
|------------|--------------|
| Ø4 ~ Ø8    | 0.00 ~ -0.07 |
| Ø8.1 ~ Ø25 | 0.00 ~ -0.10 |



(mm)

| Codigo      | ØD       | Ød   | ℓ  | L   |     |
|-------------|----------|------|----|-----|-----|
| <b>APRE</b> | 3040-050 | 4.0  | 6  | 8   | 50  |
|             | 3050-050 | 5.0  | 6  | 13  | 50  |
|             | 3060-050 | 6.0  | 6  | 15  | 50  |
|             | 3065-060 | 6.5  | 8  | 16  | 60  |
|             | 3070-060 | 7.0  | 8  | 16  | 60  |
|             | 3075-060 | 7.5  | 8  | 20  | 60  |
|             | 3080-060 | 8.0  | 8  | 20  | 60  |
|             | 3085-075 | 8.5  | 10 | 20  | 75  |
|             | 3090-075 | 9.0  | 10 | 20  | 75  |
|             | 3095-075 | 9.5  | 10 | 22  | 75  |
|             | 3100-075 | 10.0 | 10 | 25  | 75  |
|             | 3110-075 | 11.0 | 12 | 30  | 75  |
|             | 3120-075 | 12.0 | 12 | 30  | 75  |
|             | 3130-075 | 13.0 | 14 | 30  | 75  |
|             | 3140-075 | 14.0 | 16 | 32  | 75  |
|             | 3150-075 | 15.0 | 16 | 32  | 75  |
|             | 3160-100 | 16.0 | 16 | 35  | 100 |
|             | 3170-100 | 17.0 | 20 | 35  | 100 |
|             | 3180-100 | 18.0 | 20 | 35  | 100 |
|             | 3200-100 | 20.0 | 20 | 45  | 100 |
| 3250-105    | 25.0     | 25   | 50 | 105 |     |

## RPAE3000 (Filos Dentados para Desbaste)



| ØD        | Tolerancia     |
|-----------|----------------|
| Ø6 ~ Ø10  | 0.000 ~ -0.058 |
| Ø10 ~ Ø18 | 0.000 ~ -0.070 |
| Ø18 ~ Ø25 | 0.000 ~ -0.084 |



(mm)

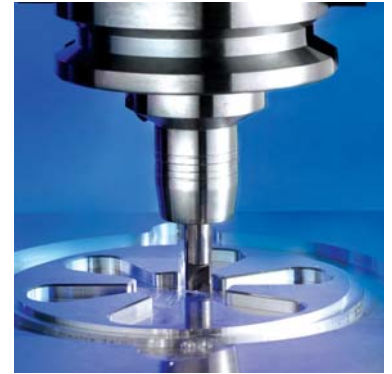
| Codigo      | ØD       | Ød   | ℓ  | L  | L   |     |
|-------------|----------|------|----|----|-----|-----|
| <b>RPAE</b> | 3060-063 | 6.0  | 6  | 18 | 63  | 0.3 |
|             | 3070-063 | 7.0  | 8  | 23 | 63  | 0.3 |
|             | 3080-063 | 8.0  | 8  | 23 | 63  | 0.3 |
|             | 3090-080 | 9.0  | 10 | 30 | 80  | 0.3 |
|             | 3100-080 | 10.0 | 10 | 30 | 80  | 0.3 |
|             | 3110-080 | 11.0 | 12 | 32 | 80  | 0.5 |
|             | 3120-080 | 12.0 | 12 | 32 | 80  | 0.5 |
|             | 3140-080 | 14.0 | 14 | 32 | 80  | 0.5 |
|             | 3160-105 | 16.0 | 16 | 48 | 105 | 0.5 |
|             | 3180-105 | 18.0 | 18 | 48 | 105 | 0.5 |
|             | 3200-105 | 20.0 | 20 | 50 | 105 | 0.5 |
|             | 3250-105 | 25.0 | 25 | 50 | 105 | 0.5 |

# F Información Técnica para PCD Endmill

Mayor duración de la herramienta y buena rugosidad de la superficie

## PCD Endmill

- Mayor duración de la herramienta y buena rugosidad de la superficie
- Reducción de la rebaba en el maquinado de metales no-ferrosos
- Serie 1000: Para acabado Ultrafion en Metales No-Ferrosos
- Serie 2000: Recomendada para Aleaciones de Aluminio, Acero al Carbon, grafito y maquinado de plástico reforzado



### ➤ Fresa integral PCD: sistema de codificación



### ➤ Condiciones de corte recomendadas

| Pieza de trabajo            | vc (m/min) | n (min <sup>-1</sup> ) | fz (mm/t) |
|-----------------------------|------------|------------------------|-----------|
| Aleación de Aluminio, Cobre | 30~300     | 2,000~12,000           | 0.02~0.07 |
| Plastico Reforsado          | 35~300     | 2,800~16,000           | 0.04~0.12 |
| Acero al Catbon, Grafitoo   | 10~100     | 5,300~16,000           | 0.04~0.2  |

### Formato de fresas integrales especiales

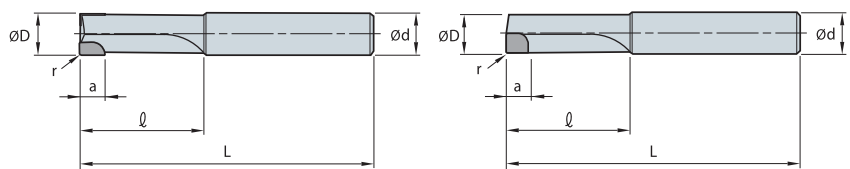


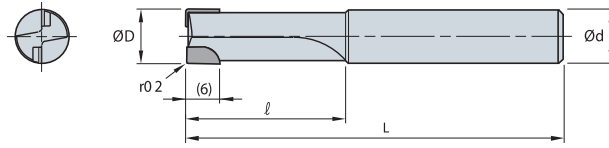
Fig.1

Fig.2

| Codigo | Fig. | No. de Flautas | Dimension (mm) |    |   |   |   |   |
|--------|------|----------------|----------------|----|---|---|---|---|
|        |      |                | ØD             | Ød | r | a | l | L |
| PDES   |      |                |                |    |   |   |   |   |
|        |      |                |                |    |   |   |   |   |
|        |      |                |                |    |   |   |   |   |
|        |      |                |                |    |   |   |   |   |

※ Dependiendo de lassolicitudesde clientes, se pueden hacer endmills especiales



**PDE1000/2000 (Plano)**

1

2



(mm)

|          | Codigo | ØD | Ød | ℓ  | L  |
|----------|--------|----|----|----|----|
| PDE<br>1 | 1040   | 4  | 6  | 15 | 45 |
|          | 1050   | 5  | 6  | 15 | 50 |
|          | 1060   | 6  | 6  | 20 | 60 |
| PDE<br>2 | 2060   | 6  | 8  | 20 | 60 |
|          | 2070   | 7  | 8  | 20 | 60 |
|          | 2080   | 8  | 8  | 20 | 60 |
|          | 2090   | 9  | 10 | 25 | 70 |
|          | 2100   | 10 | 10 | 25 | 70 |
|          | 2120   | 12 | 12 | 25 | 75 |

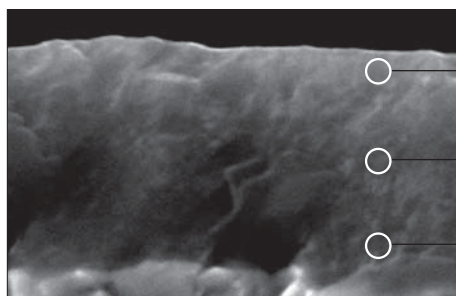
# F Información Técnica para Brazed Endmill

Diseño que permite un maquinado con mayor precisión

## Brazed Endmills

- Aplicable para maquinado de alta velocidad ya que reduce la resistencia a la fricción mientras mejora su resistencia al desgaste al implementar un recubrimiento exclusivo de PVD.
- Herramienta de larga vida debido a la absorción de impacto a través del cuerpo cementado en corte interrumpido pesado
- Para maquinado en Acero en general, Aleacion de Acero, Acero Medio, Acero Inoxidable, Acero Ductil, Fundición, Fundición Dustil
- Serie ZSEA: Aluminio, Aleaciones de Aluminio, Cobre, Aleaciones de Cobre, Metales No-Ferrosos
- Endmills Cementados con Recubrimiento (Especiales) Garantiza una larga vida a la herramienta debido a la aplicación de un nuevo recubrimiento resistente a la oxidación

### Características



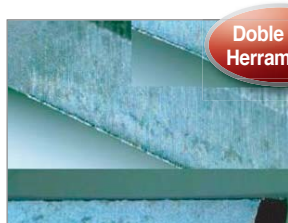
- **Capa Superior**  
Recubrimiento resistente a la oxidación
- **Capa Principal**  
Evita la adherencia dematerial al filo Mayor resistencia al astillamiento
- **Substrato Ultrafino**

Recubrimiento PC221F

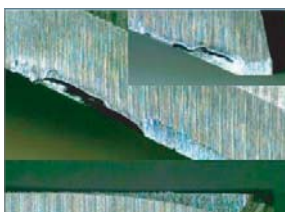
### Endmills Cementados Sistema Codificación

|                  |                |  |                              |                 |   |   |
|------------------|----------------|--|------------------------------|-----------------|---|---|
| Z                | S              | E  | 2                            | 14              | - | S   |
| <b>Cementado</b> | <b>Espiral</b> | <b>Endmill</b>   | <b>No. de Flautas</b>        | <b>Diametro</b> |   | <b>Diametro Mango</b>   |
|                  |                | E: Plano (Acero)<br>EA: Plano (Aluminio, Cobre)<br>EL: Plano Largo (Acero)<br>EXL: Plano Largo (Acero)<br>BE: Esférico (Acero) | 2: 2 Flautas<br>3: 3 Flautas | Ø14             |   | S: Ø42.0<br>Q: Recubierto<br>SQ: Ø42.0 Recubierto<br>Diametro del Mango<br>Standard: none |

### Prueba de Resistencia al desgaste



Recubrimiento ZSE(PC221F)



Carburo ZSE

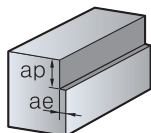




## Condiciones de corte recomendadas (ZSE200 Plano)

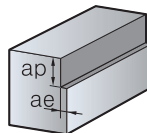
| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | SM50C,SCM,GC<br>(~HRC30)        |                       | STD61,STD11<br>(HRC30~45)       |                       | STD61<br>(HRC45~55)             |                       |
|---|---------------------------------|-----------------------|---------------------------------|-----------------------|---------------------------------|-----------------------|
|   | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) |
| 20  | 1,600                           | 152                   | 950                             | 88                    | 560                             | 44                    |
| 25  | 1,300                           | 136                   | 750                             | 72                    | 450                             | 36                    |
| 30  | 1,100                           | 120                   | 650                             | 64                    | 370                             | 32                    |
| 40  | 800                             | 96                    | 500                             | 56                    | 280                             | 24                    |
| 50  | 650                             | 88                    | 400                             | 48                    | 220                             | 20                    |

### Consejo aplicación



#### ■ Escuadrado (por debajo de 45 HRC)

- ap:  $\leq 1.5D$
- ae:  $\leq 0.1D$



#### ■ Escuadrado (por encima de 45 HRC)

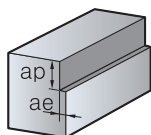
- ap:  $\leq 1D$  (Máx: 1mm)

- \* Datos mencionados arriba basados en fresado lateral, cuando entra en dirección ae, debe reducir condición de corte
- \* Cuando entra en dirección ae, para terminar debe aumentar la velocidad y avance

## Condiciones de corte recomendadas (ZSE400 Plano)

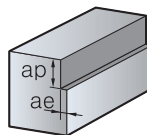
| Pieza de trabajo<br>Condición<br>Diámetro (Ø) | SM50C,SCM,GC<br>(~HRC30)        |                       | STD61,STD11<br>(HRC30~45)       |                       | STD61<br>(HRC45~55)             |                       |
|---|---------------------------------|-----------------------|---------------------------------|-----------------------|---------------------------------|-----------------------|
|   | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) | R.P.M<br>n (min <sup>-1</sup> ) | Avance<br>vf (mm/min) |
| 20  | 1,600                           | 230                   | 950                             | 133                   | 560                             | 66                    |
| 25  | 1,300                           | 205                   | 750                             | 109                   | 450                             | 54                    |
| 30  | 1,100                           | 180                   | 650                             | 96                    | 370                             | 48                    |
| 40  | 800                             | 145                   | 500                             | 85                    | 280                             | 36                    |
| 50  | 650                             | 135                   | 400                             | 72                    | 220                             | 30                    |

### Consejo aplicación



#### ■ Escuadrado (por debajo de 45 HRC)

- ap:  $\leq 1.5D$
- ae:  $\leq 0.1D$

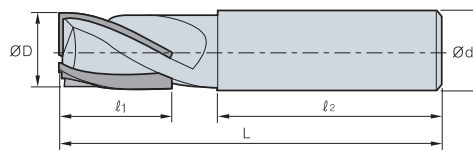
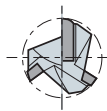


#### ■ Escuadrado (por encima de 45 HRC)

- ap:  $\leq 1D$  (Máx: 1mm)

- \* Datos mencionados arriba basados en fresado lateral, cuando entra en dirección ae, debe reducir condición de corte
- \* Cuando entra en dirección ae, para terminar debe aumentar la velocidad y avance

## ZSE200/300 (Plano)



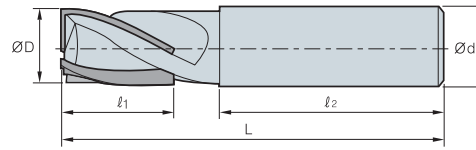
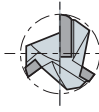
| ØD    | Tolerancia |
|-------|------------|
| Todos | 0.00~-0.05 |

(mm)

| Codigo     | ØD | Ød | l <sub>1</sub> | l <sub>2</sub> | L   |
|------------|----|----|----------------|----------------|-----|
| <b>ZSE</b> |    |    |                |                |     |
| 214        | 14 | 16 | 28             | 57             | 95  |
| 215        | 15 | 16 | 28             | 57             | 95  |
| 216(Q)     | 16 | 16 | 28             | 55             | 95  |
| 217        | 17 | 20 | 30             | 70             | 115 |
| 218        | 18 | 20 | 30             | 70             | 115 |
| 219        | 19 | 20 | 30             | 70             | 115 |
| 220(Q)     | 20 | 20 | 30             | 70             | 115 |
| 221        | 21 | 20 | 35             | 65             | 115 |
| 222        | 22 | 20 | 35             | 65             | 115 |
| 223        | 23 | 25 | 35             | 75             | 125 |
| 224        | 24 | 25 | 35             | 75             | 125 |
| 225        | 25 | 25 | 35             | 75             | 125 |
| 226(Q)     | 26 | 25 | 35             | 75             | 125 |
| 227        | 27 | 25 | 35             | 75             | 125 |
| 228        | 28 | 25 | 35             | 75             | 125 |
| 229        | 29 | 32 | 40             | 95             | 150 |
| 230(Q)     | 30 | 32 | 40             | 95             | 150 |
| 231        | 31 | 32 | 40             | 95             | 150 |
| 232        | 32 | 32 | 45             | 90             | 150 |
| 233        | 33 | 32 | 45             | 90             | 150 |
| 234        | 34 | 32 | 50             | 85             | 150 |
| 235        | 35 | 32 | 50             | 85             | 150 |
| 236        | 36 | 32 | 50             | 85             | 150 |
| 237        | 37 | 32 | 55             | 80             | 150 |
| 238        | 38 | 32 | 55             | 80             | 150 |
| 238S       | 38 | 42 | 55             | 80             | 150 |
| 240(Q)     | 40 | 32 | 60             | 75             | 150 |
| 240S       | 40 | 42 | 60             | 75             | 150 |
| 242        | 42 | 32 | 60             | 75             | 150 |
| 244        | 44 | 32 | 65             | 80             | 160 |
| 245        | 45 | 32 | 65             | 80             | 160 |
| 245S       | 45 | 42 | 65             | 80             | 160 |
| 247        | 47 | 32 | 65             | 80             | 160 |
| 248        | 48 | 32 | 65             | 80             | 160 |
| 248S       | 48 | 42 | 65             | 80             | 160 |
| 250        | 50 | 32 | 65             | 80             | 160 |
| 250S       | 50 | 42 | 65             | 80             | 160 |
| <b>ZSE</b> |    |    |                |                |     |
| 314        | 14 | 16 | 28             | 57             | 95  |
| 315        | 15 | 16 | 28             | 57             | 95  |
| 316        | 16 | 16 | 28             | 55             | 95  |
| 317        | 17 | 20 | 30             | 70             | 115 |
| 318        | 18 | 20 | 30             | 70             | 115 |
| 319        | 19 | 20 | 30             | 70             | 115 |
| 320        | 20 | 20 | 30             | 70             | 115 |
| 322        | 22 | 20 | 35             | 65             | 115 |
| 325        | 25 | 25 | 35             | 75             | 125 |
| 326        | 26 | 25 | 35             | 75             | 125 |
| 328        | 28 | 25 | 35             | 75             | 125 |
| 330        | 30 | 32 | 40             | 95             | 150 |
| 331        | 31 | 32 | 40             | 95             | 150 |



# ZSE300/400/600 (Plano)



| ØD    | Tolerancia |
|-------|------------|
| Todos | 0.00~-0.05 |

(mm)

|                | Codigo         | ØD  | Ød | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L   |    |
|----------------|----------------|-----|----|----------------|----------------|-----|----|
| <b>ZSE</b><br> | 332            | 32  | 32 | 45             | 90             | 150 |    |
|                | 333            | 33  | 32 | 45             | 90             | 150 |    |
|                | 334            | 34  | 32 | 50             | 85             | 150 |    |
|                | 335            | 35  | 32 | 50             | 85             | 150 |    |
|                | 338            | 38  | 32 | 55             | 80             | 150 |    |
|                | 338S           | 38  | 42 | 55             | 80             | 150 |    |
|                | 340            | 40  | 32 | 60             | 75             | 150 |    |
|                | 340S           | 40  | 42 | 60             | 75             | 150 |    |
|                | 342            | 42  | 32 | 60             | 75             | 150 |    |
|                | 345            | 45  | 32 | 65             | 80             | 160 |    |
|                | 345S           | 45  | 42 | 65             | 80             | 160 |    |
|                | 350            | 50  | 32 | 65             | 80             | 160 |    |
|                | 350S           | 50  | 42 | 65             | 80             | 160 |    |
|                | <b>ZSE</b><br> | 414 | 14 | 16             | 28             | 57  | 95 |
|                |                | 415 | 15 | 16             | 28             | 57  | 95 |
| 416(Q)         |                | 16  | 16 | 28             | 55             | 95  |    |
| 417            |                | 17  | 20 | 30             | 70             | 115 |    |
| 418            |                | 18  | 20 | 30             | 70             | 115 |    |
| 419            |                | 19  | 20 | 30             | 70             | 115 |    |
| 420(Q)         |                | 20  | 20 | 30             | 70             | 115 |    |
| 421            |                | 21  | 20 | 35             | 65             | 115 |    |
| 422            |                | 22  | 20 | 35             | 65             | 115 |    |
| 423            |                | 23  | 25 | 35             | 75             | 125 |    |
| 424            |                | 24  | 25 | 35             | 75             | 125 |    |
| 425(Q)         |                | 25  | 25 | 35             | 75             | 125 |    |
| 426            |                | 26  | 25 | 35             | 75             | 125 |    |
| 427            |                | 27  | 25 | 35             | 75             | 125 |    |
| 428            |                | 28  | 25 | 35             | 75             | 125 |    |
| 429            |                | 29  | 32 | 40             | 95             | 150 |    |
| 430            |                | 30  | 32 | 40             | 95             | 150 |    |
| 432(Q)         |                | 32  | 32 | 45             | 90             | 150 |    |
| 435            |                | 35  | 32 | 50             | 80             | 150 |    |
| 438            |                | 38  | 32 | 55             | 85             | 150 |    |
| 438S           |                | 38  | 42 | 55             | 85             | 150 |    |
| 440(Q)         |                | 40  | 32 | 60             | 75             | 150 |    |
| 440S           |                | 40  | 42 | 60             | 75             | 150 |    |
| 445            |                | 45  | 32 | 65             | 80             | 160 |    |
| 445S           |                | 45  | 42 | 65             | 80             | 160 |    |
| 450            | 50             | 32  | 65 | 80             | 160            |     |    |
| 450S           | 50             | 42  | 65 | 80             | 160            |     |    |
| <b>ZSE</b><br> | 634            | 34  | 32 | 50             | 85             | 150 |    |
|                | 635            | 35  | 32 | 50             | 85             | 150 |    |
|                | 638            | 38  | 32 | 55             | 80             | 150 |    |
|                | 638S           | 38  | 42 | 55             | 80             | 150 |    |
|                | 640            | 40  | 32 | 60             | 75             | 150 |    |
|                | 640S           | 40  | 42 | 60             | 75             | 150 |    |
|                | 645            | 45  | 32 | 65             | 80             | 160 |    |
|                | 645S           | 45  | 42 | 65             | 80             | 160 |    |
|                | 650            | 50  | 32 | 65             | 80             | 160 |    |
|                | 650S           | 50  | 42 | 65             | 80             | 160 |    |

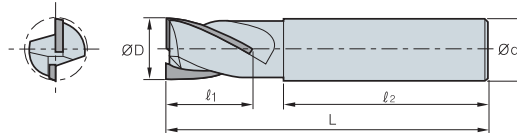
Formato Endmill Especia : ZSE③③③③③-L

Ej.1) 2 flautas, Diametro : 6.3, l : 10, L : 60 ZSBE2063 10-60L

Ej.2) 2 flautas, Diametro : 6.3, Estándar Tipo ZSE2063



## ZSEA200 (Plano)



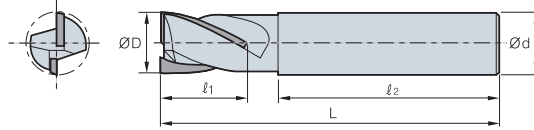
| ØD    | Tolerancia |
|-------|------------|
| Todos | 0.00~-0.05 |

(mm)

| Codigo | ØD | Ød | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L   |
|--------|----|----|----------------|----------------|-----|
| ZSEA   |    |    |                |                |     |
| 215    | 15 | 16 | 28             | 57             | 95  |
| 216    | 16 | 16 | 28             | 55             | 95  |
| 218    | 18 | 20 | 30             | 70             | 115 |
| 219    | 19 | 20 | 30             | 70             | 115 |
| 220    | 20 | 20 | 30             | 70             | 115 |
| 221    | 21 | 20 | 35             | 65             | 115 |
| 222    | 22 | 20 | 35             | 65             | 115 |
| 223    | 23 | 25 | 35             | 75             | 125 |
| 224    | 24 | 25 | 35             | 75             | 125 |
| 225    | 25 | 25 | 35             | 75             | 125 |
| 228    | 28 | 25 | 35             | 75             | 125 |
| 230    | 30 | 32 | 40             | 95             | 150 |
| 232    | 32 | 32 | 45             | 90             | 150 |
| 238    | 38 | 32 | 55             | 80             | 150 |
| 240    | 40 | 32 | 60             | 75             | 150 |
| 250    | 50 | 32 | 65             | 80             | 160 |



# ZSEL200/400, ZSEXL200 (Plano Largo)

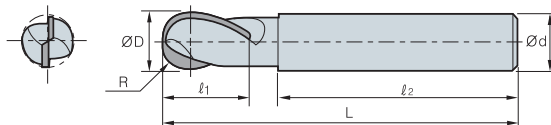


| ØD    | Tolerancia |
|-------|------------|
| Todos | 0.00~-0.05 |

(mm)

|           | Codigo     | ØD  | Ød | l <sub>1</sub> | l <sub>2</sub> | L   |
|-----------|------------|-----|----|----------------|----------------|-----|
| ZSEL<br>2 | 214        | 14  | 16 | 50             | 55             | 120 |
|           | 216        | 16  | 16 | 50             | 55             | 120 |
|           | 218        | 18  | 20 | 60             | 65             | 140 |
|           | 220        | 20  | 20 | 60             | 65             | 140 |
|           | 222        | 22  | 20 | 60             | 65             | 140 |
|           | 225        | 25  | 25 | 70             | 65             | 150 |
|           | 230        | 30  | 32 | 80             | 85             | 180 |
|           | 232        | 32  | 32 | 90             | 85             | 190 |
|           | 235        | 35  | 32 | 100            | 85             | 200 |
|           | 240        | 40  | 42 | 100            | 105            | 220 |
|           | 245        | 45  | 42 | 120            | 95             | 230 |
|           | 250        | 50  | 42 | 120            | 95             | 230 |
| ZSEL<br>4 | 416        | 16  | 16 | 50             | 55             | 120 |
|           | 420        | 20  | 20 | 60             | 65             | 140 |
|           | 425        | 25  | 25 | 70             | 65             | 150 |
|           | 430        | 30  | 32 | 80             | 85             | 180 |
|           | 435        | 35  | 32 | 100            | 85             | 200 |
|           | 440        | 40  | 42 | 100            | 105            | 220 |
|           | ZSEXL<br>2 | 220 | 20 | 20             | 120            | 65  |
| 222       |            | 22  | 20 | 120            | 65             | 200 |
| 225       |            | 25  | 25 | 140            | 65             | 220 |

## ZSBE200 (Esférico)



| ØD    | Tolerancia  |
|-------|-------------|
| Todos | 0.00~ -0.05 |

(mm)

| Codigo   | R    | ØD | Ød | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L   |
|----------|------|----|----|----------------|----------------|-----|
| ZSBE 213 | 6.5  | 13 | 16 | 30             | 60             | 100 |
| 214      | 7    | 14 | 16 | 30             | 65             | 100 |
| 215      | 7.5  | 15 | 16 | 35             | 55             | 100 |
| 216Q     | 8    | 16 | 16 | 35             | 55             | 100 |
| 217      | 8.5  | 17 | 20 | 35             | 65             | 110 |
| 218      | 9    | 18 | 20 | 35             | 65             | 110 |
| 219      | 9.5  | 19 | 20 | 35             | 65             | 110 |
| 220Q     | 10   | 20 | 20 | 35             | 65             | 110 |
| 221      | 10.5 | 21 | 20 | 35             | 65             | 110 |
| 222      | 11   | 22 | 20 | 35             | 65             | 110 |
| 223      | 11.5 | 23 | 25 | 40             | 65             | 120 |
| 224      | 12   | 24 | 25 | 40             | 70             | 120 |
| 225      | 12.5 | 25 | 25 | 40             | 70             | 120 |
| 230      | 15   | 30 | 32 | 40             | 70             | 130 |
| 231      | 15.5 | 31 | 32 | 40             | 80             | 130 |
| 232      | 16   | 32 | 32 | 50             | 75             | 140 |
| 233      | 16.5 | 33 | 32 | 50             | 75             | 140 |
| 234      | 17   | 34 | 32 | 50             | 85             | 150 |
| 235      | 17.5 | 35 | 32 | 50             | 85             | 150 |
| 235S     | 17.5 | 35 | 42 | 50             | 85             | 150 |
| 236      | 18   | 36 | 32 | 50             | 85             | 150 |
| 236S     | 18   | 36 | 42 | 50             | 85             | 150 |
| 237      | 18.5 | 37 | 32 | 50             | 95             | 160 |
| 237S     | 18.5 | 37 | 42 | 50             | 95             | 160 |
| 238      | 19   | 38 | 32 | 50             | 95             | 160 |
| 238S     | 19   | 38 | 42 | 50             | 95             | 160 |
| 239      | 19.5 | 39 | 32 | 50             | 95             | 160 |
| 239S     | 19.5 | 39 | 42 | 50             | 95             | 160 |
| 240      | 20   | 40 | 32 | 50             | 95             | 160 |
| 240S     | 20   | 40 | 42 | 50             | 95             | 160 |
| 245      | 22.5 | 45 | 32 | 50             | 105            | 170 |
| 245S     | 22.5 | 45 | 42 | 50             | 105            | 170 |
| 250      | 25   | 50 | 32 | 50             | 105            | 170 |
| 250S     | 25   | 50 | 42 | 50             | 105            | 170 |

### • ZSBE200

Formato Endmills Especiales : ZSBE2◎◎I-L

Ex.1) 2 flautas, diametro : 6.3, l: 10, L: 60 ZSBE 206310-60L

Ex.2) 2 flautas, diametro : 6.3, Tipo Estándar ZSBE2063

### • ZSEA200

Formato Endmills Especiales : ZSEA2◎◎I-L

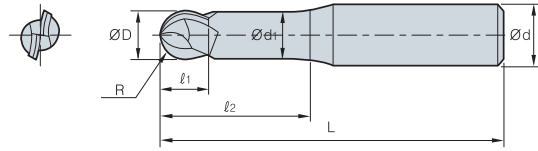
Ex.1) 2 flautas, diametro : 16.3, l: 28, L: 95 ZSEA2163 28-95L

Ex.2) 2 flautas, diametro : 17.0, Tipo Estándar ZSEA2170

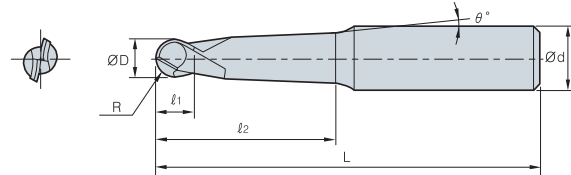
### • ZSEL200/400, ZSEXL200

Formato Endmills Especiales : ZSEL◎◎◎I-L

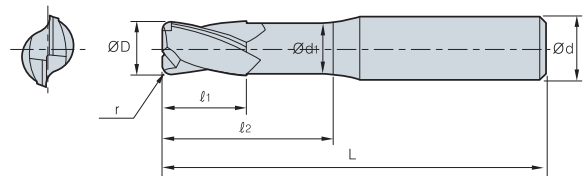




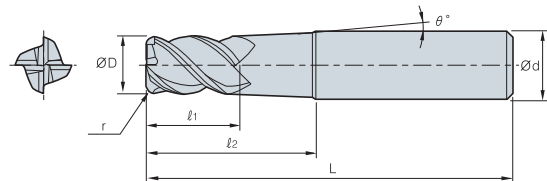
| Codigo | Flautas | R | ØD | Ød | Ød <sub>1</sub> | l <sub>1</sub> | l <sub>2</sub> | L |
|--------|---------|---|----|----|-----------------|----------------|----------------|---|
|        |         |   |    |    |                 |                |                |   |
|        |         |   |    |    |                 |                |                |   |



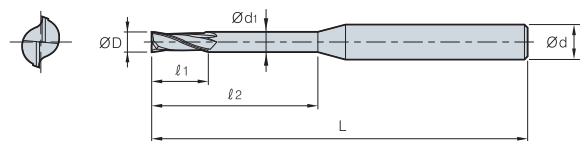
| Codigo | Flautas | R | ØD | Ød | l <sub>1</sub> | l <sub>2</sub> | L | θ° |
|--------|---------|---|----|----|----------------|----------------|---|----|
|        |         |   |    |    |                |                |   |    |
|        |         |   |    |    |                |                |   |    |



| Codigo | Flautas | ØD | Ød | Ød <sub>1</sub> | r | l <sub>1</sub> | l <sub>2</sub> | L |
|--------|---------|----|----|-----------------|---|----------------|----------------|---|
|        |         |    |    |                 |   |                |                |   |
|        |         |    |    |                 |   |                |                |   |



| Codigo | Flautas | ØD | r | Ød | l <sub>1</sub> | l <sub>2</sub> | L | θ° |
|--------|---------|----|---|----|----------------|----------------|---|----|
|        |         |    |   |    |                |                |   |    |
|        |         |    |   |    |                |                |   |    |



| Codigo | Flautas | ØD | Ød | Ød <sub>1</sub> | l <sub>1</sub> | l <sub>2</sub> | L |
|--------|---------|----|----|-----------------|----------------|----------------|---|
|        |         |    |    |                 |                |                |   |
|        |         |    |    |                 |                |                |   |

# G

## Brocas

Las brocas Korloy proporcionan una solución total para la fabricación de agujeros, basado en el know-how de herramientas, así como una amplia investigación y desarrollo de nuestras herramientas





## Información Técnica para Brocas

- G02 Índice de Brocas
- G04 Insertos disponibles

## Brocas Indexables

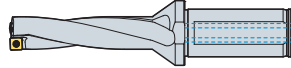
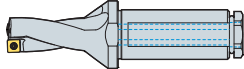

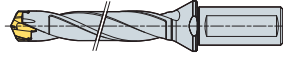












- G06 Información Técnica para King Drill
- G12 King Drill
- G21 Información Técnica para King Drill  
(Para el sistema de refrigerante perforante)
- G22 King Drill (Para el sistema de refrigerante perforante)
- G25 Información Técnica para King Drill  
(para taladrado de diámetro grande)
- G26 King Drill (para taladrado de diámetro grande)
- G27 Información Técnica para TPDC
- G31 TPDC
- G34 Información Técnica para TPDB Plus
- G38 TPDB Plus
- G44 Información Técnica para TPDB-H
- G47 TPDB-H
- G51 Información Técnica para WPDC
- G54 Center Drill
- G55 WPDC

## Brocas Solidas



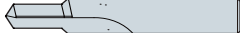









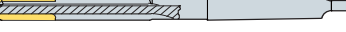



- G57 Información Técnica para Mach Solid Drill Plus
- G59 Mach Solid Drill Plus
- G64 Información Técnica para Mach Solid Drill Plus-S
- G66 Mach Solid Drill Plus-S
- G70 Información Técnica para Mach Solid Drill plus CFRP
- G72 Mach Solid Drill Plus CFRP
- G73 Información Técnica para Mach Solid Flat Drill
- G76 Mach Solid Flat Drill
- G82 Información Técnica para Mach long Drill Plus
- G84 Mach long Drill Plus
- G87 Modelo orden Mach step Drills
- G88 Información Técnica para Vulcan Drill
- G89 Vulcan Drill
- G91 Información Técnica para ESD Plus
- G93 ESD Plus
- G98 Información Técnica para Carbide Drill (SSDP)
- G99 Carbide Drill (SSDP)
- G101 Burnishing Drill
- G102 Top Solid Drill
- G103 PCD Drill
- G104 Información Técnica para Gun Drill
- G108 Gun Drill

## Escariadores

- G110 Información Técnica para Indexable Reamer
- G113 Indexable Reamer
- G116 Chucking/Machine Reamer
- G119 PCD Reamer
- G120 Cermet Reamer
- G121 Broach Reamer

| Tipo              | Código                                     |          | Forma   | Diámetro Broca | Dimensiones | Página    |
|-------------------|--|----------|---|----------------|-------------|-----------|
| Brocas Indexables | King Drill                                 | K□D      | <br>Placa Disponibles: SP□T, XO□T | Ø12.0~Ø60.5    | 2D~5D       | G12 ~ G20 |
|                   | King Drill HP                              | K□D..HP  | <br>Placa Disponibles: SP□T, XO□T | Ø12.0~Ø60.5    | 2D~4D       | G22 ~ G24 |
|                   | King Drill (taladrar para diámetro grande) | K□D      | <br>Placa Disponibles: SP□T, XO□T | Ø61.0~Ø100.0   | 2D~4D       | G26       |
|                   | TPDC <sup>new</sup>                        | TPDC     | <br>Placa Disponibles: TPD□□□□CP  | Ø12.0~Ø30.9    | 3D~12D      | G32 ~ G33 |
|                   | TPDB Plus <sup>new</sup>                   | TPDB-P   | <br>Placa Disponibles: TPD□□□B    | Ø10.0~Ø32.9    | 3D~12D      | G39 ~ G43 |
|                   | TPDB-H <sup>new</sup>                      | TPDB-H   | <br>Placa Disponibles: TPD□□□B-H  | Ø14.0~Ø30.4    | 3D~8D       | G48 ~ G50 |
|                   | Brocas Indexables y Brocas con centro      | WPDC     | <br>Placa Disponibles: WC□T     | Ø25.0~Ø80.0    | 5D~8D       | G55 ~ G56 |
| Brocas Solidas    | Mach Solid Drill Plus <sup>new</sup>       | MSDP     |                                 | Ø1.0~Ø20.0     | 3D~7D       | G59 ~ G63 |
|                   |  | MSDPH    |                                 | Ø2.5~Ø20.0     | 3D~7D       | G60 ~ G63 |
|                   | Mach Solid Drill Plus-S <sup>new</sup>     | MSDPH-S  |                                 | Ø3.0~Ø16.0     | 3D~5D       | G66 ~ G69 |
|                   | Mach Solid Drill Plus CFRP <sup>new</sup>  | MSDP-C   |                                 | Ø3.0~Ø12.7     | 5D          | G72       |
|                   | Mach Solid Flat Drill <sup>new</sup>       | MSFD     |                                 | Ø2.5~Ø16.0     | 2D          | G76 ~ G78 |
|                   |  | MSFDH    |                                 | Ø2.5~Ø16.0     | 3D          | G79 ~ G81 |
|                   | Mach Long Drill Plus <sup>new</sup>        | MLD□□□□N |                                 | Ø3.0~Ø10.0     | 10D~25D     | G84 ~ G86 |
|                   | Vulcan Drill                               | VZD      |                                 | Ø12.6~Ø40.5    | -           | G89 ~ G90 |
|                   | ESD Plus <sup>new</sup>                    | ESDP     |                                 | Ø1.0~Ø20.0     | 3D~7D       | G93 ~ G97 |



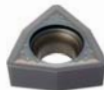
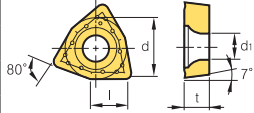

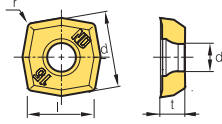

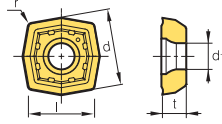

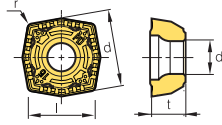

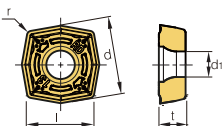
| Tipo           | Código                   |      | Forma   | Diámetro Broca | Dimensiones | Página     |
|----------------|--------------------------|------|---|----------------|-------------|------------|
| Brocas Solidas | Carbide Drill <b>new</b> | SSDP |                             | Ø1.0~Ø15.0     | -           | G99 ~ G100 |
|                | Burnishing Drill         | BDS  |                             | Ø4.0~Ø16.0     | 5D~7D       | G101       |
|                |                          | BDT  |                             | Ø4.2~Ø10.3     | 2D~4D       | G101       |
|                | Top solid Drill          | TSDM |                             | Ø8.0~Ø25.0     | 5D~8D       | G102       |
|                | PCD Drill                | PDD  |                             | Ø5.0~Ø12.0     | 5D          | G103       |
|                | Gun Drill                | KGDS |                             | Ø2.0~Ø33.0     | 50D~100D    | G108       |
|                |                          | KGDT |                            | Ø6.0~Ø26.5     | 50D~100D    | G109       |
| Escariadores   | Indexable Reamer         | IRT  | <br>Placa Disponibles: RI | Ø10.0~Ø31.0    | 3D~5D       | G114       |
|                |                          | IRB  | <br>Placa Disponibles: RI | Ø10.0~Ø31.0    | 3D~5D       | G115       |
|                | Chucking/Machine Reamer  | SCRS |                           | Ø5.0~Ø20.0     | 2D~3D       | G117       |
|                |                          | SCRH |                           | Ø5.0~Ø20.0     | 2D~3D       | G117       |
|                |                          | TCRS |                           | Ø7.0~Ø30.0     | 2D~3D       | G118       |
|                |                          | TMRS |                           | Ø7.0~Ø30.0     | 3D~5D       | G118       |
|                | PCD Reamer               | PDR  |                           | Ø5.0~Ø20.0     | 3D~5D       | G119       |
|                | Cermet Reamer            | KCR  |                           | Ø6.0~Ø30.0     | 3D~7D       | G120       |
|                | Broach Reamer            | HBRE |                           | Ø3.0~Ø25.0     | 3D~7D       | G121       |

## ➤ Insertos disponibles

| Imagen  | Código      | Recubierta |        |        |        |        |        |        |        | Sin Rec | Dimensiones (mm) |       |      |     |     | Geometría   | Página    |
|---|-------------|------------|--------|--------|--------|--------|--------|--------|--------|---------|------------------|-------|------|-----|-----|---|-----------|
|   |             | NC5330     | NCM535 | PC3700 | PC5335 | PC9530 | PC6510 | PC5300 | PC5400 |         | H01              | l     | d    | t   | r   |   |           |
|    | 040204-ND   |            |        |        |        |        |        |        |        | ●       | 4.7              | -     | 2.4  | 0.4 | 2.3 |    | G12 ~ G26 |
|   | 050204-ND   |            |        |        |        |        |        |        |        | ●       | 5.1              | -     | 2.4  | 0.4 | 2.3 |   |           |
|   | 060205-ND   |            |        |        |        |        |        |        |        | ●       | 6.2              | -     | 2.5  | 0.5 | 2.5 |   |           |
|   | 07T208-ND   |            |        |        |        |        |        |        |        | ●       | 7.5              | -     | 2.8  | 0.7 | 2.8 |   |           |
|   | 090308-ND   |            |        |        |        |        |        |        |        | ●       | 9.2              | -     | 3.3  | 0.8 | 3.4 |   |           |
|   | 11T308-ND   |            |        |        |        |        |        |        |        | ●       | 11.0             | -     | 4.0  | 0.8 | 4.0 |   |           |
|   | 130410-ND   |            |        |        |        |        |        |        |        | ●       | 13.0             | -     | 4.5  | 1.0 | 4.5 |   |           |
|   | 15M510-ND   |            |        |        |        |        |        |        |        | ●       | 15.2             | -     | 5.0  | 1.0 | 5.5 |   |           |
|   | 180510-ND   |            |        |        |        |        |        |        |        | ●       | 18.2             | -     | 5.5  | 1.0 | 6.0 |   |           |
|   | 060205-LD   |            |        |        | ●      |        |        |        |        |         | 6.2              | -     | 2.5  | 0.5 | 2.5 |   | G12 ~ G26 |
|   | 07T208-LD   |            |        |        | ●      |        |        |        |        |         | 7.5              | -     | 2.8  | 0.7 | 2.8 |   |           |
|   | 090308-LD   |            |        |        | ●      |        |        |        |        |         | 9.2              | -     | 3.3  | 0.8 | 3.4 |   |           |
|   | 11T308-LD   |            |        |        | ●      |        |        |        |        |         | 11.0             | -     | 4.0  | 0.8 | 4.0 |   |           |
|   | 130410-LD   |            |        |        | ●      |        |        |        |        |         | 13.0             | -     | 4.5  | 1.0 | 4.5 |   |           |
|   | 15M510-LD   |            |        |        | ●      |        |        |        |        |         | 15.2             | -     | 5.0  | 1.0 | 5.5 |   |           |
|   | 180510-LD   |            |        |        | ●      |        |        |        |        |         | 18.2             | -     | 5.5  | 1.0 | 6.0 |   |           |
|   |             |            |        |        |        |        |        |        |        |         |                  |       |      |     |     |   |           |
|  | 040204-PD   | ●          | ●      |        |        |        |        |        |        |         | 4.7              | -     | 2.4  | 0.4 | 2.3 |  | G12 ~ G26 |
|   | 050204-PD   | ●          | ●      |        |        |        |        |        |        |         | 5.1              | -     | 2.4  | 0.4 | 2.3 |   |           |
|   | 060205-PD   | ●          | ●      |        |        |        |        |        |        |         | 6.2              | -     | 2.5  | 0.5 | 2.5 |   |           |
|   | 07T208-PD   | ●          | ●      |        |        |        |        |        |        |         | 7.5              | -     | 2.8  | 0.7 | 2.8 |   |           |
|   | 090308-PD   | ●          | ●      |        |        |        |        |        |        |         | 9.2              | -     | 3.3  | 0.8 | 3.4 |   |           |
|   | 11T308-PD   | ●          | ●      |        |        |        |        |        |        |         | 11.0             | -     | 4.0  | 0.8 | 4.0 |   |           |
|   | 130410-PD   | ●          | ●      |        |        |        |        |        |        |         | 13.0             | -     | 4.5  | 1.0 | 4.5 |   |           |
|   | 15M510-PD   | ●          | ●      |        |        |        |        |        |        |         | 15.2             | -     | 5.0  | 1.0 | 5.5 |   |           |
|   | 180510-PD   | ●          | ●      |        |        |        |        |        |        |         | 18.2             | -     | 5.5  | 1.0 | 6.0 |   |           |
|  | 030208-C20N |            |        |        | ●      |        |        |        |        |         | 3.8              | 5.56  | 2.38 | 0.8 | 2.8 |  | -         |
|   | 040208-C20N |            |        |        | ●      |        |        |        |        |         | 4.3              | 6.35  | 2.38 | 0.8 | 3.0 |   |           |
|   | 050308-C20N |            |        |        | ●      |        |        |        |        |         | 5.4              | 7.94  | 3.18 | 0.8 | 3.4 |   |           |
|   | 06T308-C20N |            |        |        | ●      |        |        |        |        |         | 6.5              | 9.525 | 3.97 | 0.8 | 3.7 |   |           |
|   | 080408-C20N |            |        |        | ●      |        |        |        |        |         | 8.7              | 12.7  | 4.76 | 0.8 | 4.3 |   |           |
|   | 080412-C20N |            |        |        | ●      |        |        |        |        |         | 8.7              | 12.7  | 4.76 | 1.2 | 4.3 |   |           |
|   |             |            |        |        |        |        |        |        |        |         |                  |       |      |     |     |   |           |

●: En Almacen

**Insertos disponibles**

| Imagen  | Código      | Recubierta |        |        |        |        |        |        |        | Sin Rec | Dimensiones (mm) |       |      |     |                | Geometría   | Página       |
|---|-------------|------------|--------|--------|--------|--------|--------|--------|--------|---------|------------------|-------|------|-----|----------------|---|--------------|
|   |             | NC5330     | NCM535 | PC3700 | PC5335 | PC9530 | PC6510 | PC5300 | PC5400 |         | l                | d     | t    | r   | d <sub>1</sub> |   |              |
|    | 030204-C21N |            |        |        | ●      |        |        |        |        |         | 3.8              | 5.56  | 2.38 | 0.4 | 2.55           |    | G55<br>G56   |
|   | 040204-C21N |            |        |        | ●      |        |        |        |        |         | 4.3              | 6.35  | 2.38 | 0.4 | 2.8            |   |              |
|   | 040208-C21N |            |        |        | ●      |        |        |        |        |         | 4.3              | 6.35  | 2.38 | 0.8 | 2.8            |   |              |
|   | 050308-C21N |            |        |        | ●      |        |        |        |        |         | 5.4              | 7.94  | 3.18 | 0.8 | 3.4            |   |              |
|   | 06T308-C21N |            |        |        | ●      |        |        |        |        |         | 6.5              | 9.525 | 3.97 | 0.8 | 4.4            |   |              |
|   | 080408-C21N |            |        |        | ●      |        |        |        |        |         | 8.7              | 12.7  | 4.76 | 0.8 | 5.5            |   |              |
|    | 040204-ND   |            |        |        |        |        |        |        | ●      |         | 4.3              | 4.9   | 2.4  | 0.4 | 2.3            |    | G12 ~<br>G26 |
|   | 050204-ND   |            |        |        |        |        |        |        | ●      |         | 4.8              | 5.4   | 2.4  | 0.4 | 2.3            |   |              |
|   | 060204-ND   |            |        |        |        |        |        |        | ●      |         | 5.8              | 6.6   | 2.5  | 0.4 | 2.5            |   |              |
|   | 07T205-ND   |            |        |        |        |        |        |        | ●      |         | 6.9              | 7.8   | 2.8  | 0.5 | 2.8            |   |              |
|   | 090305-ND   |            |        |        |        |        |        |        | ●      |         | 8.4              | 9.6   | 3.3  | 0.5 | 3.4            |   |              |
|   | 11T306-ND   |            |        |        |        |        |        |        | ●      |         | 10.0             | 11.4  | 4.0  | 0.6 | 4.0            |   |              |
|   | 130406-ND   |            |        |        |        |        |        |        | ●      |         | 11.9             | 13.6  | 4.5  | 0.6 | 4.5            |   |              |
|   | 15M508-ND   |            |        |        |        |        |        |        | ●      |         | 13.9             | 15.9  | 5.0  | 0.8 | 5.5            |   |              |
| 180508-ND   |             |            |        |        |        |        |        | ●      |        | 16.5    | 18.9             | 5.5   | 0.8  | 6.0 |                |   |              |
|  | 060204-LD   |            |        |        | ●      |        |        |        |        |         | 5.8              | 6.6   | 2.5  | 0.4 | 2.5            |  | G12 ~<br>G26 |
|   | 07T205-LD   |            |        |        | ●      |        |        |        |        |         | 6.9              | 7.8   | 2.8  | 0.5 | 2.8            |   |              |
|   | 090305-LD   |            |        |        | ●      |        |        |        |        |         | 8.4              | 9.6   | 3.3  | 0.5 | 3.4            |   |              |
|   | 11T306-LD   |            |        |        | ●      |        |        |        |        |         | 10.0             | 11.4  | 4.0  | 0.6 | 4.0            |   |              |
|   | 130406-LD   |            |        |        | ●      |        |        |        |        |         | 11.9             | 13.6  | 4.5  | 0.6 | 4.5            |   |              |
|   | 15M508-LD   |            |        |        | ●      |        |        |        |        |         | 13.9             | 15.9  | 5.0  | 0.8 | 5.5            |   |              |
|   | 180508-LD   |            |        |        | ●      |        |        |        |        |         | 16.5             | 18.9  | 5.5  | 0.8 | 6.0            |   |              |
|   |             |            |        |        |        |        |        |        |        |         |                  |       |      |     |                |   |              |
|  | 040204-PD   |            |        |        |        |        |        |        | ●      |         | 4.3              | 4.9   | 2.4  | 0.4 | 2.3            |  | G12 ~<br>G26 |
|   | 050204-PD   |            |        |        |        |        |        |        | ●      |         | 4.8              | 5.4   | 2.4  | 0.4 | 2.3            |   |              |
|   | 060204-PD   |            |        |        |        |        |        |        | ●      |         | 5.8              | 6.6   | 2.5  | 0.4 | 2.5            |   |              |
|   | 07T205-PD   |            |        |        |        |        |        |        | ●      |         | 6.9              | 7.8   | 2.8  | 0.5 | 2.8            |   |              |
|   | 090305-PD   |            |        |        |        |        |        |        | ●      |         | 8.4              | 9.6   | 3.3  | 0.5 | 3.4            |   |              |
|   | 11T306-PD   |            |        |        |        |        |        |        | ●      |         | 10.0             | 11.4  | 4.0  | 0.6 | 4.0            |   |              |
|   | 130406-PD   |            |        |        |        |        |        |        | ●      |         | 11.9             | 13.6  | 4.5  | 0.6 | 4.5            |   |              |
|   | 15M508-PD   |            |        |        |        |        |        |        | ●      |         | 13.9             | 15.9  | 5.0  | 0.8 | 5.5            |   |              |
|   | 180508-PD   |            |        |        |        |        |        |        | ●      |         | 16.5             | 18.9  | 5.5  | 0.8 | 6.0            |   |              |
|   |             |            |        |        |        |        |        |        |        |         |                  |       |      |     |                |   |              |
|  | 07T207-RD   |            |        |        |        |        |        |        | ●      |         | 6.9              | 7.8   | 2.8  | 0.7 | 2.8            |  | G12 ~<br>G26 |
|   | 090308-RD   |            |        |        |        |        |        |        | ●      |         | 8.4              | 9.6   | 3.3  | 0.8 | 3.4            |   |              |
|   | 11T309-RD   |            |        |        |        |        |        |        | ●      |         | 10.0             | 11.4  | 4.0  | 0.9 | 4.0            |   |              |
|   | 130410-RD   |            |        |        |        |        |        |        | ●      |         | 11.9             | 13.6  | 4.5  | 1.0 | 4.5            |   |              |
|   | 15M511-RD   |            |        |        |        |        |        |        | ●      |         | 13.9             | 15.9  | 5.0  | 1.1 | 5.5            |   |              |
|   | 180512-RD   |            |        |        |        |        |        |        | ●      |         | 16.5             | 18.9  | 5.5  | 1.2 | 6.0            |   |              |

● : En Almacén

Diseño optimizado del Inserto para una eficiencia máxima de perforación

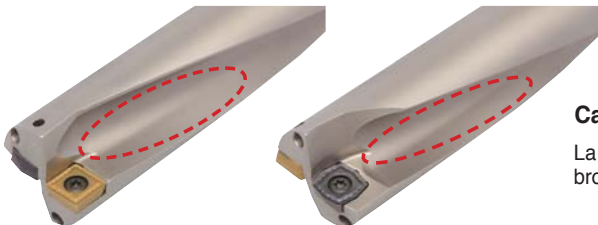
## King Drill

### ➤ Sistema de Codificación de la Herramienta

|                    |                          |                                |                            |  |   |                                     |
|--------------------|--------------------------|--------------------------------|----------------------------|--|---|-------------------------------------|
| K                  | 5D                       | 200                            | 25                         | □  | - | 07                                  |
| <b>KING/KORLOY</b> | <b>Dimensiones (L/D)</b> | <b>Diámetro de la Broca</b>    | <b>Una decimal marcada</b> | <b>Forma de mango</b>  |   | <b>Círculo Inscrito del Inserto</b> |
|                    | 2D, 3D, 4D, 5D           | Ø20.0<br>(Una decimal marcada) | Ø20, Ø25<br>Ø32, Ø40       | Sin marca: mango de Brida, Weldon<br>HP: mango de Brida, Weldon, PT Tap<br>F1: mango de Brida, Silbar Muesca<br>F2: mango de Brida, trabe lateral<br>S: mango Recto, Weldon<br>S1: mango Recto, Silbar Muesca<br>S2: mango Recto, Sin trabe lateral<br>M0, M1, M2, M3...: MT0, MT1, MT2, MT3...<br>H63, H100: HSK63, HSK100<br>B30, B40, B50: BT30, BT40, BT50 |   | 04, 05, 06, 07, 09<br>11 13, 15, 18 |

### ➤ Características

- Diseño Optimizado del Inserto para un máximo y eficiente barrenado
- Excelente rendimiento de corte y control de la viruta debido a la geometría optimizada y a las rompevirutas de ambos Insertos, central y periférico
- Insertos diferentes, optimizados para las posiciones centrales y periféricas con el fin de maximizar la vida útil de corte



#### Canales optimizados - 2 orificios de refrigerante aplicados

La forma optimizada del canal aumenta la rigidez del cuerpo de la broca y mejora la evacuación de viruta.

### ➤ Características de las geometrías

| Rompevirutas                 | PD  |                    | LD   |               | ND  |               | RD   |
|------------------------------|---|--------------------|--|---------------|---|---------------|--|
| <b>Características</b>       | - Universal<br>- Para velocidad y avance medios                 |                    | - Control de viruta superior para el mecanizado de acero suave y acero inoxidable<br>- Corte ligero (a velocidad baja ~ medio y bajo avance) |               | - Afilado filo para el mecanizado de aluminio.<br>- Cara del inserto pulida para un resultado de alta calidad.<br>- Tolerancia de clase E |               | - Mejora la resistencia al astillado.<br>- Excelente rendimiento en caso de fractura frecuente y astillado en el filo. |
| <b>Placa</b>                 | Placa periférica  | Placa central      | Placa periférica   | Placa central | Placa periférica  | Placa central | Placa central  |
| <b>Forma</b>                 |   |                    |  |               |   |               |  |
| <b>Calidades para piezas</b> | NC5330: P, M, K<br>PC3500: P<br>PC5300: P, M, K, S<br>PC6510: K | PC5300: P, M, K, S | PC5335: P, M   |               | H01: N  |               | PC5300: P, M, K, S   |

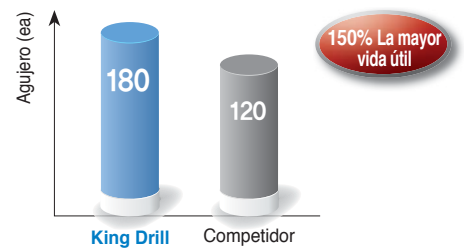


**Cadena de eslabones de arbusto**

- **Uso** Cadena de eslabones de arbusto
- **Material** SM45C
- **Condición de corte** vc (m/min) = 120, fn (mm/rev) = 0.1 por medio del sistema de refrigeración
- **Herramientas insertos** SPMT07T208-PD (PC3500)  
XOMT07T205-PD (PC5300)  
**Porta** K5D20025-07
- **Maquina** Drilling machine



■ **Resultado de la prueba**

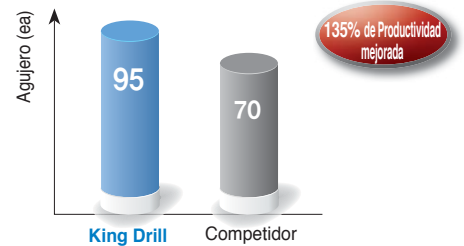


• Acabado superficial y evacuación de la viruta superior

- **Uso** Cadena de eslabones de arbusto
- **Material** SCM415H
- **Condición de corte** King Drill: vc (m/min) = 140, fn (mm/rev) = 0.12  
Competidor: vc (m/min) = 125, fn (mm/rev) = 0.1
- **Herramientas insertos** SPMT090308-PD (PC3500)  
XOMT090305-PD (PC5300)  
**Porta** K3D27032-09
- **Maquina** MCT



■ **Resultado de la prueba**



• Mayor productividad debido a las mayores capacidades para condiciones de corte más exigentes en comparación con la competencia

**Condiciones de Corte Recomendadas**

| Material                   |                                       | Inserto                               |              |               | vc (m/min)  | Dimensiones (L/D) = 2D, 3D, 4D                         |               |           |           |           |           |           |
|----------------------------|---------------------------------------|---------------------------------------|--------------|---------------|-------------|--|---------------|-----------|-----------|-----------|-----------|-----------|
| ISO                        | Materiales pieza de trabajo           | Dureza (HB)                           | Rompevirutas | Grado         |             | Avance (mm/rev) Dependiendo del Diam. de la broca (mm) |               |           |           |           |           |           |
|                            |                                       |                                       |              | Placa central |             | Placa periférica                                       | Ø12~Ø16       | Ø17~Ø23   | Ø24~Ø29   | Ø30~Ø42   | Ø43~Ø60   |           |
| P                          | Acero al Carbón                       | 80~180                                | LD           | PC5335        | PC5335      | 120 (60~170)   |               |           |           |           |           |           |
|                            |                                       |                                       | PD/RD        | PC5300        | PC3500      | 150 (120~180)  | 0.04~0.08     | 0.04~0.08 | 0.04~0.08 | 0.04~0.08 | 0.04~0.08 |           |
|                            |                                       |                                       |              |               | NC5330      | 180 (140~220)  |               |           |           |           |           |           |
|                            | Acero Alto en Carbón                  | 180~280                               | PD           | PC5300        | PC3500      | 120 (90~150)   | 0.04~0.10     | 0.04~0.12 | 0.05~0.16 | 0.06~0.16 | 0.06~0.18 |           |
|                            |                                       |                                       |              |               | NC5330      | 150 (110~190)  | 0.04~0.06     | 0.04~0.07 | 0.04~0.08 | 0.04~0.08 | 0.04~0.08 |           |
|                            |                                       |                                       |              |               |             |  |               |           |           |           |           |           |
| Aleación de Acero          | Aleación baja en Acero                | 140~260                               | LD           | PC5335        | PC5335      | 120 (60~160)   | 0.06~0.10     | 0.06~0.10 | 0.06~0.12 | 0.06~0.14 | 0.06~0.14 |           |
|                            |                                       |                                       | PD           | PC5300        | PC3500      | 150 (120~170)  | 0.06~0.12     | 0.06~0.12 | 0.06~0.14 | 0.06~0.16 | 0.06~0.16 |           |
|                            |                                       |                                       | NC5330       | 180 (140~210) | 0.06~0.08   | 0.06~0.08  | 0.06~0.10     | 0.06~0.12 | 0.06~0.12 |           |           |           |
|                            | Aleación baja en Acero Pre-endurecido | 200~400                               | PD           | PC5300        | PC5300      | 100 (50~150)   | 0.04~0.10     | 0.06~0.10 | 0.06~0.12 | 0.06~0.14 | 0.06~0.14 |           |
|                            | Aleación baja en Acero                | 260~320                               | PD           | PC5300        | PC3500      | 100 (50~160)   | 0.05~0.11     | 0.05~0.11 | 0.05~0.13 | 0.05~0.15 | 0.05~0.15 |           |
| Acero Altamente Endurecido | 300~450                               | PD                                    | PC5300       | PC5300        | 70 (30~120) | 0.04~0.08  | 0.06~0.08     | 0.06~0.10 | 0.06~0.12 | 0.06~0.12 |           |           |
| M                          | Acero Inoxidable                      | Acero Inoxidable                      | 135-275      | LD            | PD5335      | PC5335   | 120 (80~140)  | 0.04~0.07 | 0.04~0.07 | 0.04~0.07 | 0.04~0.08 | 0.04~0.08 |
|                            |                                       |                                       |              | PD            | PC5300      | PC5300   | 130 (100~160) | 0.04~0.07 | 0.04~0.07 | 0.04~0.07 | 0.04~0.08 | 0.04~0.08 |
| K                          | Fundición                             | Fundición Gris                        | 150~230      | PD            | PC5300      | PC6510   | 190 (150~250) | 0.04~0.12 | 0.05~0.14 | 0.06~0.18 | 0.10~0.22 | 0.10~0.26 |
|                            |                                       | Fundición Dúctil                      | 150~230      | PD            | PC5300      | PC6510   | 130 (100~160) | 0.04~0.07 | 0.04~0.08 | 0.04~0.10 | 0.05~0.12 | 0.05~0.12 |
| S                          | Aleaciones Resistentes al Calor       | Aleaciones de Ni Resistentes al calor | 130~400      | PD            | PC5300      | PC5300   | 50 (30~100)   | 0.04~0.10 | 0.04~0.10 | 0.04~0.10 | 0.04~0.10 | 0.04~0.10 |
|                            |                                       | Aleaciones de Ti Resistentes al calor | 130~400      | LD            | PC5335      | PC5335   | 60 (40~80)    | 0.04~0.08 | 0.04~0.10 | 0.06~0.12 | 0.06~0.14 | 0.06~0.16 |
|                            |                                       |                                       |              | PD            | PC5300      | PC5300   | 60 (40~80)    | 0.04~0.08 | 0.04~0.10 | 0.06~0.12 | 0.06~0.14 | 0.06~0.16 |
|                            |                                       | Acero Altamente Endurecido            | sobre 400    | PD            | PC5300      | PC5300   | 40 (20~80)    | 0.04~0.05 | 0.04~0.06 | 0.04~0.08 | 0.04~0.08 | 0.04~0.08 |
| N                          | Aleación de Aluminio                  | Aleación de Aluminio                  | 30~150       | ND            | H01         | H01  | 300 (250~400) | 0.05~0.14 | 0.06~0.16 | 0.10~0.20 | 0.10~0.22 | 0.12~0.25 |
|                            |                                       | Aleación de Cobre                     | 150-160      | ND            | H01         | H01  | 250 (200~300) | 0.05~0.14 | 0.06~0.16 | 0.10~0.20 | 0.10~0.22 | 0.12~0.25 |

• En caso de 5D, reducir 70~80% la condición de corte de la broca anterior  
 • En maquinado interrumpido, reducir 30~50% del avance de la broca anterior maquinando alrededor de la parte interrumpida

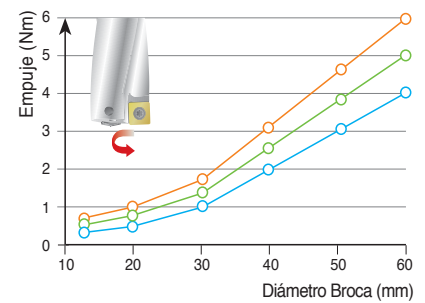
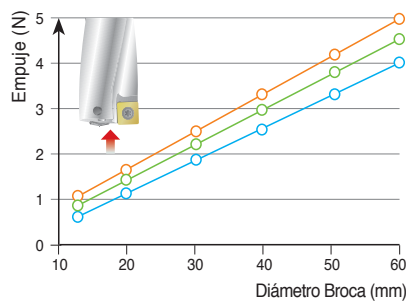
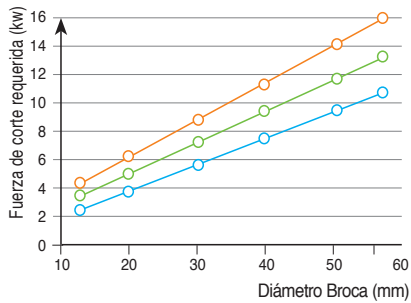


## ➤ Fuerza de corte requerida

- Los gráficos siguientes muestran la fuerza de corte requerida en la perforación
- Maquinado con una King Drill y una máquina con una alta rigidez y poder

- **Pieza de Trabajo** SCM440 (240HB)
- **Condición**  $vc$  (m/min) = 100, Con Sistema de Refrigeración Interna de corte

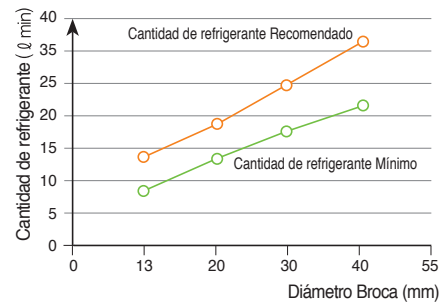
—○—  $fn$  (mm/rev) = 0.13    
 —○—  $fn$  (mm/rev) = 0.10    
 —○—  $fn$  (mm/rev) = 0.07



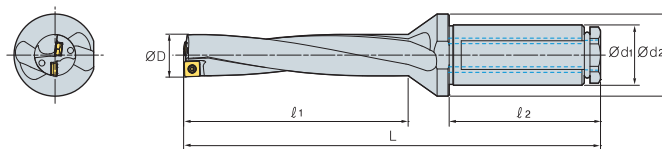
## ➤ Cantidad de refrigerante en el corte

- **Pieza de Trabajo** SCM440 (240HB)
- **Condición**  $vc$  (m/min) = 100, Con Sistema de Refrigeración Interna de corte

- Presión de refrigerante recomendada: alrededor de 5kg/cm<sup>2</sup>
- Los datos de la gráfica anterior se podría cambiar dependiendo de la pieza de trabajo y la condición de corte

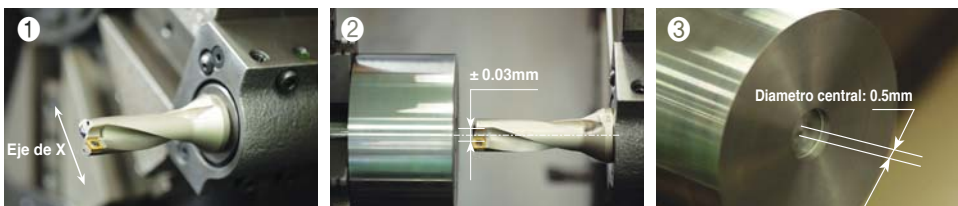


## ➤ Tolerancia de la Broca y del Barreno



| Diámetro de la Broca |                             | Ø12~Ø29     | Ø30~Ø45    | Ø46~Ø60.5   |
|----------------------|-----------------------------|-------------|------------|-------------|
| 2D~3D                | Tolerancia de la Broca (ØD) | 0~-0.15     | 0~-0.15    | 0~-0.15     |
|                      | Tolerancia del Barreno      | +0.2~-0.1   | +0.25~-0.1 | +0.28~-0.1  |
| 4D~5D                | Tolerancia de la Broca (ØD) | 0~-0.15     | 0~-0.15    | 0~-0.15     |
|                      | Tolerancia del Barreno      | +0.25~-0.05 | +0.3~-0.05 | +0.33~-0.05 |

## ➤ Aviso para configuración de la broca en el torno



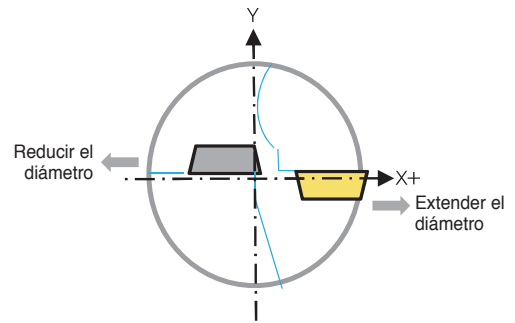
- Establezca el Inserto periférico en paralelo al eje X. (basado en un bloqueo lateral)
- Si el núcleo maquinado es de 0.5 mm después del mecanizado de 5mm, es el ajuste apropiado

※ Por favor, asegúrese de que la ubicación de la traba interna de seguridad ya que puede ser diferente en función de los fabricantes de maquinaria



## El rango de ajustar el diámetro de mecanizado en torno

- En el torneado, el King Drill puede extender y reducir diámetro de mecanizado moviéndose a X axis. Favor de referir a la table que muestra el rango de ajustar diámetro de taladro abajo
- Más el diámetro de taladro se extiende o se reduce , más la broca pierde la balance de taladro



| Dia de broca (Ø) | El rango de ajustar diámetro de taladro (Ø) | Dia de broca (Ø) | El rango de ajustar diámetro de taladro (Ø) | Dia de broca (Ø) | El rango de ajustar diámetro de taladro (Ø) | Dia de broca (Ø) | El rango de ajustar diámetro de taladro (Ø) |
|------------------|---|------------------|---|------------------|---|------------------|---|
| 12.0             | 11.7~12.4                                   | 24.5             | 23.9~25.1                                   | 37.0             | 36.3~37.7                                   | 49.5             | 48.7~50.2                                   |
| 12.5             | 12.2~12.9                                   | 25.0             | 24.4~25.6                                   | 37.5             | 36.8~38.2                                   | 50.0             | 49.2~50.7                                   |
| 13.0             | 12.7~13.4                                   | 25.5             | 24.9~26.1                                   | 38.0             | 37.3~38.7                                   | 50.5             | 49.7~51.2                                   |
| 13.5             | 13.2~13.9                                   | 26.0             | 25.4~26.6                                   | 38.5             | 37.8~39.2                                   | 51.0             | 50.2~51.7                                   |
| 14.0             | 13.6~14.5                                   | 26.5             | 25.9~27.1                                   | 39.0             | 38.3~39.7                                   | 51.5             | 50.7~52.2                                   |
| 14.5             | 14.1~15.0                                   | 27.0             | 26.4~27.6                                   | 39.5             | 38.8~40.2                                   | 52.0             | 51.2~52.7                                   |
| 15.0             | 14.6~15.5                                   | 27.5             | 26.9~28.1                                   | 40.0             | 39.3~40.7                                   | 52.5             | 51.7~53.2                                   |
| 15.5             | 15.1~16.0                                   | 27.8             | 27.4~28.6                                   | 40.5             | 39.8~41.2                                   | 53.0             | 52.2~53.7                                   |
| 16.0             | 15.6~16.5                                   | 28.5             | 27.9~29.1                                   | 41.0             | 40.3~41.7                                   | 53.5             | 52.7~54.2                                   |
| 16.5             | 16.0~17.0                                   | 29.0             | 28.4~29.6                                   | 41.5             | 40.8~42.2                                   | 54.0             | 53.2~54.7                                   |
| 17.0             | 16.5~17.5                                   | 29.5             | 28.9~30.1                                   | 42.0             | 41.3~42.7                                   | 54.5             | 53.7~55.2                                   |
| 17.5             | 17.0~18.0                                   | 30.0             | 29.3~30.7                                   | 42.5             | 41.8~43.2                                   | 55.0             | 54.2~55.7                                   |
| 18.0             | 17.5~18.5                                   | 30.5             | 29.8~31.2                                   | 43.0             | 42.2~43.7                                   | 55.5             | 54.7~56.2                                   |
| 18.5             | 18.0~19.0                                   | 31.0             | 30.3~31.7                                   | 43.5             | 42.7~44.2                                   | 56.0             | 55.2~56.7                                   |
| 19.0             | 18.5~19.5                                   | 31.5             | 30.8~32.2                                   | 44.0             | 43.2~44.7                                   | 56.5             | 55.7~57.2                                   |
| 19.5             | 19.0~20.0                                   | 32.0             | 31.3~32.7                                   | 44.5             | 43.7~45.2                                   | 57.0             | 56.2~57.7                                   |
| 20.0             | 19.4~20.6                                   | 32.5             | 31.8~33.2                                   | 45.0             | 44.2~45.7                                   | 57.5             | 56.7~58.2                                   |
| 20.5             | 19.9~21.1                                   | 33.0             | 32.3~33.7                                   | 45.5             | 44.7~46.2                                   | 58.0             | 57.2~58.7                                   |
| 21.0             | 20.4~21.6                                   | 33.5             | 32.8~34.2                                   | 46.0             | 45.2~46.7                                   | 58.5             | 57.7~59.2                                   |
| 21.5             | 20.9~22.1                                   | 34.0             | 33.3~34.7                                   | 46.5             | 45.7~47.2                                   | 59.0             | 58.2~59.7                                   |
| 22.0             | 21.4~22.6                                   | 34.5             | 33.8~35.2                                   | 47.0             | 46.2~47.7                                   | 59.5             | 58.7~60.2                                   |
| 22.5             | 21.9~23.1                                   | 35.0             | 34.3~35.7                                   | 47.5             | 46.7~48.2                                   | 60.0             | 59.2~60.7                                   |
| 23.0             | 22.4~23.6                                   | 35.5             | 34.8~36.2                                   | 48.0             | 47.2~48.7                                   | 60.5             | 59.7~61.2                                   |
| 23.5             | 22.9~24.1                                   | 36.0             | 35.3~36.7                                   | 48.5             | 47.7~49.2                                   |                  |   |
| 24.0             | 23.4~24.6                                   | 36.5             | 35.8~37.2                                   | 49.0             | 48.2~49.7                                   |                  |   |

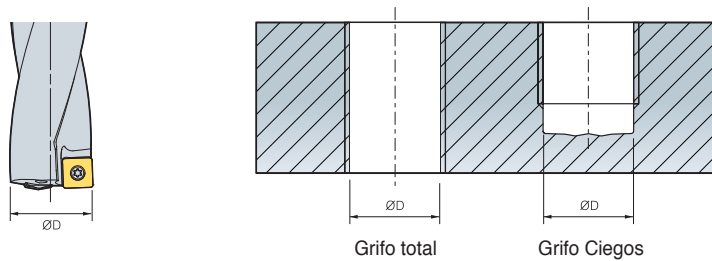
## Placa y piezas de repuesto

| Diámetro de la Broca (mm) | Placa Periférico | Placa central | Tornillo   | Llave    | Empuje (N·m) |
|---------------------------|------------------|---------------|------------|----------|--------------|
| Ø12.0~Ø13.5               | SP□T040204-□□    | XO□T040204-□□ | FTNA0204   | TW06P    | 0.4          |
| Ø13.6~Ø16.0               | SP□T050204-□□    | XO□T050204-□□ | FTNA0204   | TW06P    | 0.4          |
| Ø16.1~Ø19.5               | SP□T060205-□□    | XO□T060204-□□ | FTKA02206S | TW07P    | 0.8          |
| Ø19.6~Ø23.5               | SP□T07T208-□□    | XO□T07T205-□□ | FTKA02565  | TW07S    | 0.8          |
| Ø23.6~Ø29.5               | SP□T090308-□□    | XO□T090305-□□ | FTKA0307   | TW09S    | 1.2          |
| Ø29.6~Ø35.5               | SP□T11T308-□□    | XO□T11T306-□□ | FTKA03508  | TW15S    | 3            |
| Ø35.6~Ø42.5               | SP□T130410-□□    | XO□T130406-□□ | FTKA0410   | TW15S    | 3            |
| Ø42.6~Ø50.5               | SP□T15M510-□□    | XO□T15M508-□□ | FTNC04511  | TW20S    | 5            |
| Ø50.6~Ø60.5               | SP□T180510-□□    | XO□T180508-□□ | FTNA0511   | TW20-100 | 5            |

- En la fijación del Inserto, limpie el asiento y aplicar el CASMOLY 1000 en el tornillo
- Asegúrese de utilizar tornillos Korloy solamente

## King Drill - para mecanizar un grifo de agujero fundamental

- Hay dos tipos de especificaciones de grifo, métrico y inch. El King Drill es disponible para mecanizar grifo ciego y grifo total

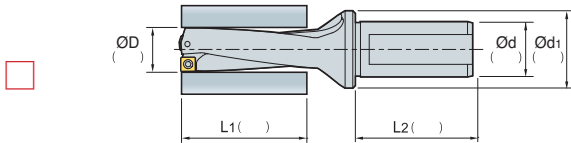
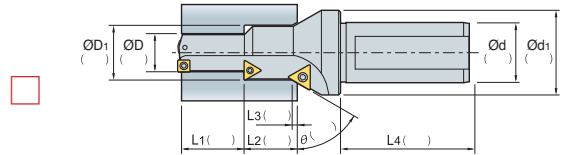
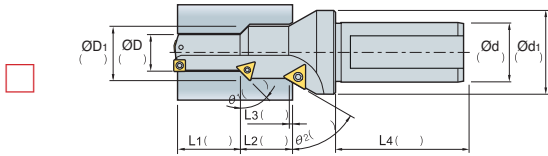
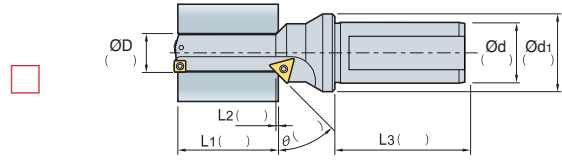
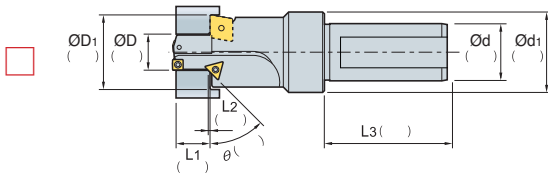


(mm)

| Tipo de grifo | Rosca       | ØD   | Código      | Referencia |
|---------------|-------------|------|-------------|------------|
| Métrico       | M14 x 2.0   | 12.0 | K3D12020-04 | G14        |
|               | M16 x 2.0   | 14.0 | K3D14020-05 | G14        |
|               | M18 x 2.5   | 15.5 | K3D15520-05 | G14        |
|               | M20 x 2.5   | 17.5 | K3D17525-06 | G14        |
|               | M22 x 2.5   | 19.5 | K3D19525-06 | G14        |
|               | M24 x 3.0   | 21.0 | K3D21025-07 | G14        |
|               | M27 x 3.0   | 24.0 | K3D24032-09 | G14        |
|               | M30 x 3.5   | 26.5 | K3D26532-09 | G14        |
|               | M33 x 4.0   | 29.0 | K3D29032-09 | G14        |
|               | M36 x 4.0   | 32.0 | K3D32032-11 | G15        |
|               | M39 x 4.0   | 35.0 | K3D35032-11 | G15        |
|               | M42 x 4.5   | 37.5 | K3D37540-13 | G15        |
| Pulgada       | 9/16-12 UNC | 12.2 | K3D12220-04 | G14        |
|               | 5/8-11 UNC  | 13.5 | K3D13520-04 | G14        |
|               | 3/4-10 UNC  | 16.5 | K3D16525-06 | G14        |
|               | 7/8-9 UNC   | 19.5 | K3D19525-06 | G14        |
|               | 9/16-18 UNF | 12.9 | K3D12920-04 | G14        |
|               | 5/8-18 UNF  | 14.5 | K3D14520-05 | G14        |
|               | 3/4-16 UNF  | 17.5 | K3D17525-06 | G14        |



**Formato Orden Especial de Brocas**



**■ Tipo de refrigerante**

Refrigerante con toma estándar     Refrigerante sin toma estándar     Sin refrigerante

**■ Tipo de Agujero**

Agujero ciego     Agujero total

**■ Tipos de mango**

Tipo Recto

Tipo Weldon

Tipo Whisthe Notch

**■ Posición del Perno de Sujeción**

Paralelo al Inserto Periférico (Estándar)

A 90° del Inserto Periférico (Estándar)

A 180° del Inserto Periférico (Estándar)

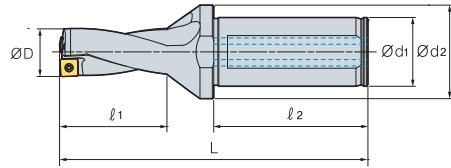
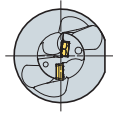
A 270° del Inserto Periférico (Estándar)

**■ Nota**

- Herramienta usada Actualmente:
- Condición de corte Actual
  - RPM or vc (m/min):
  - vf (mm/min) or fn (mm/rev):
  - Profundidad de corte (mm):

- estándar de medición duración de la herramienta:
- Maquina usada Actualmente
  - Centro de maquinado:
  - Torno Convencional:
  - Torno CNC:

# King Drill (2D)



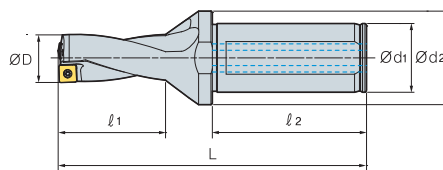
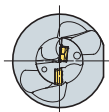
(mm)

| Código     | ØD   | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L   | Placa                          | Tornillo   | Llave |
|------------|------|-----------------|-----------------|----------------|----------------|-----|--------------------------------|------------|-------|
| <b>K2D</b> |      |                 |                 |                |                |     |                                |            |       |
| 12020-04   | 12.0 | 20              | 25              | 27             | 50             | 91  | SP□T040204-□□<br>XO□T040204-□□ | FTNA0204   | TW06P |
| 12520-04   | 12.5 | 20              | 25              | 27             | 50             | 91  |                                |            |       |
| 13020-04   | 13.0 | 20              | 25              | 29             | 50             | 93  |                                |            |       |
| 13520-04   | 13.5 | 20              | 25              | 29             | 50             | 93  | SP□T050204-□□<br>XO□T050204-□□ | FTNA0204   | TW06P |
| 14020-05   | 14.0 | 20              | 25              | 31             | 50             | 96  |                                |            |       |
| 14520-05   | 14.5 | 20              | 25              | 31             | 50             | 96  |                                |            |       |
| 15020-05   | 15.0 | 20              | 25              | 33             | 50             | 99  |                                |            |       |
| 15520-05   | 15.5 | 20              | 25              | 33             | 50             | 99  |                                |            |       |
| 16020-05   | 16.0 | 20              | 25              | 35             | 50             | 101 |                                |            |       |
| 16525-06   | 16.5 | 25              | 34              | 35             | 56             | 107 | SP□T060205-□□<br>XO□T060204-□□ | FTKA02206S | TW07P |
| 17025-06   | 17.0 | 25              | 34              | 37             | 56             | 109 |                                |            |       |
| 17525-06   | 17.5 | 25              | 34              | 37             | 56             | 109 |                                |            |       |
| 18025-06   | 18.0 | 25              | 34              | 39             | 56             | 112 |                                |            |       |
| 18525-06   | 18.5 | 25              | 34              | 39             | 56             | 112 |                                |            |       |
| 19025-06   | 19.0 | 25              | 34              | 41             | 56             | 114 |                                |            |       |
| 19525-06   | 19.5 | 25              | 34              | 41             | 56             | 114 | SP□T07T208-□□<br>XO□T07T205-□□ | FTKA02565  | TW07S |
| 20025-07   | 20.0 | 25              | 34              | 43             | 56             | 118 |                                |            |       |
| 20525-07   | 20.5 | 25              | 34              | 43             | 56             | 118 |                                |            |       |
| 21025-07   | 21.0 | 25              | 34              | 45             | 56             | 120 |                                |            |       |
| 21525-07   | 21.5 | 25              | 34              | 45             | 56             | 120 |                                |            |       |
| 22025-07   | 22.0 | 25              | 34              | 47             | 56             | 122 |                                |            |       |
| 22525-07   | 22.5 | 25              | 34              | 47             | 56             | 122 | SP□T090308-□□<br>XO□T090305-□□ | FTKA0307   | TW09S |
| 23025-07   | 23.0 | 25              | 34              | 49             | 56             | 126 |                                |            |       |
| 23525-07   | 23.5 | 25              | 34              | 49             | 56             | 126 |                                |            |       |
| 24032-09   | 24.0 | 32              | 44              | 51             | 60             | 133 |                                |            |       |
| 24532-09   | 24.5 | 32              | 44              | 51             | 60             | 133 |                                |            |       |
| 25032-09   | 25.0 | 32              | 44              | 53             | 60             | 135 |                                |            |       |
| 25532-09   | 25.5 | 32              | 44              | 53             | 60             | 135 | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
| 26032-09   | 26.0 | 32              | 44              | 55             | 60             | 137 |                                |            |       |
| 26532-09   | 26.5 | 32              | 44              | 55             | 60             | 137 |                                |            |       |
| 27032-09   | 27.0 | 32              | 44              | 57             | 60             | 140 |                                |            |       |
| 27532-09   | 27.5 | 32              | 44              | 57             | 60             | 140 |                                |            |       |
| 28032-09   | 28.0 | 32              | 44              | 59             | 60             | 143 |                                |            |       |
| 28532-09   | 28.5 | 32              | 44              | 59             | 60             | 143 | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
| 29032-09   | 29.0 | 32              | 44              | 61             | 60             | 145 |                                |            |       |
| 29532-09   | 29.5 | 32              | 44              | 61             | 60             | 145 |                                |            |       |
| 30032-11   | 30.0 | 32              | 44              | 63             | 60             | 150 |                                |            |       |
| 30532-11   | 30.5 | 32              | 44              | 63             | 60             | 150 |                                |            |       |
| 31032-11   | 31.0 | 32              | 44              | 65             | 60             | 152 |                                |            |       |
| 31532-11   | 31.5 | 32              | 44              | 65             | 60             | 152 | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
| 32032-11   | 32.0 | 32              | 44              | 67             | 60             | 154 |                                |            |       |
| 32532-11   | 32.5 | 32              | 44              | 67             | 60             | 154 |                                |            |       |
| 33032-11   | 33.0 | 32              | 44              | 69             | 60             | 157 |                                |            |       |
| 33532-11   | 33.5 | 32              | 44              | 69             | 60             | 157 |                                |            |       |
| 34032-11   | 34.0 | 32              | 44              | 71             | 60             | 159 |                                |            |       |
| 34532-11   | 34.5 | 32              | 44              | 71             | 60             | 159 | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
| 35032-11   | 35.0 | 32              | 44              | 73             | 60             | 161 |                                |            |       |
| 35532-11   | 35.5 | 32              | 44              | 73             | 60             | 161 |                                |            |       |

Placas Disponibles G04-05

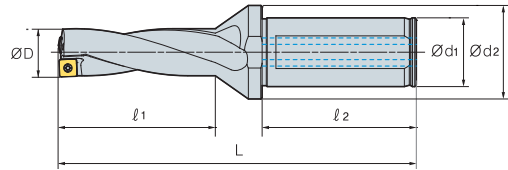
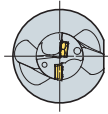


# King Drill (2D)



|     |          |      |                 |                 |                |                |     | (mm)                           |           |          |
|-----|----------|------|-----------------|-----------------|----------------|----------------|-----|--------------------------------|-----------|----------|
| K2D | Código   | ØD   | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L   | Placa                          | Tornillo  | Llave    |
|     |          |      |                 |                 |                |                |     |                                |           |          |
|     | 36040-13 | 36.0 | 40              | 48              | 76             | 70             | 176 | SP□T130410-□□<br>XO□T130406-□□ | FTKA0410  | TW15S    |
|     | 36540-13 | 36.5 | 40              | 48              | 76             | 70             | 176 |                                |           |          |
|     | 37040-13 | 37.0 | 40              | 48              | 78             | 70             | 178 |                                |           |          |
|     | 37540-13 | 37.5 | 40              | 48              | 78             | 70             | 178 |                                |           |          |
|     | 38040-13 | 38.0 | 40              | 48              | 80             | 70             | 181 |                                |           |          |
|     | 38540-13 | 38.5 | 40              | 48              | 80             | 70             | 181 |                                |           |          |
|     | 39040-13 | 39.0 | 40              | 48              | 82             | 70             | 183 |                                |           |          |
|     | 39540-13 | 39.5 | 40              | 48              | 82             | 70             | 183 |                                |           |          |
|     | 40040-13 | 40.0 | 40              | 48              | 84             | 70             | 186 |                                |           |          |
|     | 40540-13 | 40.5 | 40              | 48              | 84             | 70             | 186 |                                |           |          |
|     | 41040-13 | 41.0 | 40              | 48              | 86             | 70             | 188 |                                |           |          |
|     | 41540-13 | 41.5 | 40              | 48              | 86             | 70             | 188 |                                |           |          |
|     | 42040-13 | 42.0 | 40              | 48              | 88             | 70             | 191 |                                |           |          |
|     | 42540-13 | 42.5 | 40              | 48              | 88             | 70             | 191 |                                |           |          |
|     | 43040-15 | 43.0 | 40              | 58              | 91             | 70             | 196 | SP□T15M510-□□<br>XO□T15M508-□□ | FTNC04511 | TW20S    |
|     | 43540-15 | 43.5 | 40              | 58              | 91             | 70             | 196 |                                |           |          |
|     | 44040-15 | 44.0 | 40              | 58              | 93             | 70             | 198 |                                |           |          |
|     | 44540-15 | 44.5 | 40              | 58              | 93             | 70             | 198 |                                |           |          |
|     | 45040-15 | 45.0 | 40              | 58              | 95             | 70             | 201 |                                |           |          |
|     | 45540-15 | 45.5 | 40              | 58              | 95             | 70             | 201 |                                |           |          |
|     | 46040-15 | 46.0 | 40              | 58              | 97             | 70             | 203 |                                |           |          |
|     | 46540-15 | 46.5 | 40              | 58              | 97             | 70             | 203 |                                |           |          |
|     | 47040-15 | 47.0 | 40              | 58              | 99             | 70             | 206 |                                |           |          |
|     | 47540-15 | 47.5 | 40              | 58              | 99             | 70             | 206 |                                |           |          |
|     | 48040-15 | 48.0 | 40              | 58              | 101            | 70             | 208 |                                |           |          |
|     | 48540-15 | 48.5 | 40              | 58              | 101            | 70             | 208 |                                |           |          |
|     | 49040-15 | 49.0 | 40              | 58              | 103            | 70             | 210 |                                |           |          |
|     | 49540-15 | 49.5 | 40              | 58              | 103            | 70             | 210 |                                |           |          |
|     | 50040-15 | 50.0 | 40              | 58              | 105            | 70             | 212 |                                |           |          |
|     | 50540-15 | 50.5 | 40              | 58              | 105            | 70             | 212 |                                |           |          |
|     | 51040-18 | 51.0 | 40              | 68              | 108            | 70             | 218 | SP□T180510-□□<br>XO□T180508-□□ | FTNA0511  | TW20-100 |
|     | 51540-18 | 51.5 | 40              | 68              | 108            | 70             | 218 |                                |           |          |
|     | 52040-18 | 52.0 | 40              | 68              | 110            | 70             | 220 |                                |           |          |
|     | 52540-18 | 52.5 | 40              | 68              | 110            | 70             | 220 |                                |           |          |
|     | 53040-18 | 53.0 | 40              | 68              | 112            | 70             | 222 |                                |           |          |
|     | 53540-18 | 53.5 | 40              | 68              | 112            | 70             | 222 |                                |           |          |
|     | 54040-18 | 54.0 | 40              | 68              | 114            | 70             | 224 |                                |           |          |
|     | 54540-18 | 54.5 | 40              | 68              | 114            | 70             | 224 |                                |           |          |
|     | 55040-18 | 55.0 | 40              | 68              | 116            | 70             | 226 |                                |           |          |
|     | 55540-18 | 55.5 | 40              | 68              | 116            | 70             | 226 |                                |           |          |
|     | 56040-18 | 56.0 | 40              | 68              | 118            | 70             | 230 |                                |           |          |
|     | 56540-18 | 56.5 | 40              | 68              | 118            | 70             | 230 |                                |           |          |
|     | 57040-18 | 57.0 | 40              | 68              | 121            | 70             | 233 |                                |           |          |
|     | 57540-18 | 57.5 | 40              | 68              | 121            | 70             | 233 |                                |           |          |
|     | 58040-18 | 58.0 | 40              | 68              | 124            | 70             | 236 |                                |           |          |
|     | 58540-18 | 58.5 | 40              | 68              | 124            | 70             | 236 |                                |           |          |
|     | 59040-18 | 59.0 | 40              | 68              | 127            | 70             | 239 |                                |           |          |
|     | 59540-18 | 59.5 | 40              | 68              | 127            | 70             | 239 |                                |           |          |
|     | 60040-18 | 60.0 | 40              | 68              | 130            | 70             | 242 |                                |           |          |
|     | 60540-18 | 60.5 | 40              | 68              | 130            | 70             | 242 |                                |           |          |

# King Drill (3D)



(mm)

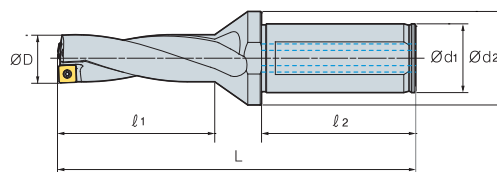
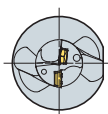
| Código     | ØD   | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L   | Placa                          | Tornillo  | Llave |
|------------|------|-----------------|-----------------|----------------|----------------|-----|--------------------------------|-----------|-------|
| <b>K3D</b> |      |                 |                 |                |                |     |                                |           |       |
| 12020-04 * | 12.0 | 20              | 25              | 39             | 50             | 103 | SP□T040204-□□<br>XO□T040204-□□ | FTNA0204  | TW06P |
| 12220-04   | 12.2 | 20              | 25              | 39             | 50             | 103 |                                |           |       |
| 12520-04   | 12.5 | 20              | 25              | 39             | 50             | 103 |                                |           |       |
| 12920-04   | 12.9 | 20              | 25              | 42             | 50             | 106 |                                |           |       |
| 13020-04   | 13.0 | 20              | 25              | 42             | 50             | 106 |                                |           |       |
| 13520-04   | 13.5 | 20              | 25              | 42             | 50             | 106 |                                |           |       |
| 14020-05 * | 14.0 | 20              | 25              | 45             | 50             | 110 | SP□T050204-□□<br>XO□T050204-□□ | FTNA0204  | TW06P |
| 14520-05   | 14.5 | 20              | 25              | 45             | 50             | 110 |                                |           |       |
| 15020-05   | 15.0 | 20              | 25              | 48             | 50             | 114 |                                |           |       |
| 15520-05 * | 15.5 | 20              | 25              | 48             | 50             | 114 |                                |           |       |
| 16020-05   | 16.0 | 20              | 25              | 51             | 50             | 117 |                                |           |       |
| 16525-06   | 16.5 | 25              | 34              | 51             | 56             | 123 |                                |           |       |
| 17025-06   | 17.0 | 25              | 34              | 54             | 56             | 126 |                                |           |       |
| 17525-06 * | 17.5 | 25              | 34              | 54             | 56             | 126 |                                |           |       |
| 18025-06   | 18.0 | 25              | 34              | 57             | 56             | 130 |                                |           |       |
| 18525-06   | 18.5 | 25              | 34              | 57             | 56             | 130 |                                |           |       |
| 19025-06   | 19.0 | 25              | 34              | 60             | 56             | 133 |                                |           |       |
| 19525-06 * | 19.5 | 25              | 34              | 60             | 56             | 133 | SP□T07T208-□□<br>XO□T07T205-□□ | FTKA02565 | TW07S |
| 20025-07   | 20.0 | 25              | 34              | 63             | 56             | 138 |                                |           |       |
| 20525-07   | 20.5 | 25              | 34              | 63             | 56             | 138 |                                |           |       |
| 21025-07 * | 21.0 | 25              | 34              | 66             | 56             | 141 |                                |           |       |
| 21525-07   | 21.5 | 25              | 34              | 66             | 56             | 141 |                                |           |       |
| 22025-07   | 22.0 | 25              | 34              | 69             | 56             | 144 |                                |           |       |
| 22525-07   | 22.5 | 25              | 34              | 69             | 56             | 144 | SP□T090308-□□<br>XO□T090305-□□ | FTKA0307  | TW09S |
| 23025-07   | 23   | 25              | 34              | 72             | 56             | 149 |                                |           |       |
| 23525-07   | 23.5 | 25              | 34              | 72             | 56             | 149 |                                |           |       |
| 24032-09 * | 24.0 | 32              | 44              | 75             | 60             | 157 |                                |           |       |
| 24532-09   | 24.5 | 32              | 44              | 75             | 60             | 157 |                                |           |       |
| 25032-09   | 25.0 | 32              | 44              | 78             | 60             | 160 |                                |           |       |
| 25532-09   | 25.5 | 32              | 44              | 78             | 60             | 160 | SP□T090308-□□<br>XO□T090305-□□ | FTKA0307  | TW09S |
| 26032-09   | 26.0 | 32              | 44              | 81             | 60             | 163 |                                |           |       |
| 26532-09 * | 26.5 | 32              | 44              | 81             | 60             | 163 |                                |           |       |
| 27032-09   | 27.0 | 32              | 44              | 84             | 60             | 167 |                                |           |       |
| 27532-09   | 27.5 | 32              | 44              | 84             | 60             | 167 |                                |           |       |
| 28032-09   | 28.0 | 32              | 44              | 87             | 60             | 171 |                                |           |       |
| 28532-09   | 28.5 | 32              | 44              | 87             | 60             | 171 | SP□T090308-□□<br>XO□T090305-□□ | FTKA0307  | TW09S |
| 29032-09 * | 29.0 | 32              | 44              | 90             | 60             | 174 |                                |           |       |
| 29532-09   | 29.5 | 32              | 44              | 90             | 60             | 174 |                                |           |       |

Placas Disponibles G04-05

Materiales marcados puede mecanizar grifo de agujero fundamental



# King Drill (3D)

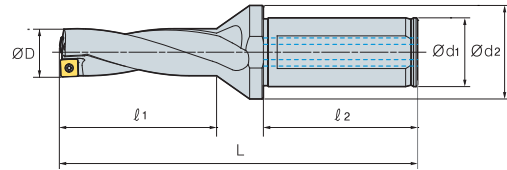
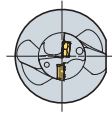


|     |            |      |                 |                 |                |                |     | (mm)                           |           |       |
|-----|------------|------|-----------------|-----------------|----------------|----------------|-----|--------------------------------|-----------|-------|
| K3D | Código     | ØD   | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L   | Placa                          | Tornillo  | Llave |
|     | 30032-11 * | 30.0 | 32              | 44              | 93             | 60             | 180 | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508 | TW15S |
|     | 30532-11   | 30.5 | 32              | 44              | 93             | 60             | 180 |                                |           |       |
|     | 31032-11   | 31.0 | 32              | 44              | 96             | 60             | 183 |                                |           |       |
|     | 31532-11   | 31.5 | 32              | 44              | 96             | 60             | 183 |                                |           |       |
|     | 32032-11   | 32.0 | 32              | 44              | 99             | 60             | 186 |                                |           |       |
|     | 32532-11   | 32.5 | 32              | 44              | 99             | 60             | 186 |                                |           |       |
|     | 33032-11   | 33.0 | 32              | 44              | 102            | 60             | 190 |                                |           |       |
|     | 33532-11   | 33.5 | 32              | 44              | 102            | 60             | 190 |                                |           |       |
|     | 34032-11   | 34.0 | 32              | 44              | 105            | 60             | 193 |                                |           |       |
|     | 34532-11   | 34.5 | 32              | 44              | 105            | 60             | 193 |                                |           |       |
|     | 35032-11 * | 35.0 | 32              | 44              | 108            | 60             | 196 |                                |           |       |
|     | 35532-11   | 35.5 | 32              | 44              | 108            | 60             | 196 |                                |           |       |
|     | 36040-13   | 36.0 | 40              | 48              | 112            | 70             | 212 |                                |           |       |
|     | 36540-13   | 36.5 | 40              | 48              | 112            | 70             | 212 |                                |           |       |
|     | 37040-13   | 37.0 | 40              | 48              | 115            | 70             | 215 |                                |           |       |
|     | 37540-13   | 37.5 | 40              | 48              | 115            | 70             | 215 |                                |           |       |
|     | 38040-13   | 38.0 | 40              | 48              | 118            | 70             | 219 |                                |           |       |
|     | 38540-13   | 38.5 | 40              | 48              | 118            | 70             | 219 |                                |           |       |
|     | 39040-13   | 39.0 | 40              | 48              | 121            | 70             | 222 |                                |           |       |
|     | 39540-13   | 39.5 | 40              | 48              | 121            | 70             | 222 |                                |           |       |
|     | 40040-13   | 40.0 | 40              | 48              | 124            | 70             | 226 |                                |           |       |
|     | 40540-13   | 40.5 | 40              | 48              | 124            | 70             | 226 |                                |           |       |
|     | 41040-13   | 41.0 | 40              | 48              | 127            | 70             | 229 |                                |           |       |
|     | 41540-13   | 41.5 | 40              | 48              | 127            | 70             | 229 |                                |           |       |
|     | 42040-13   | 42.0 | 40              | 48              | 130            | 70             | 233 |                                |           |       |
|     | 42540-13   | 42.5 | 40              | 48              | 130            | 70             | 233 |                                |           |       |
|     | 43040-15   | 43.0 | 40              | 58              | 134            | 70             | 239 | SP□T15M510-□□<br>XO□T15M508-□□ | FTNC04511 | TW20S |
|     | 43540-15   | 43.5 | 40              | 58              | 134            | 70             | 239 |                                |           |       |
|     | 44040-15   | 44.0 | 40              | 58              | 137            | 70             | 242 |                                |           |       |
|     | 44540-15   | 44.5 | 40              | 58              | 137            | 70             | 242 |                                |           |       |
|     | 45040-15   | 45.0 | 40              | 58              | 140            | 70             | 246 |                                |           |       |
|     | 45540-15   | 45.5 | 40              | 58              | 140            | 70             | 246 |                                |           |       |
|     | 46040-15   | 46.0 | 40              | 58              | 143            | 70             | 249 |                                |           |       |
|     | 46540-15   | 46.5 | 40              | 58              | 143            | 70             | 249 |                                |           |       |
|     | 47040-15   | 47.0 | 40              | 58              | 146            | 70             | 253 |                                |           |       |
|     | 47540-15   | 47.5 | 40              | 58              | 146            | 70             | 253 |                                |           |       |
|     | 48040-15   | 48.0 | 40              | 58              | 149            | 70             | 256 |                                |           |       |
|     | 48540-15   | 48.5 | 40              | 58              | 149            | 70             | 256 |                                |           |       |
|     | 49040-15   | 49.0 | 40              | 58              | 152            | 70             | 259 |                                |           |       |
|     | 49540-15   | 49.5 | 40              | 58              | 152            | 70             | 259 |                                |           |       |
|     | 50040-15   | 50.0 | 40              | 58              | 155            | 70             | 262 |                                |           |       |
|     | 50540-15   | 50.5 | 40              | 58              | 155            | 70             | 262 |                                |           |       |

→ Placas Disponibles G04~05

Materiales marcados puede mecanizar grifo de agujero fundamental

## King Drill (3D)



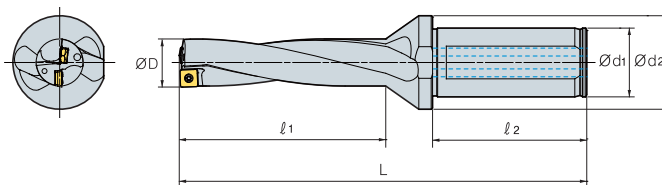
(mm)

| Código     | ØD   | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L   | Placa         | Tornillo | Llave    |
|------------|------|-----------------|-----------------|----------------|----------------|-----|---------------|----------|----------|
| <b>K3D</b> |      |                 |                 |                |                |     |               |          |          |
| 51040-18   | 51.0 | 40              | 68              | 159            | 70             | 269 |               |          |          |
| 51540-18   | 51.5 | 40              | 68              | 159            | 70             | 269 |               |          |          |
| 52040-18   | 52.0 | 40              | 68              | 162            | 70             | 272 |               |          |          |
| 52540-18   | 52.5 | 40              | 68              | 162            | 70             | 272 |               |          |          |
| 53040-18   | 53.0 | 40              | 68              | 165            | 70             | 275 |               |          |          |
| 53540-18   | 53.5 | 40              | 68              | 165            | 70             | 275 |               |          |          |
| 54040-18   | 54.0 | 40              | 68              | 168            | 70             | 278 |               |          |          |
| 54540-18   | 54.5 | 40              | 68              | 168            | 70             | 278 |               |          |          |
| 55040-18   | 55.0 | 40              | 68              | 171            | 70             | 281 |               |          |          |
| 55540-18   | 55.5 | 40              | 68              | 171            | 70             | 281 | SP□T180510-□□ | FTNA0511 | TW20-100 |
| 56040-18   | 56.0 | 40              | 68              | 174            | 70             | 286 | XO□T180508-□□ |          |          |
| 56540-18   | 56.5 | 40              | 68              | 174            | 70             | 286 |               |          |          |
| 57040-18   | 57.0 | 40              | 68              | 178            | 70             | 290 |               |          |          |
| 57540-18   | 57.5 | 40              | 68              | 178            | 70             | 290 |               |          |          |
| 58040-18   | 58.0 | 40              | 68              | 182            | 70             | 294 |               |          |          |
| 58540-18   | 58.5 | 40              | 68              | 182            | 70             | 294 |               |          |          |
| 59040-18   | 59.0 | 40              | 68              | 186            | 70             | 298 |               |          |          |
| 59540-18   | 59.5 | 40              | 68              | 186            | 70             | 298 |               |          |          |
| 60040-18   | 60.0 | 40              | 68              | 190            | 70             | 302 |               |          |          |
| 60540-18   | 60.5 | 40              | 68              | 190            | 70             | 302 |               |          |          |

Placas Disponibles G04-05



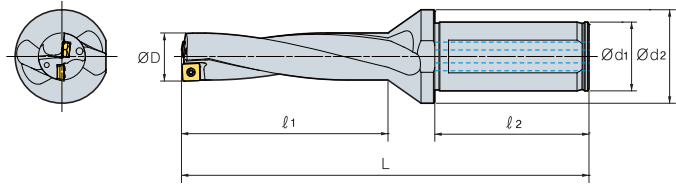
# King Drill (4D)



|            |          |                 |                 |                |                |     |       | (mm)                           |            |       |                                |           |       |
|------------|----------|-----------------|-----------------|----------------|----------------|-----|-------|--------------------------------|------------|-------|--------------------------------|-----------|-------|
| Código     | ØD       | Ød <sub>1</sub> | Ød <sub>2</sub> | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L   | Placa | Tornillo                       | Llave      |       |                                |           |       |
| <b>K4D</b> | 12020-04 | 12.0            | 20              | 25             | 51             | 50  | 115   | SP□T040204-□□<br>XO□T040204-□□ | FTNA0204   | TW06P |                                |           |       |
|            | 12520-04 | 12.5            | 20              | 25             | 51             | 50  | 115   |                                |            |       |                                |           |       |
|            | 13020-04 | 13.0            | 20              | 25             | 55             | 50  | 119   |                                |            |       |                                |           |       |
|            | 13520-04 | 13.5            | 20              | 25             | 55             | 50  | 119   |                                |            |       |                                |           |       |
|            | 14020-05 | 14.0            | 20              | 25             | 59             | 50  | 124   | SP□T050204-□□<br>XO□T050204-□□ | FTNA0204   | TW06P |                                |           |       |
|            | 14520-05 | 14.5            | 20              | 25             | 59             | 50  | 124   |                                |            |       |                                |           |       |
|            | 15020-05 | 15.0            | 20              | 25             | 63             | 50  | 129   |                                |            |       |                                |           |       |
|            | 15520-05 | 15.5            | 20              | 25             | 63             | 50  | 129   |                                |            |       |                                |           |       |
|            | 16020-05 | 16.0            | 20              | 25             | 67             | 50  | 133   | SP□T060205-□□<br>XO□T060204-□□ | FTKA02206S | TW07P |                                |           |       |
|            | 16525-06 | 16.5            | 25              | 34             | 67             | 56  | 139   |                                |            |       |                                |           |       |
|            | 17025-06 | 17.0            | 25              | 34             | 71             | 56  | 143   |                                |            |       |                                |           |       |
|            | 17525-06 | 17.5            | 25              | 34             | 71             | 56  | 143   |                                |            |       |                                |           |       |
|            | 18025-06 | 18.0            | 25              | 34             | 75             | 56  | 148   |                                |            |       |                                |           |       |
|            | 18525-06 | 18.5            | 25              | 34             | 75             | 56  | 148   |                                |            |       |                                |           |       |
|            | 19025-06 | 19.0            | 25              | 34             | 79             | 56  | 152   |                                |            |       |                                |           |       |
|            | 19525-06 | 19.5            | 25              | 34             | 79             | 56  | 152   |                                |            |       |                                |           |       |
|            | 20025-07 | 20.0            | 25              | 34             | 83             | 56  | 158   | SP□T07T208-□□<br>XO□T07T205-□□ | FTKA02565  | TW07S |                                |           |       |
|            | 20525-07 | 20.5            | 25              | 34             | 83             | 56  | 158   |                                |            |       |                                |           |       |
|            | 21025-07 | 21.0            | 25              | 34             | 87             | 56  | 162   |                                |            |       |                                |           |       |
|            | 21525-07 | 21.5            | 25              | 34             | 87             | 56  | 162   |                                |            |       |                                |           |       |
|            | 22025-07 | 22.0            | 25              | 34             | 91             | 56  | 166   |                                |            |       |                                |           |       |
|            | 22525-07 | 22.5            | 25              | 34             | 91             | 56  | 166   |                                |            |       |                                |           |       |
|            | 23025-07 | 23.0            | 25              | 34             | 95             | 56  | 172   |                                |            |       |                                |           |       |
|            | 23525-07 | 23.5            | 25              | 34             | 95             | 56  | 172   |                                |            |       |                                |           |       |
|            | 24032-09 | 24.0            | 32              | 44             | 99             | 60  | 181   | SP□T090308-□□<br>XO□T090305-□□ | FTKA0307   | TW09S |                                |           |       |
|            | 24532-09 | 24.5            | 32              | 44             | 99             | 60  | 181   |                                |            |       |                                |           |       |
|            | 25032-09 | 25.0            | 32              | 44             | 103            | 60  | 185   |                                |            |       |                                |           |       |
|            | 25532-09 | 25.5            | 32              | 44             | 103            | 60  | 185   |                                |            |       |                                |           |       |
|            | 26032-09 | 26.0            | 32              | 44             | 107            | 60  | 189   |                                |            |       |                                |           |       |
|            | 26532-09 | 26.5            | 32              | 44             | 107            | 60  | 189   |                                |            |       |                                |           |       |
|            | 27032-09 | 27.0            | 32              | 44             | 111            | 60  | 194   |                                |            |       |                                |           |       |
|            | 27532-09 | 27.5            | 32              | 44             | 111            | 60  | 194   |                                |            |       |                                |           |       |
|            | 28032-09 | 28.0            | 32              | 44             | 115            | 60  | 199   |                                |            |       |                                |           |       |
|            | 28532-09 | 28.5            | 32              | 44             | 115            | 60  | 199   |                                |            |       |                                |           |       |
|            | 29032-09 | 29.0            | 32              | 44             | 119            | 60  | 203   |                                |            |       |                                |           |       |
|            | 29532-09 | 29.5            | 32              | 44             | 119            | 60  | 203   |                                |            |       |                                |           |       |
|            | 30032-11 | 30.0            | 32              | 44             | 123            | 60  | 210   |                                |            |       | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508 | TW15S |
|            | 30532-11 | 30.5            | 32              | 44             | 123            | 60  | 210   |                                |            |       |                                |           |       |
|            | 31032-11 | 31.0            | 32              | 44             | 127            | 60  | 214   |                                |            |       |                                |           |       |
|            | 31532-11 | 31.5            | 32              | 44             | 127            | 60  | 214   |                                |            |       |                                |           |       |
| 32032-11   | 32.0     | 32              | 44              | 131            | 60             | 218 |       |                                |            |       |                                |           |       |
| 32532-11   | 32.5     | 32              | 44              | 131            | 60             | 218 |       |                                |            |       |                                |           |       |
| 33032-11   | 33.0     | 32              | 44              | 135            | 60             | 223 |       |                                |            |       |                                |           |       |
| 33532-11   | 33.5     | 32              | 44              | 135            | 60             | 223 |       |                                |            |       |                                |           |       |
| 34032-11   | 34.0     | 32              | 44              | 139            | 60             | 227 |       |                                |            |       |                                |           |       |
| 34532-11   | 34.5     | 32              | 44              | 139            | 60             | 227 |       |                                |            |       |                                |           |       |
| 35032-11   | 35.0     | 32              | 44              | 143            | 60             | 231 |       |                                |            |       |                                |           |       |
| 35532-11   | 35.5     | 32              | 44              | 143            | 60             | 231 |       |                                |            |       |                                |           |       |

→ Placas Disponibles G04~05

# King Drill (4D)



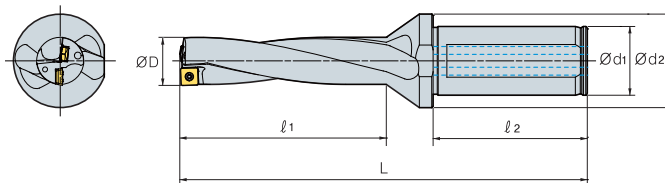
(mm)

| Código     | ØD   | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L   | Placa                          | Tornillo | Llave    |                                |           |       |
|------------|------|-----------------|-----------------|----------------|----------------|-----|--------------------------------|----------|----------|--------------------------------|-----------|-------|
| <b>K4D</b> |      |                 |                 |                |                |     |                                |          |          |                                |           |       |
| 36040-13   | 36.0 | 40              | 48              | 148            | 70             | 248 | SP□T130410-□□<br>XO□T130406-□□ | FTKA0410 | TW15S    |                                |           |       |
| 36540-13   | 36.5 | 40              | 48              | 148            | 70             | 248 |                                |          |          |                                |           |       |
| 37040-13   | 37.0 | 40              | 48              | 152            | 70             | 252 |                                |          |          |                                |           |       |
| 37540-13   | 37.5 | 40              | 48              | 152            | 70             | 252 |                                |          |          |                                |           |       |
| 38040-13   | 38.0 | 40              | 48              | 156            | 70             | 257 |                                |          |          |                                |           |       |
| 38540-13   | 38.5 | 40              | 48              | 156            | 70             | 257 |                                |          |          |                                |           |       |
| 39040-13   | 39.0 | 40              | 48              | 160            | 70             | 261 |                                |          |          |                                |           |       |
| 39540-13   | 39.5 | 40              | 48              | 160            | 70             | 261 |                                |          |          |                                |           |       |
| 40040-13   | 40.0 | 40              | 48              | 164            | 70             | 266 |                                |          |          |                                |           |       |
| 40540-13   | 40.5 | 40              | 48              | 164            | 70             | 266 |                                |          |          |                                |           |       |
| 41040-13   | 41.0 | 40              | 48              | 168            | 70             | 270 |                                |          |          |                                |           |       |
| 41540-13   | 41.5 | 40              | 48              | 168            | 70             | 270 |                                |          |          |                                |           |       |
| 42040-13   | 42.0 | 40              | 48              | 172            | 70             | 275 |                                |          |          |                                |           |       |
| 42540-13   | 42.5 | 40              | 48              | 172            | 70             | 275 |                                |          |          |                                |           |       |
| 43040-15   | 43.0 | 40              | 58              | 177            | 70             | 282 |                                |          |          | SP□T15M510-□□<br>XO□T15M508-□□ | FTNC04511 | TW20S |
| 43540-15   | 43.5 | 40              | 58              | 177            | 70             | 282 |                                |          |          |                                |           |       |
| 44040-15   | 44.0 | 40              | 58              | 181            | 70             | 286 |                                |          |          |                                |           |       |
| 44540-15   | 44.5 | 40              | 58              | 181            | 70             | 286 |                                |          |          |                                |           |       |
| 45040-15   | 45.0 | 40              | 58              | 185            | 70             | 291 |                                |          |          |                                |           |       |
| 45540-15   | 45.5 | 40              | 58              | 185            | 70             | 291 |                                |          |          |                                |           |       |
| 46040-15   | 46.0 | 40              | 58              | 189            | 70             | 295 |                                |          |          |                                |           |       |
| 46540-15   | 46.5 | 40              | 58              | 189            | 70             | 295 |                                |          |          |                                |           |       |
| 47040-15   | 47.0 | 40              | 58              | 193            | 70             | 300 |                                |          |          |                                |           |       |
| 47540-15   | 47.5 | 40              | 58              | 193            | 70             | 300 |                                |          |          |                                |           |       |
| 48040-15   | 48.0 | 40              | 58              | 197            | 70             | 304 |                                |          |          |                                |           |       |
| 48540-15   | 48.5 | 40              | 58              | 197            | 70             | 304 |                                |          |          |                                |           |       |
| 49040-15   | 49.0 | 40              | 58              | 201            | 70             | 308 |                                |          |          |                                |           |       |
| 49540-15   | 49.5 | 40              | 58              | 201            | 70             | 308 |                                |          |          |                                |           |       |
| 50040-15   | 50.0 | 40              | 58              | 205            | 70             | 312 |                                |          |          |                                |           |       |
| 50540-15   | 50.5 | 40              | 58              | 205            | 70             | 312 |                                |          |          |                                |           |       |
| 51040-18   | 51.0 | 40              | 68              | 210            | 70             | 320 | SP□T180510-□□<br>XO□T180508-□□ | FTNA0511 | TW20-100 |                                |           |       |
| 51540-18   | 51.5 | 40              | 68              | 210            | 70             | 320 |                                |          |          |                                |           |       |
| 52040-18   | 52.0 | 40              | 68              | 214            | 70             | 324 |                                |          |          |                                |           |       |
| 52540-18   | 52.5 | 40              | 68              | 214            | 70             | 324 |                                |          |          |                                |           |       |
| 53040-18   | 53.0 | 40              | 68              | 218            | 70             | 328 |                                |          |          |                                |           |       |
| 53540-18   | 53.5 | 40              | 68              | 218            | 70             | 328 |                                |          |          |                                |           |       |
| 54040-18   | 54.0 | 40              | 68              | 222            | 70             | 332 |                                |          |          |                                |           |       |
| 54540-18   | 54.5 | 40              | 68              | 222            | 70             | 332 |                                |          |          |                                |           |       |
| 55040-18   | 55.0 | 40              | 68              | 226            | 70             | 336 |                                |          |          |                                |           |       |
| 55540-18   | 55.5 | 40              | 68              | 226            | 70             | 336 |                                |          |          |                                |           |       |
| 56040-18   | 56.0 | 40              | 68              | 230            | 70             | 342 |                                |          |          |                                |           |       |
| 56540-18   | 56.5 | 40              | 68              | 230            | 70             | 342 |                                |          |          |                                |           |       |
| 57040-18   | 57.0 | 40              | 68              | 235            | 70             | 347 |                                |          |          |                                |           |       |
| 57540-18   | 57.5 | 40              | 68              | 235            | 70             | 347 |                                |          |          |                                |           |       |
| 58040-18   | 58.0 | 40              | 68              | 240            | 70             | 352 |                                |          |          |                                |           |       |
| 58540-18   | 58.5 | 40              | 68              | 240            | 70             | 352 |                                |          |          |                                |           |       |
| 59040-18   | 59.0 | 40              | 68              | 245            | 70             | 357 |                                |          |          |                                |           |       |
| 59540-18   | 59.5 | 40              | 68              | 245            | 70             | 357 |                                |          |          |                                |           |       |
| 60040-18   | 60.0 | 40              | 68              | 250            | 70             | 362 |                                |          |          |                                |           |       |
| 60540-18   | 60.5 | 40              | 68              | 250            | 70             | 362 |                                |          |          |                                |           |       |

Placas Disponibles G04-05



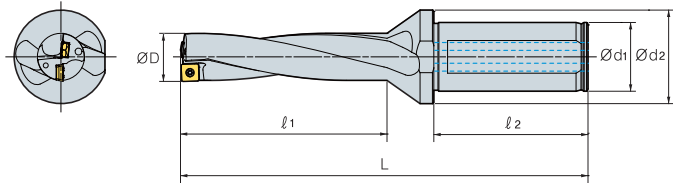
# King Drill (5D)



|            |          |                 |                 |                |                |     |                                | (mm)                           |            |       |
|------------|----------|-----------------|-----------------|----------------|----------------|-----|--------------------------------|--------------------------------|------------|-------|
| Código     | ØD       | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L   | Placa                          | Tornillo                       | Llave      |       |
| <b>K5D</b> | 12020-04 | 12.0            | 20              | 25             | 63             | 50  | 127                            | SP□T040204-□□<br>XO□T040204-□□ | FTNA0204   | TW06P |
|            | 12520-04 | 12.5            | 20              | 25             | 63             | 50  | 127                            |                                |            |       |
|            | 13020-04 | 13.0            | 20              | 25             | 68             | 50  | 132                            | SP□T050204-□□<br>XO□T050204-□□ | FTNA0204   | TW06P |
|            | 13520-04 | 13.5            | 20              | 25             | 68             | 50  | 132                            |                                |            |       |
|            | 14020-05 | 14.0            | 20              | 25             | 73             | 50  | 138                            | SP□T060205-□□<br>XO□T060204-□□ | FTKA02206S | TW07P |
|            | 14520-05 | 14.5            | 20              | 25             | 73             | 50  | 138                            |                                |            |       |
|            | 15020-05 | 15.0            | 20              | 25             | 78             | 50  | 144                            | SP□T07T208-□□<br>XO□T07T205-□□ | FTKA02565  | TW07S |
|            | 15520-05 | 15.5            | 20              | 25             | 78             | 50  | 144                            |                                |            |       |
|            | 16020-05 | 16.0            | 20              | 25             | 83             | 50  | 149                            | SP□T090308-□□<br>XO□T090305-□□ | FTKA0307   | TW09S |
|            | 16525-06 | 16.5            | 25              | 34             | 83             | 56  | 155                            |                                |            |       |
|            | 17025-06 | 17.0            | 25              | 34             | 88             | 56  | 160                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
|            | 17525-06 | 17.5            | 25              | 34             | 88             | 56  | 160                            |                                |            |       |
|            | 18025-06 | 18.0            | 25              | 34             | 93             | 56  | 166                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
|            | 18525-06 | 18.5            | 25              | 34             | 93             | 56  | 166                            |                                |            |       |
|            | 19025-06 | 19.0            | 25              | 34             | 98             | 56  | 171                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
|            | 19525-06 | 19.5            | 25              | 34             | 98             | 56  | 171                            |                                |            |       |
|            | 20025-07 | 20.0            | 25              | 34             | 103            | 56  | 178                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
|            | 20525-07 | 20.5            | 25              | 34             | 103            | 56  | 178                            |                                |            |       |
|            | 21025-07 | 21.0            | 25              | 34             | 108            | 56  | 183                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
|            | 21525-07 | 21.5            | 25              | 34             | 108            | 56  | 183                            |                                |            |       |
|            | 22025-07 | 22.0            | 25              | 34             | 113            | 56  | 188                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
|            | 22525-07 | 22.5            | 25              | 34             | 113            | 56  | 188                            |                                |            |       |
|            | 23025-07 | 23.0            | 25              | 34             | 118            | 56  | 195                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
|            | 23525-07 | 23.5            | 25              | 34             | 118            | 56  | 195                            |                                |            |       |
|            | 24032-09 | 24.0            | 32              | 44             | 123            | 60  | 205                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
|            | 24532-09 | 24.5            | 32              | 44             | 123            | 60  | 205                            |                                |            |       |
|            | 25032-09 | 25.0            | 32              | 44             | 128            | 60  | 210                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
|            | 25532-09 | 25.5            | 32              | 44             | 128            | 60  | 210                            |                                |            |       |
|            | 26032-09 | 26.0            | 32              | 44             | 133            | 60  | 215                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
|            | 26532-09 | 26.5            | 32              | 44             | 133            | 60  | 215                            |                                |            |       |
|            | 27032-09 | 27.0            | 32              | 44             | 138            | 60  | 221                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
|            | 27532-09 | 27.5            | 32              | 44             | 138            | 60  | 221                            |                                |            |       |
|            | 28032-09 | 28.0            | 32              | 44             | 143            | 60  | 227                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
|            | 28532-09 | 28.5            | 32              | 44             | 143            | 60  | 227                            |                                |            |       |
|            | 29032-09 | 29.0            | 32              | 44             | 148            | 60  | 232                            | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508  | TW15S |
| 29532-09   | 29.5     | 32              | 44              | 148            | 60             | 232 |                                |                                |            |       |
| 30032-11   | 30.0     | 32              | 44              | 153            | 60             | 240 | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508                      | TW15S      |       |
| 30532-11   | 30.5     | 32              | 44              | 153            | 60             | 240 |                                |                                |            |       |
| 31032-11   | 31.0     | 32              | 44              | 158            | 60             | 245 | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508                      | TW15S      |       |
| 31532-11   | 31.5     | 32              | 44              | 158            | 60             | 245 |                                |                                |            |       |
| 32032-11   | 32.0     | 32              | 44              | 163            | 60             | 250 | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508                      | TW15S      |       |
| 32532-11   | 32.5     | 32              | 44              | 163            | 60             | 250 |                                |                                |            |       |
| 33032-11   | 33.0     | 32              | 44              | 168            | 60             | 256 | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508                      | TW15S      |       |
| 33532-11   | 33.5     | 32              | 44              | 168            | 60             | 256 |                                |                                |            |       |
| 34032-11   | 34.0     | 32              | 44              | 173            | 60             | 261 | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508                      | TW15S      |       |
| 34532-11   | 34.5     | 32              | 44              | 173            | 60             | 261 |                                |                                |            |       |
| 35032-11   | 35.0     | 32              | 44              | 178            | 60             | 266 | SP□T11T308-□□<br>XO□T11T306-□□ | FTKA03508                      | TW15S      |       |
| 35532-11   | 35.5     | 32              | 44              | 178            | 60             | 266 |                                |                                |            |       |

→ Placas Disponibles G04~05

# King Drill (5D)



(mm)

| Código     | ØD   | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L   | Placa                          | Tornillo  | Llave    |
|------------|------|-----------------|-----------------|----------------|----------------|-----|--------------------------------|-----------|----------|
| <b>K5D</b> |      |                 |                 |                |                |     |                                |           |          |
| 36040-13   | 36.0 | 40              | 48              | 184            | 70             | 284 | SP□T130410-□□<br>XO□T130406-□□ | FTKA0410  | TW15S    |
| 36540-13   | 36.5 | 40              | 48              | 184            | 70             | 284 |                                |           |          |
| 37040-13   | 37.0 | 40              | 48              | 189            | 70             | 289 |                                |           |          |
| 37540-13   | 37.5 | 40              | 48              | 189            | 70             | 289 |                                |           |          |
| 38040-13   | 38.0 | 40              | 48              | 194            | 70             | 295 |                                |           |          |
| 38540-13   | 38.5 | 40              | 48              | 194            | 70             | 295 |                                |           |          |
| 39040-13   | 39.0 | 40              | 48              | 199            | 70             | 300 |                                |           |          |
| 39540-13   | 39.5 | 40              | 48              | 199            | 70             | 300 |                                |           |          |
| 40040-13   | 40.0 | 40              | 48              | 204            | 70             | 306 |                                |           |          |
| 40540-13   | 40.5 | 40              | 48              | 204            | 70             | 306 |                                |           |          |
| 41040-13   | 41.0 | 40              | 48              | 209            | 70             | 311 |                                |           |          |
| 41540-13   | 41.5 | 40              | 48              | 209            | 70             | 311 |                                |           |          |
| 42040-13   | 42.0 | 40              | 48              | 214            | 70             | 317 |                                |           |          |
| 42540-13   | 42.5 | 40              | 48              | 214            | 70             | 317 |                                |           |          |
| 43040-15   | 43.0 | 40              | 58              | 220            | 70             | 325 | SP□T15M510-□□<br>XO□T15M508-□□ | FTNC04511 | TW20S    |
| 43540-15   | 43.5 | 40              | 58              | 221            | 70             | 326 |                                |           |          |
| 44040-15   | 44.0 | 40              | 58              | 225            | 70             | 330 |                                |           |          |
| 44540-15   | 44.5 | 40              | 58              | 225            | 70             | 330 |                                |           |          |
| 45040-15   | 45.0 | 40              | 58              | 230            | 70             | 336 |                                |           |          |
| 45540-15   | 45.5 | 40              | 58              | 230            | 70             | 336 |                                |           |          |
| 46040-15   | 46.0 | 40              | 58              | 235            | 70             | 341 |                                |           |          |
| 46540-15   | 46.5 | 40              | 58              | 235            | 70             | 341 |                                |           |          |
| 47040-15   | 47.0 | 40              | 58              | 240            | 70             | 347 |                                |           |          |
| 47540-15   | 47.5 | 40              | 58              | 240            | 70             | 347 |                                |           |          |
| 48040-15   | 48.0 | 40              | 58              | 245            | 70             | 352 |                                |           |          |
| 48540-15   | 48.5 | 40              | 58              | 245            | 70             | 352 |                                |           |          |
| 49040-15   | 49.0 | 40              | 58              | 250            | 70             | 357 |                                |           |          |
| 49540-15   | 49.5 | 40              | 58              | 250            | 70             | 357 |                                |           |          |
| 50040-15   | 50.0 | 40              | 58              | 255            | 70             | 362 | SP□T180510-□□<br>XO□T180508-□□ | FTNA0511  | TW20-100 |
| 50540-15   | 50.5 | 40              | 58              | 255            | 70             | 362 |                                |           |          |
| 51040-18   | 51.0 | 40              | 68              | 261            | 70             | 371 |                                |           |          |
| 51540-18   | 51.5 | 40              | 68              | 261            | 70             | 371 |                                |           |          |
| 52040-18   | 52.0 | 40              | 68              | 266            | 70             | 376 |                                |           |          |
| 52540-18   | 52.5 | 40              | 68              | 266            | 70             | 376 |                                |           |          |
| 53040-18   | 53.0 | 40              | 68              | 271            | 70             | 381 |                                |           |          |
| 53540-18   | 53.5 | 40              | 68              | 271            | 70             | 381 |                                |           |          |
| 54040-18   | 54.0 | 40              | 68              | 276            | 70             | 386 |                                |           |          |
| 54540-18   | 54.5 | 40              | 68              | 276            | 70             | 386 |                                |           |          |
| 55040-18   | 55.0 | 40              | 68              | 281            | 70             | 391 |                                |           |          |
| 55540-18   | 55.5 | 40              | 68              | 281            | 70             | 391 |                                |           |          |
| 56040-18   | 56.0 | 40              | 68              | 286            | 70             | 398 |                                |           |          |
| 56540-18   | 56.5 | 40              | 68              | 286            | 70             | 398 |                                |           |          |
| 57040-18   | 57.0 | 40              | 68              | 292            | 70             | 404 |                                |           |          |
| 57540-18   | 57.5 | 40              | 68              | 292            | 70             | 404 |                                |           |          |
| 58040-18   | 58.0 | 40              | 68              | 298            | 70             | 410 |                                |           |          |
| 58540-18   | 58.5 | 40              | 68              | 298            | 70             | 410 |                                |           |          |
| 59040-18   | 59.0 | 40              | 68              | 304            | 70             | 416 |                                |           |          |
| 59540-18   | 59.5 | 40              | 68              | 304            | 70             | 416 |                                |           |          |
| 60040-18   | 60.0 | 40              | 68              | 310            | 70             | 422 |                                |           |          |
| 60540-18   | 60.5 | 40              | 68              | 310            | 70             | 422 |                                |           |          |

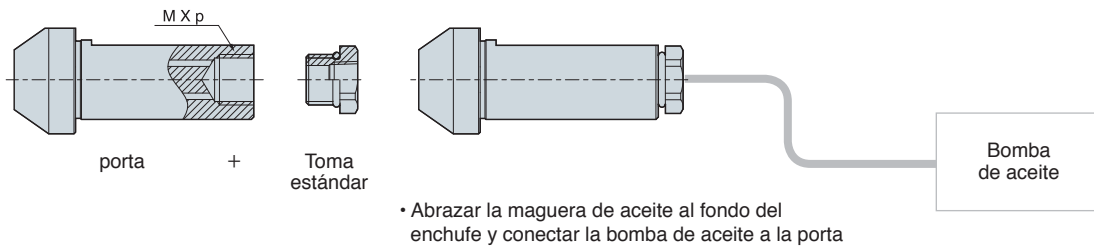
Placas Disponibles G04-05



Broca con el sistema de refrigerante perforante para torno general y torno de CNC  
sin sistema de refrigerante interno

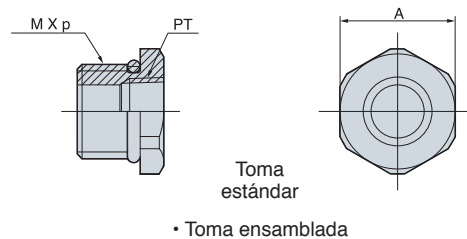
## King Drill (Para el sistema de refrigerante perforante)

- El sistema de refrigerante perforante con porta, toma estándar, manguera de agujero de aceite, bomba de agujero de aceite de broca
- PT TAP en toma estándar es combinado a PT TAP conectado a la manguera de aceite
- Disponible para usar la broca sin un toma estándar en mecanizado de fresado



(mm)

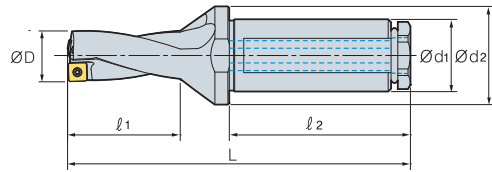
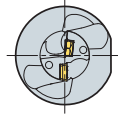
| Tipo de rosca     | Diámetro    | Diá de mango | M x p   | Toma estándar |
|-------------------|-------------|--------------|---------|---------------|
| K□D120~16020HP-□□ | Ø12.0~Ø16.0 | Ø20          | M12x1.5 | PLG12PT18     |
| K□D161~23525HP-□□ | Ø16.1~Ø23.5 | Ø25          | M16x1.5 | PLG16PT18     |
| K□D236~35532HP-□□ | Ø23.6~Ø35.5 | Ø32          | M20x2.0 | PLG20PT14     |
| K□D356~60940HP-□□ | Ø35.6~Ø60.5 | Ø40          | M27x2.0 | PLG27PT38     |



| Tipo de toma | M x p   | PT tap | A  |
|--------------|---------|--------|----|
| PLG12PT18    | M12x1.5 | 1/8    | 16 |
| PLG16PT18    | M16x1.5 | 1/8    | 19 |
| PLG20PT14    | M20x2.0 | 1/4    | 26 |
| PLG27PT38    | M27x2.0 | 3/8    | 35 |

## King Drill (2D)

Para el sistema de refrigerante perforante



(mm)

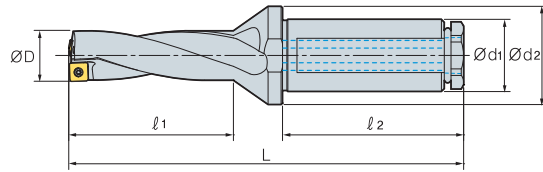
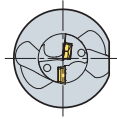
| Código     | ØD                | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L  | Placa | Tornillo                       | Llave      |       |
|------------|-------------------|-----------------|-----------------|----------------|----------------|----|-------|--------------------------------|------------|-------|
| <b>K2D</b> | <b>13020HP-04</b> | 13.0            | 20              | 25             | 29             | 50 | 93    | SP□T040204-□□                  | FTNA0204   | TW06P |
|            | <b>13520HP-04</b> | 13.5            | 20              | 25             | 29             | 50 | 93    | XO□T040204-□□                  |            |       |
|            | <b>14020HP-05</b> | 14.0            | 20              | 25             | 31             | 50 | 96    | SP□T050204-□□<br>XO□T050204-□□ | FTNA0204   | TW06P |
|            | <b>15020HP-05</b> | 15.0            | 20              | 25             | 33             | 50 | 99    |                                |            |       |
|            | <b>16020HP-05</b> | 16.0            | 20              | 25             | 35             | 50 | 101   | SP□T060205-□□<br>XO□T060204-□□ | FTKA02206S | TW07P |
|            | <b>17025HP-06</b> | 17.0            | 25              | 34             | 37             | 56 | 109   |                                |            |       |
|            | <b>18025HP-06</b> | 18.0            | 25              | 34             | 39             | 56 | 112   | SP□T07T208-□□<br>XO□T07T205-□□ | FTKA02565  | TW07S |
|            | <b>19025HP-06</b> | 19.0            | 25              | 34             | 41             | 56 | 114   |                                |            |       |
|            | <b>20025HP-07</b> | 20.0            | 25              | 34             | 43             | 56 | 118   | SP□T090308-□□<br>XO□T090305-□□ | FTKA0307   | TW09S |
|            | <b>21025HP-07</b> | 21.0            | 25              | 34             | 45             | 56 | 120   |                                |            |       |
|            | <b>22025HP-07</b> | 22.0            | 25              | 34             | 47             | 56 | 122   | SP□T090308-□□<br>XO□T090305-□□ | FTKA0307   | TW09S |
|            | <b>23025HP-07</b> | 23.0            | 25              | 34             | 49             | 56 | 126   |                                |            |       |
|            | <b>24032HP-09</b> | 24.0            | 32              | 44             | 51             | 60 | 133   | SP□T090308-□□<br>XO□T090305-□□ | FTKA0307   | TW09S |
|            | <b>25032HP-09</b> | 25.0            | 32              | 44             | 53             | 60 | 135   |                                |            |       |
|            | <b>26032HP-09</b> | 26.0            | 32              | 44             | 55             | 60 | 137   | SP□T090308-□□<br>XO□T090305-□□ | FTKA0307   | TW09S |
|            | <b>27032HP-09</b> | 27.0            | 32              | 44             | 57             | 60 | 140   |                                |            |       |
|            | <b>28032HP-09</b> | 28.0            | 32              | 44             | 59             | 60 | 143   | SP□T090308-□□<br>XO□T090305-□□ | FTKA0307   | TW09S |
|            | <b>29032HP-09</b> | 29.0            | 32              | 44             | 61             | 60 | 145   |                                |            |       |

Placas Disponibles G04-05



# King Drill (3D)

Para el sistema de refrigerante perforante

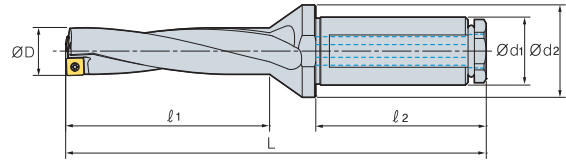
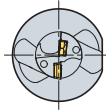


|                   |                   |                 |                 |                |                |     |       | (mm)                           |            |       |
|-------------------|-------------------|-----------------|-----------------|----------------|----------------|-----|-------|--------------------------------|------------|-------|
| Código            | ØD                | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L   | Placa | Tornillo                       | Llave      |       |
| <b>K3D</b>        | <b>13020HP-04</b> | 13.0            | 20              | 25             | 42             | 50  | 106   | SP□T040204-□□<br>XO□T040204-□□ | FTNA0204   | TW06P |
|                   | <b>13520HP-04</b> | 13.5            | 20              | 25             | 42             | 50  | 106   |                                |            |       |
|                   | <b>14020HP-05</b> | 14.0            | 20              | 25             | 45             | 50  | 110   |                                |            |       |
|                   | <b>14520HP-05</b> | 14.5            | 20              | 25             | 45             | 50  | 110   | SP□T050204-□□<br>XO□T050204-□□ | FTNA0204   | TW06P |
|                   | <b>15020HP-05</b> | 15.0            | 20              | 25             | 48             | 50  | 114   |                                |            |       |
|                   | <b>15520HP-05</b> | 15.5            | 20              | 25             | 48             | 50  | 114   |                                |            |       |
|                   | <b>16020HP-05</b> | 16.0            | 20              | 25             | 51             | 50  | 117   | SP□T060205-□□<br>XO□T060204-□□ | FTKA02206S | TW07P |
|                   | <b>16525HP-06</b> | 16.5            | 25              | 34             | 51             | 56  | 123   |                                |            |       |
|                   | <b>17025HP-06</b> | 17.0            | 25              | 34             | 54             | 56  | 126   |                                |            |       |
|                   | <b>17525HP-06</b> | 17.5            | 25              | 34             | 54             | 56  | 126   |                                |            |       |
|                   | <b>18025HP-06</b> | 18.0            | 25              | 34             | 57             | 56  | 130   |                                |            |       |
|                   | <b>18525HP-06</b> | 18.5            | 25              | 34             | 57             | 56  | 130   |                                |            |       |
|                   | <b>19025HP-06</b> | 19.0            | 25              | 34             | 60             | 56  | 133   | SP□T07T208-□□<br>XO□T07T205-□□ | FTKA02565  | TW07S |
|                   | <b>19525HP-06</b> | 19.5            | 25              | 34             | 60             | 56  | 133   |                                |            |       |
|                   | <b>20025HP-07</b> | 20.0            | 25              | 34             | 63             | 56  | 138   |                                |            |       |
|                   | <b>20525HP-07</b> | 20.5            | 25              | 34             | 63             | 56  | 138   |                                |            |       |
|                   | <b>21025HP-07</b> | 21.0            | 25              | 34             | 66             | 56  | 141   |                                |            |       |
|                   | <b>21525HP-07</b> | 21.5            | 25              | 34             | 66             | 56  | 141   |                                |            |       |
|                   | <b>22025HP-07</b> | 22.0            | 25              | 34             | 69             | 56  | 144   | SP□T090308-□□<br>XO□T090305-□□ | FTKA0307   | TW09S |
|                   | <b>22525HP-07</b> | 22.5            | 25              | 34             | 69             | 56  | 144   |                                |            |       |
|                   | <b>23025HP-07</b> | 23.0            | 25              | 34             | 72             | 56  | 149   |                                |            |       |
|                   | <b>23525HP-07</b> | 23.5            | 25              | 34             | 72             | 56  | 149   |                                |            |       |
|                   | <b>24032HP-09</b> | 24.0            | 32              | 44             | 75             | 60  | 157   |                                |            |       |
|                   | <b>24532HP-09</b> | 24.5            | 32              | 44             | 75             | 60  | 157   |                                |            |       |
|                   | <b>25032HP-09</b> | 25.0            | 32              | 44             | 78             | 60  | 160   |                                |            |       |
|                   | <b>25532HP-09</b> | 25.5            | 32              | 44             | 78             | 60  | 160   |                                |            |       |
|                   | <b>26032HP-09</b> | 26.0            | 32              | 44             | 81             | 60  | 163   |                                |            |       |
|                   | <b>26532HP-09</b> | 26.5            | 32              | 44             | 81             | 60  | 163   |                                |            |       |
|                   | <b>27032HP-09</b> | 27.0            | 32              | 44             | 84             | 60  | 167   |                                |            |       |
|                   | <b>27532HP-09</b> | 27.5            | 32              | 44             | 84             | 60  | 167   |                                |            |       |
| <b>28032HP-09</b> | 28.0              | 32              | 44              | 87             | 60             | 171 |       |                                |            |       |
| <b>28532HP-09</b> | 28.5              | 32              | 44              | 87             | 60             | 171 |       |                                |            |       |
| <b>29032HP-09</b> | 29.0              | 32              | 44              | 90             | 60             | 174 |       |                                |            |       |
| <b>29532HP-09</b> | 29.5              | 32              | 44              | 90             | 60             | 174 |       |                                |            |       |

Placas Disponibles G04~05

## King Drill (4D)

Para el sistema de refrigerante perforante



(mm)

| Código     | ØD                | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L  | Placa | Tornillo      | Llave      |       |
|------------|-------------------|-----------------|-----------------|----------------|----------------|----|-------|---------------|------------|-------|
| <b>K4D</b> | <b>13020HP-04</b> | 13.0            | 20              | 25             | 29             | 50 | 93    | SP□T040204-□□ | FTNA0204   | TW06P |
|            | <b>13520HP-04</b> | 13.5            | 20              | 25             | 29             | 50 | 93    | XO□T040204-□□ |            |       |
|            | <b>14020HP-05</b> | 14.0            | 20              | 25             | 59             | 50 | 124   | SP□T050204-□□ | FTNA0204   | TW06P |
|            | <b>15020HP-05</b> | 15.0            | 20              | 25             | 63             | 50 | 129   |               |            |       |
|            | <b>16020HP-05</b> | 16.0            | 20              | 25             | 67             | 50 | 133   | SP□T060205-□□ | FTKA02206S | TW07P |
|            | <b>17025HP-06</b> | 17.0            | 25              | 34             | 71             | 56 | 143   |               |            |       |
|            | <b>18025HP-06</b> | 18.0            | 25              | 34             | 75             | 56 | 148   | SP□T07T208-□□ | FTKA02565  | TW07S |
|            | <b>19025HP-06</b> | 19.0            | 25              | 34             | 79             | 56 | 152   |               |            |       |
|            | <b>20025HP-07</b> | 20.0            | 25              | 34             | 83             | 56 | 158   | SP□T090308-□□ | FTKA0307   | TW09S |
|            | <b>21025HP-07</b> | 21.0            | 25              | 34             | 87             | 56 | 162   |               |            |       |
|            | <b>22025HP-07</b> | 22.0            | 25              | 34             | 91             | 56 | 166   | SP□T090308-□□ | FTKA0307   | TW09S |
|            | <b>23025HP-07</b> | 23.0            | 25              | 34             | 95             | 56 | 172   |               |            |       |
|            | <b>24032HP-09</b> | 24.0            | 32              | 44             | 99             | 60 | 181   | SP□T090308-□□ | FTKA0307   | TW09S |
|            | <b>25032HP-09</b> | 25.0            | 32              | 44             | 103            | 60 | 185   |               |            |       |
|            | <b>26032HP-09</b> | 26.0            | 32              | 44             | 107            | 60 | 189   | SP□T090308-□□ | FTKA0307   | TW09S |
|            | <b>27032HP-09</b> | 27.0            | 32              | 44             | 111            | 60 | 194   |               |            |       |
|            | <b>28032HP-09</b> | 28.0            | 32              | 44             | 115            | 60 | 199   | SP□T090308-□□ | FTKA0307   | TW09S |
|            | <b>29032HP-09</b> | 29.0            | 32              | 44             | 119            | 60 | 203   |               |            |       |

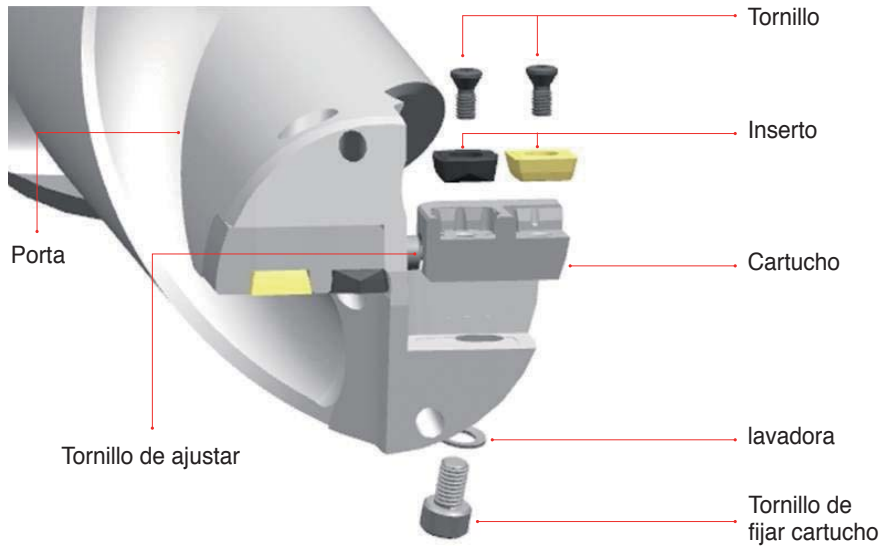
Placas Disponibles G04-05



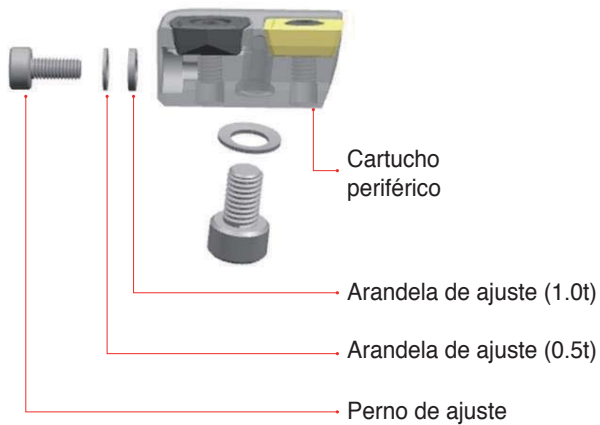
La gran rigidez de la broca reduce los gastos debido a la sustitución del cartucho

## King Drill (para taladrado de diámetro grande)

- Tipo de cartucho para taladro de  $\text{Ø}61\sim\text{Ø}100$
- Cartucho Perpérico puede ajustar el diámetro de taladro dentro de 5mm
- Fácil de ajustar diámetro de taladro con el tornillo de ajustar



### ⌚ Ajuste del diámetro de taladrado

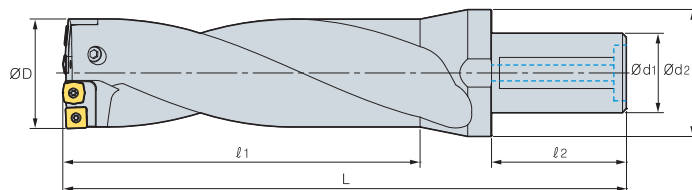


| Ajuste<br>Ø (mm) | Arandela de ajuste |            |
|------------------|--------------------|------------|
|                  | Código             | Ancho (mm) |
| 1                | WA0305             | 0.5        |
| 2                | WA0310             | 1.0        |
| 3                | WA0305+WA0310      | 1.5        |
| 4                | WA0310x2           | 2.0        |
| 5                | WA0305+WA0310x2    | 2.5        |

※ La arandela de ajuste ajusta el diámetro de taladrado hasta 5mm

## King Drill

## El taladro para diámetro grande



(mm)

| Código     | ØD                | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L  | Cartucho |           | Tornillo  | Llave     |          |
|------------|-------------------|-----------------|-----------------|----------------|----------------|----|----------|-----------|-----------|-----------|----------|
|            |                   |                 |                 |                |                |    | Interior | Exterior  |           |           |          |
| <b>K2D</b> | <b>616550-11</b>  | 61~65           | 50              | 80             | 130            | 80 | 255      | KDC6165C  | KDC6165P  | FTKA03508 | TW15S    |
|            | <b>657050-13</b>  | 65~70           | 50              | 88             | 140            | 80 | 265      | KDC6570C  | KDC6570P  | FTKA0410  | TW15S    |
|            | <b>707550-13</b>  | 70~75           | 50              | 88             | 150            | 80 | 275      | KDC7075C  | KDC7075P  | FTKA0410  | TW15S    |
|            | <b>758050-13</b>  | 75~80           | 50              | 88             | 160            | 80 | 285      | KDC7580C  | KDC7580P  | FTKA0410  | TW15S    |
|            | <b>808550-15</b>  | 80~85           | 50              | 88             | 170            | 80 | 295      | KDC8085C  | KDC8085P  | FTNC04511 | TW20S    |
|            | <b>859050-15</b>  | 85~90           | 50              | 95             | 180            | 80 | 305      | KDC8590C  | KDC8590P  | FTNC04511 | TW20S    |
|            | <b>909550-15</b>  | 90~95           | 50              | 95             | 190            | 80 | 315      | KDC9095C  | KDC9095P  | FTNC04511 | TW20S    |
|            | <b>9510050-18</b> | 95~100          | 50              | 95             | 200            | 80 | 325      | KDC95100C | KDC95100P | FTNA0511  | TW20-100 |
| <b>K3D</b> | <b>616550-11</b>  | 61~65           | 50              | 80             | 195            | 80 | 320      | KDC6165C  | KDC6165P  | FTKA03508 | TW15S    |
|            | <b>657050-13</b>  | 65~70           | 50              | 88             | 210            | 80 | 335      | KDC6570C  | KDC6570P  | FTKA0410  | TW15S    |
|            | <b>707550-13</b>  | 70~75           | 50              | 88             | 225            | 80 | 350      | KDC7075C  | KDC7075P  | FTKA0410  | TW15S    |
|            | <b>758050-13</b>  | 75~80           | 50              | 88             | 240            | 80 | 365      | KDC7580C  | KDC7580P  | FTKA0410  | TW15S    |
|            | <b>808550-15</b>  | 80~85           | 50              | 88             | 255            | 80 | 380      | KDC8085C  | KDC8085P  | FTNC04511 | TW20S    |
|            | <b>859050-15</b>  | 85~90           | 50              | 95             | 270            | 80 | 395      | KDC8590C  | KDC8590P  | FTNC04511 | TW20S    |
|            | <b>909550-15</b>  | 90~95           | 50              | 95             | 285            | 80 | 410      | KDC9095C  | KDC9095P  | FTNC04511 | TW20S    |
|            | <b>9510050-18</b> | 95~100          | 50              | 95             | 300            | 80 | 425      | KDC95100C | KDC95100P | FTNA0511  | TW20-100 |
| <b>K4D</b> | <b>616550-11</b>  | 61~65           | 50              | 80             | 260            | 80 | 385      | KDC6165C  | KDC6165P  | FTKA03508 | TW15S    |
|            | <b>657050-13</b>  | 65~70           | 50              | 88             | 280            | 80 | 405      | KDC6570C  | KDC6570P  | FTKA0410  | TW15S    |
|            | <b>707550-13</b>  | 70~75           | 50              | 88             | 300            | 80 | 425      | KDC7075C  | KDC7075P  | FTKA0410  | TW15S    |
|            | <b>758050-13</b>  | 75~80           | 50              | 88             | 320            | 80 | 445      | KDC7580C  | KDC7580P  | FTKA0410  | TW15S    |
|            | <b>808550-15</b>  | 80~85           | 50              | 88             | 340            | 80 | 465      | KDC8085C  | KDC8085P  | FTNC04511 | TW20S    |
|            | <b>859050-15</b>  | 85~90           | 50              | 95             | 360            | 80 | 485      | KDC8590C  | KDC8590P  | FTNC04511 | TW20S    |
|            | <b>909550-15</b>  | 90~95           | 50              | 95             | 380            | 80 | 505      | KDC9095C  | KDC9095P  | FTNC04511 | TW20S    |
|            | <b>9510050-18</b> | 95~100          | 50              | 95             | 400            | 80 | 525      | KDC95100C | KDC95100P | FTNA0511  | TW20-100 |

Placas Disponibles G04~05

### Partes

| Cartucho  |           | Rango (Ø) | Placa         |          |               |          | Tornillo  | Llave    |
|-----------|-----------|-----------|---------------|----------|---------------|----------|-----------|----------|
| Interior  | Exterior  |           | Código        | Cantidad | Código        | Cantidad |           |          |
| KDC6165C  | KDC6165P  | 61 ~ 65   | XO□T11T306-□□ | 2        | SP□T11T308-□□ | 2        | FTKA03508 | TW15S    |
| KDC6570C  | KDC6570P  | 65 ~ 70   | XO□T130406-□□ | 2        | SP□T130410-□□ | 2        | FTKA0410  | TW15S    |
| KDC7075C  | KDC7075P  | 70 ~ 75   | XO□T130406-□□ | 2        | SP□T130410-□□ | 2        | FTKA0410  | TW15S    |
| KDC7580C  | KDC7580P  | 75 ~ 80   | XO□T130406-□□ | 2        | SP□T130410-□□ | 2        | FTKA0410  | TW15S    |
| KDC8085C  | KDC8085P  | 80 ~ 85   | XO□T15M508-□□ | 2        | SP□T15M510-□□ | 2        | FTNC04511 | TW20S    |
| KDC8590C  | KDC8590P  | 85 ~ 90   | XO□T15M508-□□ | 2        | SP□T15M510-□□ | 2        | FTNC04511 | TW20S    |
| KDC9095C  | KDC9095P  | 90 ~ 95   | XO□T15M508-□□ | 2        | SP□T15M510-□□ | 2        | FTNC04511 | TW20S    |
| KDC95100C | KDC95100P | 95 ~ 100  | XO□T180508-□□ | 2        | SP□T180510-□□ | 2        | FTNA0511  | TW20-100 |



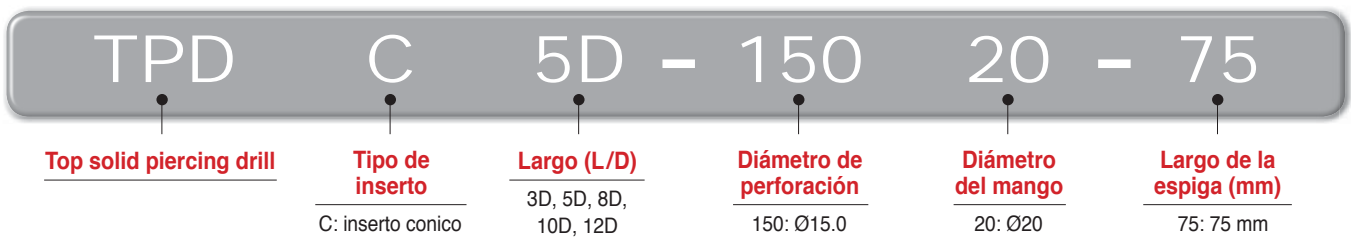
Broca indexable de punta cónica

**TPDC** **new**

- Diseño de sujeción
  - Sistema de amarre de un solo paso → Mayor estabilidad
  - Sistema de sujeción que permite cambiar las inserciones mientras el cuerpo está conectado a la máquina → Tiempo de configuración reducido
- Diseño optimizado de la cuchilla
  - Excelente control de viruta → Posibilidad de uso para varios tipos de piezas de trabajo
- Sistema de salida de refrigerante en forma helicoidal
  - Área amplia de desalajo para la viruta → Mejor lubricación + flujo de virutas mejorado
- Tecnología de materiales
  - Sustrato ultrafino + Aplicación de recubrimiento multicapa → Excelente resistencia al descamado y al desgaste

➤ Sistema de Codificación

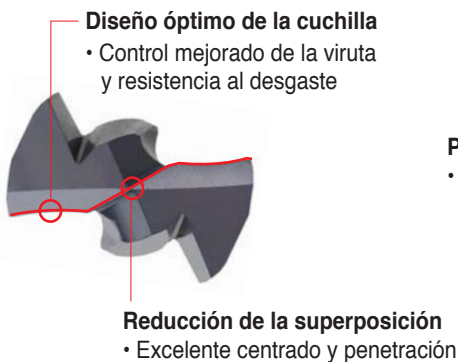
Porta



insertos

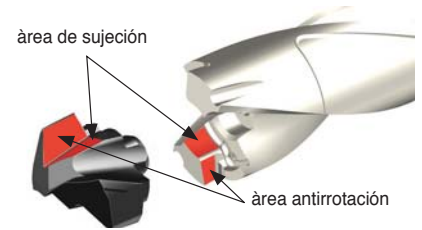


➤ Características



## Características del sistema de sujeción

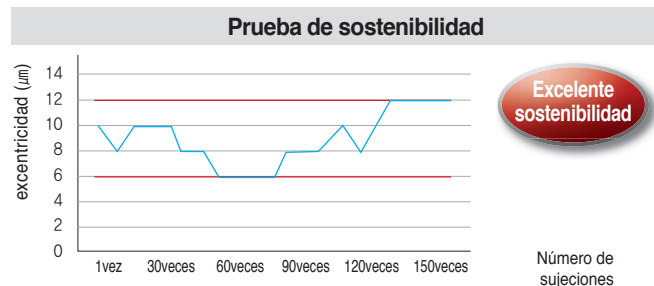
- Sistema de amarre de un solo paso → Cambio de herramienta fácil y rápido, mantiene posición
  - Área de sujeción: Cambio de herramienta fácil y rápido
  - Área antirrotación: actúa como un tope
  - El área de sujeción y antirrotación forma un ángulo agudo para evitar la rotación del inserto durante el mecanizado



## Evaluación de desempeño

| Test de durabilidad           |  |
|-------------------------------|--|
| ■ <b>Pieza de trabajo</b>     | SCM440 (HRC22)   |
| ■ <b>Condiciones de corte</b> | Diámetro del taladro (mm) = Ø15.0<br>vc (m/min) = 90, fn (mm/rev) = 0.25<br>ap (mm) = 60, con refrigerante |
| ■ <b>Herramientas</b>         | <b>Insertos</b> TPD1500CP (PC5335)<br><b>Porta</b> TPDC5D-15020-75   |

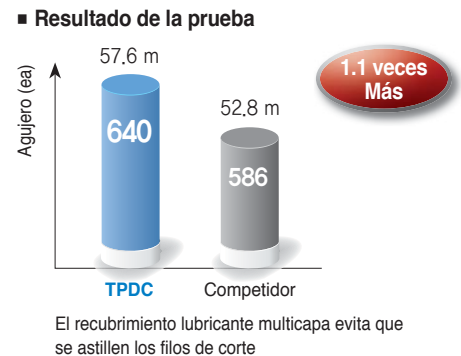
Después de usar 40 insertos, el run-out del montaje permanece debajo de 15µm



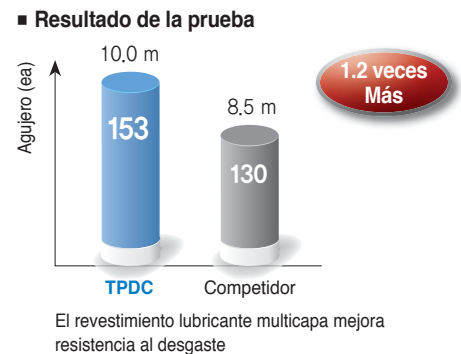
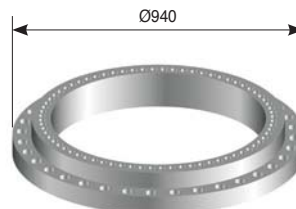
Después de sujetar 150 veces, el run-out de la broca permanece

## Cadena de eslabones de arbusto

|                               |  |
|-------------------------------|--|
| ■ <b>Uso</b>                  | repuesto de la máquina   |
| ■ <b>Pieza de trabajo</b>     | acero aleado (SCM440, HRC22)   |
| ■ <b>Condiciones de corte</b> | Diámetro del taladro (mm) = Ø19.0<br>vc (m/min) = 100<br>fn (mm/rev) = 0.3<br>ap (mm) = 90, con refrigerante |
| ■ <b>Herramientas</b>         | <b>Insertos</b> TPD1900CP (PC5335)<br><b>Porta</b> TPDC5D-19025-95   |



|                               |  |
|-------------------------------|--|
| ■ <b>Uso</b>                  | repuesto de la máquina   |
| ■ <b>Pieza de trabajo</b>     | Acero al carbono (SM45C, HRC40)  |
| ■ <b>Condiciones de corte</b> | Diámetro del taladro (mm) = Ø18.0<br>vc (m/min) = 60<br>fn (mm/rev) = 0.15<br>ap (mm) = 65, con refrigerante |
| ■ <b>Herramientas</b>         | <b>Insertos</b> TPD1800CP (PC5335)<br><b>Porta</b> TPDC5D-18025-90   |



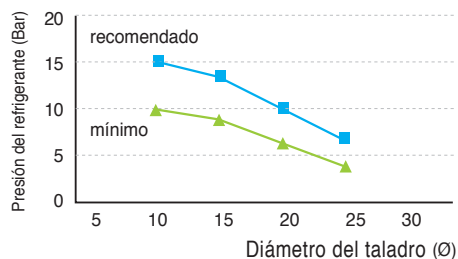
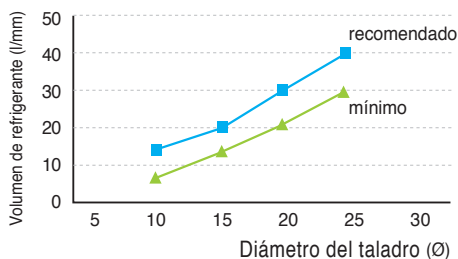
## Condiciones de Corte Recomendadas

| Material |                             |                                       | Grado   | vc (m/min)       | Dimensiones (L/D) = 3D, 5D                             |               |               |               |
|----------|-----------------------------|---------------------------------------|---------|------------------|--|---------------|---------------|---------------|
| ISO      | Materiales pieza de trabajo | HB                                    |         |                  | Avance (mm/rev) Dependiendo del Diam. de la broca (mm) |               |               |               |
|          |                             |                                       |         |                  |  | Ø12.00~Ø15.99 | Ø16.00~Ø25.99 | Ø25.00~Ø30.99 |
| P        | Acero al Carbón             | Acero Bajo en Carbón                  | 80~120  | PC5335<br>PC330P | 110(80~140)  | 0.15~0.30     | 0.20~0.35     | 0.25~0.40     |
|          |                             | Acero Alto en Carbón                  | 180~280 | PC5335<br>PC330P | 100(70~130)  | 0.15~0.30     | 0.20~0.35     | 0.25~0.40     |
|          | Aleación de Acero           | Aleación baja en Acero                | 140~260 | PC5335<br>PC5300 | 110(80~140)  | 0.18~0.35     | 0.23~0.38     | 0.28~0.43     |
|          |                             | Aleación baja en Acero Pre-endurecido | 200~400 | PC5335<br>PC5300 | 75(50~100)   | 0.18~0.35     | 0.23~0.38     | 0.28~0.43     |
|          |                             | Aleación baja en Acero                | 260~320 | PC5335           | 70(50~90)  | 0.18~0.30     | 0.20~0.35     | 0.25~0.40     |
|          |                             | Acero Altamente Endurecido            | 300~450 | PC5335<br>PC5300 | 60(40~80)  | 0.18~0.30     | 0.20~0.35     | 0.25~0.40     |
| M        | Acero Inoxidable            | Austenite series                      | 135~275 | PC330N           | 60(40~80)  | 0.05~0.15     | 0.10~0.20     | 0.15~0.25     |
|          |                             | Ferrite series                        | 135~275 | PC330N           | 70(50~90)  | 0.10~0.20     | 0.15~0.30     | 0.20~0.35     |
|          |                             | Martensite series                     | 135~275 | PC330N           | 70(50~90)  | 0.10~0.20     | 0.15~0.30     | 0.20~0.35     |
| N        | Metales No-ferrosos         | Aleación de Aluminio                  | 30~150  | H01              | 200(90~220)  | 0.35~0.45     | 0.40~0.50     | 0.45~0.55     |
|          |                             | Aleación de Cobre                     | 150~160 | H01              | 200(90~220)  | 0.35~0.45     | 0.40~0.50     | 0.45~0.55     |

- En caso de 8D, reducir 40~50% la condición de corte ó maquinado el principio del orificio (1.5D)
- En maquinado interrumpido, reducir 30~50% del avance maquinando alrededor de la parte interrumpida
- En caso de 10~12D, referir a las condiciones recomendadas de corte como abajo.
- En maquinado de acero inoxidable, procese con el avance bajo, establezca la mejor condición de corte comprobando la maquinabilidad gradualmente

## Consejo de refrigeración

- **Pieza de trabajo** SCM440 (HrC22)
- **Condiciones de corte** vc (m/min) = 100, con refrigerante



## Cómo conseguir una buena sujeción del inserto



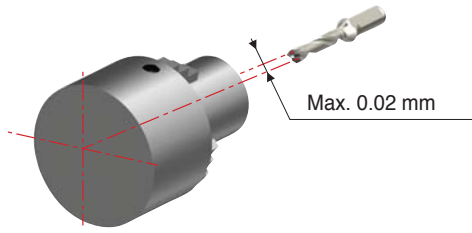
① Limpie el asiento de montaje con aire o tela

② Coloque un inserto en el soporte

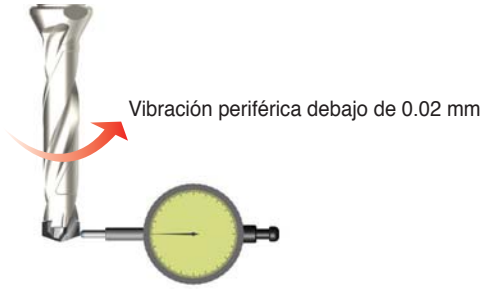
③ Una parte de la llave y la parte B del inserto deben estar paralelas entre sí antes de ajustar el inserto. Gire la llave en sentido horario para finalizar la fijación

**Inserto en sujeción**

## Precauciones al configurar



Ajuste del equipo horizontal



Ajuste del equipo vertical

## Precauciones al perforar

| Rampa  | Planos superpuestos  | Corte parcial | Perforación previa |
|--|--|---------------|--------------------|
|  |  |               |                    |
| <ol style="list-style-type: none"> <li>Una pendiente inclinada más de 6° no está permitida</li> <li>Al ingresar, reduzca el avance a 30 ~ 50%</li> </ol> | <ol style="list-style-type: none"> <li>El espacio entre planos afecta la evacuación de la viruta</li> <li>Evitar dejar espacio entre los planos</li> </ol> | no permitido  | no permitido       |

## Condiciones de corte recomendadas en taladrado de agujeros profundos (10D, 12D)

### Taladrado con broca guía (recomendado)

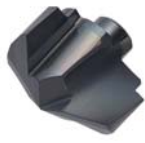
| 1. Taladro de un primer agujero con broca guía  | 2. Comienzo del taladrado  |
|---|--|
|   |  |
| Taladre un primer agujero de profundidad 0.5D, con velocidad de corte al 70% de la velocidad general recomendada y usando una broca 1.5D o 3D | Después de cambiar la broca, comience a taladrar con las condiciones de corte recomendadas |

### Taladrado sin broca guía

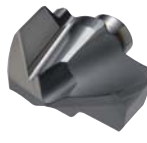
| 1. Taladre primero un primer agujero (sin broca guía)  | 2. Deje de taladrar   | 3. Prepare el proceso de taladrado principal   | 4. Comience el proceso de taladro normal                       |
|--|---|--|--|
|  |   |  |  |
| Taladre un primer agujero de profundidad 0.5D, con velocidad de corte al 70% de la velocidad general recomendada. Deje de talabrar durante unos 2-3 segundos sin retirar la broca del agujero. | Retire la broca sin evacuar lubricante. Espere unos 2-3 segundos. | Inserte la broca en el agujero hasta quedar unos 2-3 mm por encima de la superficie antes mecanizada. Taladre durante 2-3 segundos antes de comenzar a lubricar. | Comience a taladrar con las condiciones de corte recomendadas. |



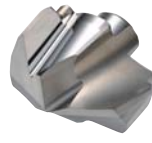
**TPDC Inserto** new



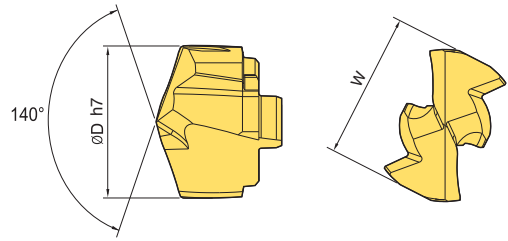
CP



CM



CN



(mm)

| Designación      | Diámetro de la broca (ØD) | Recubierta |        |        | Sin Rec H01 | Broca          | Llave    |
|------------------|---------------------------|------------|--------|--------|-------------|----------------|----------|
|                  |                           | PC5335     | PC330P | PC330N |             |                |          |
| TPD 1200CP,CM,CN | 12.0                      | ●          |        |        |             | TPDC□D-12016-□ | TPDC-W12 |
| 1220CP,CM,CN     | 12.2                      | ●          |        |        |             |                |          |
| 1250CP,CM,CN     | 12.5                      | ●          |        |        |             | TPDC□D-12516-□ |          |
| 1260CP,CM,CN     | 12.6                      | ●          |        |        |             |                | TPDC-W13 |
| 1300CP,CM,CN     | 13.0                      | ●          |        |        |             | TPDC□D-13016-□ |          |
| 1350CP,CM,CN     | 13.5                      | ●          |        |        |             | TPDC□D-13516-□ |          |
| 1400CP,CM,CN     | 14.0                      |            |        |        |             |                | TPDC-W14 |
| 1420CP,CM,CN     | 14.2                      | ●          |        |        |             | TPDC□D-14016-□ |          |
| 1430CP,CM,CN     | 14.3                      |            |        |        |             |                | TPDC-W15 |
| 1450CP,CM,CN     | 14.5                      |            |        |        |             | TPDC□D-14516-□ |          |
| 1500CP,CM,CN     | 15.0                      | ●          |        |        |             | TPDC□D-15020-□ |          |
| 1550CP,CM,CN     | 15.5                      |            |        |        |             |                | TPDC-W16 |
| 1600CP,CM,CN     | 16.0                      |            |        |        |             |                |          |
| 1630CP,CM,CN     | 16.3                      | ●          |        |        |             | TPDC□D-16020-□ |          |
| 1650CP,CM,CN     | 16.5                      |            |        |        |             |                | TPDC-W17 |
| 1670CP,CM,CN     | 16.7                      |            |        |        |             |                |          |
| 1700CP,CM,CN     | 17.0                      | ●          |        |        |             | TPDC□D-17020-□ |          |
| 1750CP,CM,CN     | 17.5                      |            |        |        |             |                | TPDC-W18 |
| 1770CP,CM,CN     | 17.7                      |            |        |        |             |                |          |
| 1800CP,CM,CN     | 18.0                      |            |        |        |             |                | TPDC-W19 |
| 1810CP,CM,CN     | 18.1                      | ●          |        |        |             | TPDC□D-18025-□ |          |
| 1850CP,CM,CN     | 18.5                      |            |        |        |             |                | TPDC-W20 |
| 1860CP,CM,CN     | 18.6                      |            |        |        |             |                |          |
| 1870CP,CM,CN     | 18.7                      |            |        |        |             |                | TPDC-W21 |
| 1900CP,CM,CN     | 19.0                      | ●          |        |        |             | TPDC□D-19025-□ |          |
| 1920CP,CM,CN     | 19.2                      |            |        |        |             |                | TPDC-W22 |
| 1950CP,CM,CN     | 19.5                      |            |        |        |             |                |          |
| 1970CP,CM,CN     | 19.7                      |            |        |        |             |                | TPDC-W23 |
| 2000CP,CM,CN     | 20.0                      | ●          |        |        |             | TPDC□D-20025-□ |          |
| 2050CP,CM,CN     | 20.5                      |            |        |        |             |                | TPDC-W24 |
| 2100CP,CM,CN     | 21.0                      | ●          |        |        |             | TPDC□D-21025-□ |          |
| 2150CP,CM,CN     | 21.5                      |            |        |        |             |                | TPDC-W25 |
| 2200CP,CM,CN     | 22.0                      | ●          |        |        |             | TPDC□D-22025-□ |          |
| 2250CP,CM,CN     | 22.5                      |            |        |        |             |                | TPDC-W26 |
| 2260CP,CM,CN     | 22.6                      |            |        |        |             |                |          |
| 2270CP,CM,CN     | 22.7                      |            |        |        |             |                | TPDC-W27 |
| 2300CP,CM,CN     | 23.0                      | ●          |        |        |             | TPDC□D-23025-□ |          |
| 2350CP,CM,CN     | 23.5                      |            |        |        |             |                | TPDC-W28 |
| 2400CP,CM,CN     | 24.0                      | ●          |        |        |             | TPDC□D-24032-□ |          |
| 2450CP,CM,CN     | 24.5                      |            |        |        |             |                | TPDC-W29 |
| 2500CP,CM,CN     | 25.0                      |            |        |        |             |                |          |
| 2530CP,CM,CN     | 25.3                      | ●          |        |        |             | TPDC□D-25032-□ |          |
| 2550CP,CM,CN     | 25.5                      |            |        |        |             |                | TPDC-W30 |
| 2580CP,CM,CN     | 25.8                      |            |        |        |             |                |          |
| 2590CP,CM,CN     | 25.9                      |            |        |        |             |                | TPDC-W26 |
| 2600CP,CM,CN     | 26.0                      | ●          |        |        |             | TPDC□D-26032-□ |          |
| 2650CP,CM,CN     | 26.5                      |            |        |        |             |                | TPDC-W27 |
| 2700CP,CM,CN     | 27.0                      | ●          |        |        |             | TPDC□D-27032-□ |          |
| 2750CP,CM,CN     | 27.5                      | ●          |        |        |             |                | TPDC-W28 |
| 2800CP,CM,CN     | 28.0                      |            |        |        |             |                |          |
| 2850CP,CM,CN     | 28.5                      | ●          |        |        |             | TPDC□D-28032-□ |          |
| 2900CP,CM,CN     | 29.0                      |            |        |        |             |                | TPDC-W29 |
| 2950CP,CM,CN     | 29.5                      | ●          |        |        |             | TPDC□D-29032-□ |          |
| 3000CP,CM,CN     | 30.0                      |            |        |        |             |                | TPDC-W30 |
| 3050CP,CM,CN     | 30.5                      | ●          |        |        |             | TPDC□D-30032-□ |          |

※ Disponibles diámetros 12.0-30.9 aparte de los ítems de stock indicados en la tabla de nuestra oferta estándar.

● : En Almacén

**Repuestos (se recomienda llaves de torque controlado)**

(mm)

| Designación | Diámetro de la broca (ØD) | Par de apriet (N·m) | Designación | Diámetro de la broca (ØD) | Par de apriet (N·m) | Designación | Diámetro de la broca (ØD) | Par de apriet (N·m) |
|-------------|---------------------------|---------------------|-------------|---------------------------|---------------------|-------------|---------------------------|---------------------|
| TPDC-W12    | 12                        | 2.5                 | TPDC-W18    | 18                        | 2.5                 | TPDC-W24    | 24                        | 3.5                 |
| TPDC-W13    | 13                        | 2.5                 | TPDC-W19    | 19                        | 2.5                 | TPDC-W25    | 25                        | 3.5                 |
| TPDC-W14    | 14                        | 2.5                 | TPDC-W20    | 20                        | 3.5                 | TPDC-W26    | 26                        | 4.5                 |
| TPDC-W15    | 15                        | 2.5                 | TPDC-W21    | 21                        | 3.5                 | TPDC-W27    | 27                        | 4.5                 |
| TPDC-W16    | 16                        | 2.5                 | TPDC-W22    | 22                        | 3.5                 | TPDC-W28    | 28                        | 4.5                 |
| TPDC-W17    | 17                        | 2.5                 | TPDC-W23    | 23                        | 3.5                 | TPDC-W29    | 29                        | 4.5                 |
|             |                           |                     |             |                           |                     | TPDC-W30    | 30                        | 4.5                 |

**Brocas**



**G**

# TPDC (3D/5D/8D/10D/12D) new

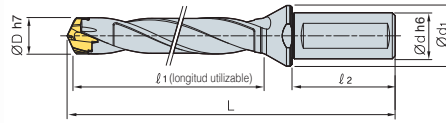


Fig.1

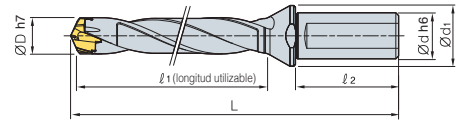


Fig.2

(mm)

|              | Código      | ØD        | Ød | Ød <sub>1</sub> | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L                | Inserto          | Fig. |
|--------------|-------------|-----------|----|-----------------|----------------|----------------|------------------|------------------|------|
| TPDC         | 3D-12016-36 | 12.0~12.4 | 16 | 20              | 36             | 48             | 99               | TPD1200C□-1249C□ | 1    |
|              | 3D-12516-38 | 12.5~12.9 | 16 | 20              | 38             | 48             | 101              | TPD1250C□-1299C□ | 1    |
|              | 3D-13016-39 | 13.0~13.4 | 16 | 20              | 39             | 48             | 103              | TPD1300C□-1349C□ | 1    |
|              | 3D-13516-41 | 13.5~13.9 | 16 | 20              | 41             | 48             | 105              | TPD1350C□-1399C□ | 1    |
|              | 3D-14016-42 | 14.0~14.4 | 16 | 20              | 42             | 48             | 106              | TPD1400C□-1449C□ | 1    |
|              | 3D-14516-44 | 14.5~14.9 | 16 | 20              | 44             | 48             | 107              | TPD1450C□-1499C□ | 1    |
|              | 3D-15020-45 | 15.0~15.9 | 20 | 25              | 45             | 50             | 113              | TPD1500C□-1599C□ | 2    |
|              | 3D-16020-48 | 16.0~16.9 | 20 | 25              | 48             | 50             | 117              | TPD1600C□-1699C□ | 2    |
|              | 3D-17020-51 | 17.0~17.9 | 20 | 25              | 51             | 50             | 120              | TPD1700C□-1799C□ | 2    |
|              | 3D-18025-54 | 18.0~18.9 | 25 | 33              | 54             | 56             | 132              | TPD1800C□-1899C□ | 2    |
|              | 3D-19025-57 | 19.0~19.9 | 25 | 33              | 57             | 56             | 135              | TPD1900C□-1999C□ | 2    |
|              | 3D-20025-60 | 20.0~20.9 | 25 | 33              | 60             | 56             | 138              | TPD2000C□-2099C□ | 2    |
|              | 3D-21025-63 | 21.0~21.9 | 25 | 33              | 63             | 56             | 141              | TPD2100C□-2199C□ | 2    |
|              | 3D-22025-66 | 22.0~22.9 | 25 | 33              | 66             | 56             | 145              | TPD2200C□-2299C□ | 2    |
|              | 3D-23025-69 | 23.0~23.9 | 25 | 33              | 69             | 56             | 149              | TPD2300C□-2399C□ | 2    |
|              | 3D-24032-72 | 24.0~24.9 | 32 | 43              | 72             | 60             | 159              | TPD2400C□-2499C□ | 2    |
|              | 3D-25032-75 | 25.0~25.9 | 32 | 43              | 75             | 60             | 162              | TPD2500C□-2599C□ | 2    |
|              | 3D-26032-78 | 26.0~26.9 | 32 | 43              | 78             | 60             | 173              | TPD2600C□-2699C□ | 2    |
|              | 3D-27032-81 | 27.0~27.9 | 32 | 43              | 81             | 60             | 176              | TPD2700C□-2799C□ | 2    |
|              | 3D-28032-84 | 28.0~28.9 | 32 | 43              | 84             | 60             | 180              | TPD2800C□-2899C□ | 2    |
|              | 3D-29032-87 | 29.0~29.9 | 32 | 43              | 87             | 60             | 185              | TPD2900C□-2999C□ | 2    |
|              | 3D-30032-90 | 30.0~30.9 | 32 | 43              | 90             | 60             | 188              | TPD3000C□-3099C□ | 2    |
|              | 5D-12016-60 | 12.0~12.9 | 16 | 20              | 60             | 48             | 123              | TPD1200C□-1249C□ | 1    |
|              | 5D-12516-63 | 12.5~12.9 | 16 | 20              | 63             | 48             | 126              | TPD1250C□-1299C□ | 1    |
|              | 5D-13016-65 | 13.0~13.9 | 16 | 20              | 65             | 48             | 129              | TPD1300C□-1349C□ | 1    |
|              | 5D-13516-68 | 13.5~13.9 | 16 | 20              | 68             | 48             | 132              | TPD1350C□-1399C□ | 1    |
|              | 5D-14016-70 | 14.0~14.9 | 16 | 20              | 70             | 48             | 134              | TPD1400C□-1449C□ | 1    |
|              | 5D-14516-73 | 14.5~14.9 | 16 | 20              | 73             | 48             | 136              | TPD1450C□-1499C□ | 1    |
|              | 5D-15020-75 | 15.0~15.9 | 20 | 25              | 75             | 50             | 143              | TPD1500C□-1599C□ | 2    |
|              | 5D-16020-80 | 16.0~16.9 | 20 | 25              | 80             | 50             | 149              | TPD1600C□-1699C□ | 2    |
| 5D-17020-85  | 17.0~17.9   | 20        | 25 | 85              | 50             | 154            | TPD1700C□-1799C□ | 2                |      |
| 5D-18025-90  | 18.0~18.9   | 25        | 33 | 90              | 56             | 168            | TPD1800C□-1899C□ | 2                |      |
| 5D-19025-95  | 19.0~19.9   | 25        | 33 | 95              | 56             | 173            | TPD1900C□-1999C□ | 2                |      |
| 5D-20025-100 | 20.0~20.9   | 25        | 33 | 100             | 56             | 178            | TPD2000C□-2099C□ | 2                |      |
| 5D-21025-105 | 21.0~21.9   | 25        | 33 | 105             | 56             | 183            | TPD2100C□-2199C□ | 2                |      |
| 5D-22025-110 | 22.0~22.9   | 25        | 33 | 110             | 56             | 189            | TPD2200C□-2299C□ | 2                |      |
| 5D-23025-115 | 23.0~23.9   | 25        | 33 | 115             | 56             | 195            | TPD2300C□-2399C□ | 2                |      |
| 5D-24032-120 | 24.0~24.9   | 32        | 43 | 120             | 60             | 207            | TPD2400C□-2499C□ | 2                |      |
| 5D-25032-125 | 25.0~25.9   | 32        | 43 | 125             | 60             | 212            | TPD2500C□-2599C□ | 2                |      |
| 5D-26032-130 | 26.0~26.9   | 32        | 43 | 130             | 60             | 225            | TPD2600C□-2699C□ | 2                |      |
| 5D-27032-135 | 27.0~27.9   | 32        | 43 | 135             | 60             | 230            | TPD2700C□-2799C□ | 2                |      |
| 5D-28032-140 | 28.0~28.9   | 32        | 43 | 140             | 60             | 236            | TPD2800C□-2899C□ | 2                |      |
| 5D-29032-145 | 29.0~29.9   | 32        | 43 | 145             | 60             | 243            | TPD2900C□-2999C□ | 2                |      |
| 5D-30032-150 | 30.0~30.9   | 32        | 43 | 150             | 60             | 248            | TPD3000C□-3099C□ | 2                |      |
| 8D-12016-96  | 12.0~12.9   | 16        | 20 | 96              | 48             | 159            | TPD1200C□-1249C□ | 1                |      |
| 8D-12516-100 | 12.5~12.9   | 16        | 20 | 100             | 48             | 163            | TPD1250C□-1299C□ | 1                |      |
| 8D-13016-104 | 13.0~13.9   | 16        | 20 | 104             | 48             | 168            | TPD1300C□-1349C□ | 1                |      |
| 8D-13516-108 | 13.5~13.9   | 16        | 20 | 108             | 48             | 173            | TPD1350C□-1399C□ | 1                |      |
| 8D-14016-112 | 14.0~14.9   | 16        | 20 | 112             | 48             | 176            | TPD1400C□-1449C□ | 1                |      |
| 8D-14516-116 | 14.5~14.9   | 16        | 20 | 116             | 48             | 180            | TPD1450C□-1499C□ | 1                |      |
| 8D-15020-120 | 15.0~15.9   | 20        | 25 | 120             | 50             | 188            | TPD1500C□-1599C□ | 2                |      |
| 8D-16020-128 | 16.0~16.9   | 20        | 25 | 128             | 50             | 197            | TPD1600C□-1699C□ | 2                |      |
| 8D-17020-136 | 17.0~17.9   | 20        | 25 | 136             | 50             | 205            | TPD1700C□-1799C□ | 2                |      |
| 8D-18025-144 | 18.0~18.9   | 25        | 33 | 144             | 56             | 222            | TPD1800C□-1899C□ | 2                |      |
| 8D-19025-152 | 19.0~19.9   | 25        | 33 | 152             | 56             | 230            | TPD1900C□-1999C□ | 2                |      |

Placas Disponibles G31

\* La dimensión del mango está basada en DIN6535 e ISO9677





# TPDC (3D/5D/8D/10D/12D) new

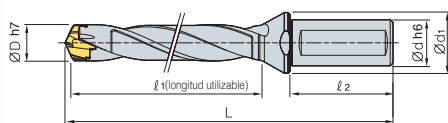


Fig.1

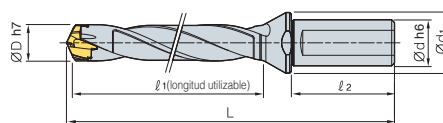


Fig.2

| (mm)          |               |           |    |                 |                |                |                  |                  |      |
|---------------|---------------|-----------|----|-----------------|----------------|----------------|------------------|------------------|------|
|               | Código        | ØD        | Ød | Ød <sub>1</sub> | l <sub>1</sub> | l <sub>2</sub> | L                | Inserto          | Fig. |
| TPDC          | 8D-20025-160  | 20.0~20.9 | 25 | 33              | 160            | 56             | 238              | TPD2000C□-2099C□ | 2    |
|               | 8D-21025-168  | 21.0~21.9 | 25 | 33              | 168            | 56             | 246              | TPD2100C□-2199C□ | 2    |
|               | 8D-22025-176  | 22.0~22.9 | 25 | 33              | 176            | 56             | 255              | TPD2200C□-2299C□ | 2    |
|               | 8D-23025-184  | 23.0~23.9 | 25 | 33              | 184            | 56             | 264              | TPD2300C□-2399C□ | 2    |
|               | 8D-24032-192  | 24.0~24.9 | 32 | 43              | 192            | 60             | 279              | TPD2400C□-2499C□ | 2    |
|               | 8D-25032-200  | 25.0~25.9 | 32 | 43              | 200            | 60             | 287              | TPD2500C□-2599C□ | 2    |
|               | 8D-26032-208  | 26.0~26.9 | 32 | 43              | 208            | 60             | 303              | TPD2600C□-2699C□ | 2    |
|               | 8D-27032-216  | 27.0~27.9 | 32 | 43              | 216            | 60             | 311              | TPD2700C□-2799C□ | 2    |
|               | 8D-28032-224  | 28.0~28.9 | 32 | 43              | 224            | 60             | 320              | TPD2800C□-2899C□ | 2    |
|               | 8D-29032-232  | 29.0~29.9 | 32 | 43              | 232            | 60             | 330              | TPD2900C□-2999C□ | 2    |
|               | 8D-30032-240  | 30.0~30.9 | 32 | 43              | 240            | 60             | 338              | TPD3000C□-3099C□ | 2    |
|               | 10D-12016-120 | 12.0~12.4 | 16 | 20              | 120            | 48             | 183              | TPD1200C□-1249C□ | 1    |
|               | 10D-12516-125 | 12.5~12.9 | 16 | 20              | 125            | 48             | 188              | TPD1250C□-1299C□ | 1    |
|               | 10D-13016-130 | 13.0~13.4 | 16 | 20              | 130            | 48             | 194              | TPD1300C□-1349C□ | 1    |
|               | 10D-13516-135 | 13.5~13.9 | 16 | 20              | 135            | 48             | 199              | TPD1350C□-1399C□ | 1    |
|               | 10D-14016-140 | 14.0~14.4 | 16 | 20              | 140            | 48             | 204              | TPD1400C□-1449C□ | 1    |
|               | 10D-14516-145 | 14.5~14.9 | 16 | 20              | 145            | 48             | 208              | TPD1450C□-1499C□ | 1    |
|               | 10D-15020-150 | 15.0~15.9 | 20 | 25              | 150            | 50             | 218              | TPD1500C□-1599C□ | 1    |
|               | 10D-16020-160 | 16.0~16.9 | 20 | 25              | 160            | 50             | 229              | TPD1600C□-1699C□ | 1    |
|               | 10D-17020-170 | 17.0~17.9 | 20 | 25              | 170            | 50             | 239              | TPD1700C□-1799C□ | 1    |
|               | 10D-18025-180 | 18.0~18.9 | 25 | 33              | 180            | 56             | 258              | TPD1800C□-1899C□ | 1    |
|               | 10D-19025-190 | 19.0~19.9 | 25 | 33              | 190            | 56             | 268              | TPD1900C□-1999C□ | 1    |
|               | 10D-20025-200 | 20.0~20.9 | 25 | 33              | 200            | 56             | 278              | TPD2000C□-2099C□ | 1    |
|               | 10D-21025-210 | 21.0~21.9 | 25 | 33              | 210            | 56             | 288              | TPD2100C□-2199C□ | 1    |
|               | 10D-22025-220 | 22.0~22.9 | 25 | 33              | 220            | 56             | 299              | TPD2200C□-2299C□ | 1    |
|               | 10D-23025-230 | 23.0~23.9 | 25 | 33              | 230            | 56             | 310              | TPD2300C□-2399C□ | 1    |
|               | 10D-24032-240 | 24.0~24.9 | 32 | 43              | 240            | 60             | 327              | TPD2400C□-2499C□ | 2    |
|               | 10D-25032-250 | 25.0~25.9 | 32 | 43              | 250            | 60             | 337              | TPD2500C□-2599C□ | 2    |
|               | 10D-26032-260 | 26.0~26.9 | 32 | 43              | 260            | 60             | 355              | TPD2600C□-2699C□ | 2    |
|               | 10D-27032-270 | 27.0~27.9 | 32 | 43              | 270            | 60             | 365              | TPD2700C□-2799C□ | 2    |
|               | 10D-28032-280 | 28.0~28.9 | 32 | 43              | 280            | 60             | 376              | TPD2800C□-2899C□ | 2    |
|               | 10D-29032-290 | 29.0~29.9 | 32 | 43              | 290            | 60             | 388              | TPD2900C□-2999C□ | 2    |
|               | 10D-30032-300 | 30.0~30.9 | 32 | 43              | 300            | 60             | 398              | TPD3000C□-3099C□ | 2    |
| 12D-12016-144 | 12.0~12.4     | 16        | 20 | 144             | 48             | 207            | TPD1200C□-1249C□ | 1                |      |
| 12D-12516-150 | 12.5~12.9     | 16        | 20 | 150             | 48             | 213            | TPD1250C□-1299C□ | 1                |      |
| 12D-13016-156 | 13.0~13.4     | 16        | 20 | 156             | 48             | 220            | TPD1300C□-1349C□ | 1                |      |
| 12D-13516-162 | 13.5~13.9     | 16        | 20 | 162             | 48             | 226            | TPD1350C□-1399C□ | 1                |      |
| 12D-14016-168 | 14.0~14.4     | 16        | 20 | 168             | 48             | 232            | TPD1400C□-1449C□ | 1                |      |
| 12D-14516-174 | 14.5~14.9     | 16        | 20 | 174             | 48             | 237            | TPD1450C□-1499C□ | 1                |      |
| 12D-15020-180 | 15.0~15.9     | 20        | 25 | 180             | 50             | 248            | TPD1500C□-1599C□ | 1                |      |
| 12D-16020-192 | 16.0~16.9     | 20        | 25 | 192             | 50             | 261            | TPD1600C□-1699C□ | 1                |      |
| 12D-17020-204 | 17.0~17.9     | 20        | 25 | 204             | 50             | 273            | TPD1700C□-1799C□ | 1                |      |
| 12D-18025-216 | 18.0~18.9     | 25        | 33 | 216             | 56             | 294            | TPD1800C□-1899C□ | 1                |      |
| 12D-19025-228 | 19.0~19.9     | 25        | 33 | 228             | 56             | 306            | TPD1900C□-1999C□ | 1                |      |
| 12D-20025-240 | 20.0~20.9     | 25        | 33 | 240             | 56             | 318            | TPD2000C□-2099C□ | 1                |      |
| 12D-21025-252 | 21.0~21.9     | 25        | 33 | 252             | 56             | 330            | TPD2100C□-2199C□ | 1                |      |
| 12D-22025-264 | 22.0~22.9     | 25        | 33 | 264             | 56             | 343            | TPD2200C□-2299C□ | 1                |      |
| 12D-23025-276 | 23.0~23.9     | 25        | 33 | 276             | 56             | 356            | TPD2300C□-2399C□ | 1                |      |
| 12D-24032-288 | 24.0~24.9     | 32        | 43 | 288             | 60             | 375            | TPD2400C□-2499C□ | 2                |      |
| 12D-25032-300 | 25.0~25.9     | 32        | 43 | 300             | 60             | 387            | TPD2500C□-2599C□ | 2                |      |
| 12D-26032-312 | 26.0~26.9     | 32        | 43 | 312             | 60             | 407            | TPD2600C□-2699C□ | 2                |      |
| 12D-27032-324 | 27.0~27.9     | 32        | 43 | 324             | 60             | 419            | TPD2700C□-2799C□ | 2                |      |
| 12D-28032-336 | 28.0~28.9     | 32        | 43 | 336             | 60             | 432            | TPD2800C□-2899C□ | 2                |      |
| 12D-29032-348 | 29.0~29.9     | 32        | 43 | 348             | 60             | 446            | TPD2900C□-2999C□ | 2                |      |
| 12D-30032-360 | 30.0~30.9     | 32        | 43 | 360             | 60             | 458            | TPD3000C□-3099C□ | 2                |      |

Broca indexable de excelente precisión y alto rendimiento

## TPDB Plus **new**

- Sistema de amarre de alta precisión. Precisión de anclaje muy alta con el sistema de autocentrado y los componentes pulidos de alta precisión que componen el siste de sujeción.
- Amarre con tornillo. Cambio de insertos sencillo.
- Filo de corte agudo. Baja carga mecánica y buen control de viruta.
- Portaherramienta de excelente durabilidad. Portaherramienta de alta rigidez y con la superficie tratada para garantizar una muy alta resistencia al desgaste.
- Portaherramienta ofrece un excelente control de viruta. Baja carga de corte y evacuación de viruta espectacular gracias al ángulo de hélice.

### 🔗 Sistema de Codificación

#### Broca



#### Inserto



### 🔗 Características

**Tratamiento especial de la superficie**  
• Durabilidad mejorada

**Sistema de sujeción con tornillo**

**Sistema de Auto-centrado**

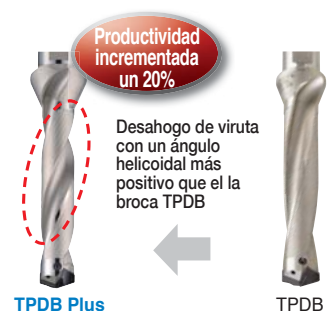
#### Ángulo helicoidal optimizado

- Alta productividad
  - Evacuación de viruta segura, garantizando un mecanizado estable
  - Mejores condiciones de corte, reduciendo tiempo de mecanizado
- Excelente grado
  - Garantiza un buen acabado y un agujero con las dimensiones deseadas

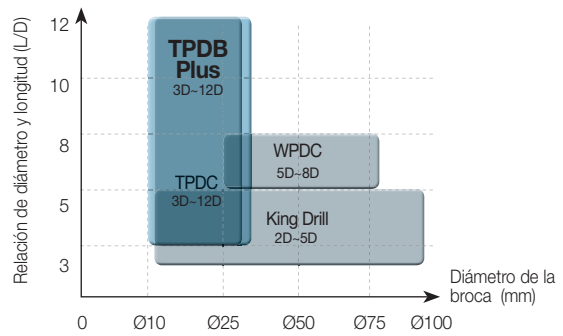
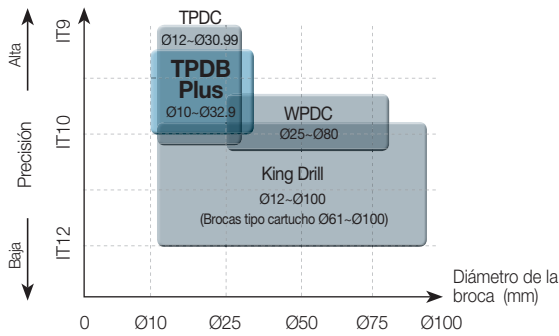
**Control de viruta avanzado gracias al rompevirutas**

**Filo de corte que genera baja carga mecánica**

- Baja carga de corte y excelente control de viruta



### Rango de aplicación

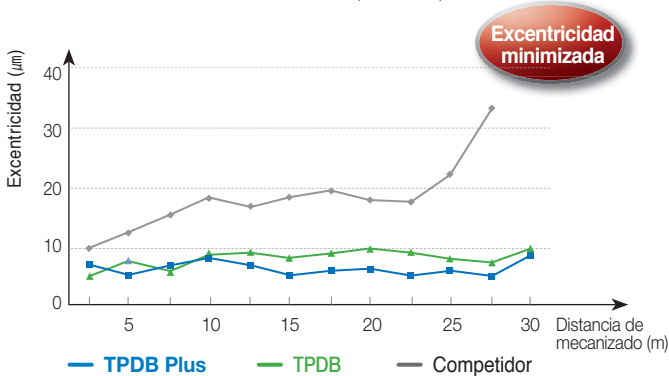


| Herramientas | Rango de aplicación      |                                       |                                     |            |                                       |          |
|--------------|--------------------------|---------------------------------------|-------------------------------------|------------|---------------------------------------|----------|
|              | Diámetro de la broca (Ø) | Relación de diámetro y longitud (L/D) | Tolerancia del diámetro de la broca | Tolerancia | Terminación, acabado superficial (Ra) | Material |
| TPDB Plus    | 10-32.9 mm               | 3, 5, 8, 10, 12                       | h7                                  | IT10       | ≤ 2.0µm                               | P, K     |

### Evaluación de desempeño

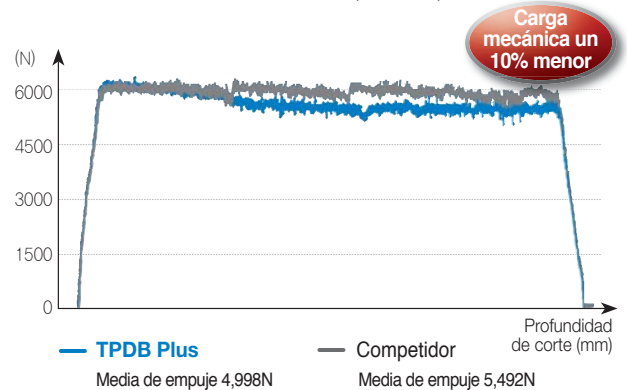
#### Excentricidad

- **Pieza de Trabajo** Aleación de Acero (SCM440)
- **Condición de corte** Diámetro del taladro (mm) = Ø25, vc (m/min) = 90, fn (mm/rev) = 0.25, ap (mm) = 120, con refrigerante (20 bares)
- **Herramientas** TPDB250-32-5-P(PC5300)



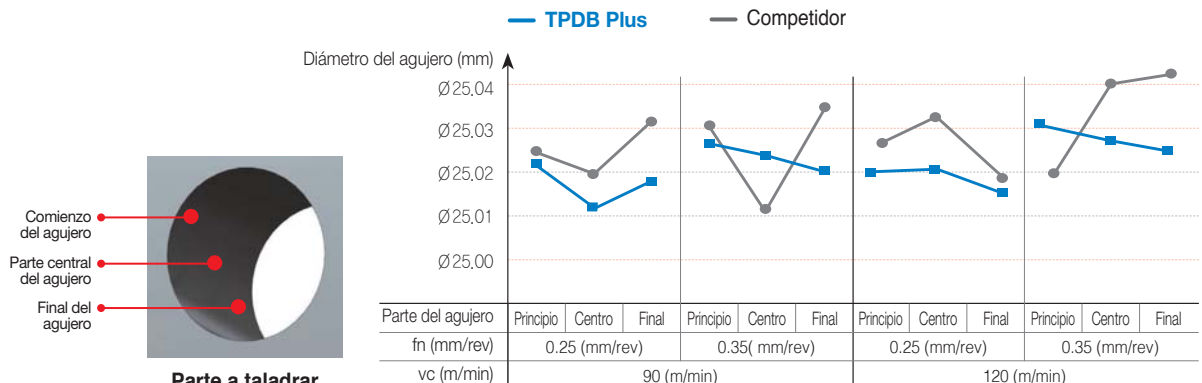
#### Carga de corte

- **Pieza de Trabajo** Aleación de Acero (SCM440)
- **Condición de corte** Diámetro del taladro (mm) = Ø25, vc (m/min) = 120, fn (mm/rev) = 0.25, ap (mm) = 120, con refrigerante (20 bares)
- **Herramientas** TPDB250-32-5-P (PC5300)



### Excelente redondez del agujero

- **Pieza de Trabajo** Aleación de Acero (SCM440)
- **Condición de corte** Diámetro del taladro (mm) = Ø25, vc (m/min) = 90/120, fn (mm/rev) = 0.25/0.35, ap (mm) = 120, con refrigerante (20 bares)
- **Herramientas** TPDB250-32-5-P (PC5300)



## ➤ Condiciones de Corte Recomendadas


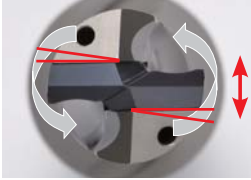
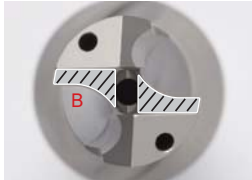



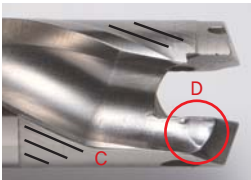
| Material |                             |                                       | Grado   | vc<br>(m/min)    | Dimensiones (L/D) = 3D, 5D                             |           |           |           |
|----------|-----------------------------|---------------------------------------|---------|------------------|--|-----------|-----------|-----------|
| ISO      | Materiales pieza de trabajo | HB                                    |         |                  | Avance (mm/rev) Dependiendo del Diam. de la broca (mm) |           |           |           |
|          |                             |                                       |         |                  | Ø10~Ø16.9  | Ø17~Ø26.9 | Ø27~Ø32.9 |           |
| P        | Acero al Carbón             | Acero Bajo en Carbón                  | 80~120  | PC5335<br>PC330P | 110(80~140)  | 0.15~0.30 | 0.20~0.35 | 0.25~0.40 |
|          |                             | Acero Alto en Carbón                  | 180~280 | PC5335<br>PC330P | 100(70~130)  | 0.15~0.30 | 0.20~0.35 | 0.25~0.40 |
|          | Aleación de Acero           | Aleación baja en Acero                | 140~260 | PC5300           | 110(80~140)  | 0.18~0.35 | 0.23~0.38 | 0.28~0.43 |
|          |                             | Aleación baja en Acero Pre-endurecido | 200~400 | PC5300           | 75(50~100)   | 0.18~0.35 | 0.23~0.38 | 0.28~0.43 |
|          |                             | Aleación baja en Acero                | 50~260  | PC5300           | 70(50~90)  | 0.18~0.30 | 0.20~0.35 | 0.25~0.40 |
|          | Acero Altamente Endurecido  | 220~450                               | PC5300  | 60(40~80)        | 0.18~0.30  | 0.20~0.35 | 0.25~0.40 |           |
| K        | Fundición                   | Fundición Gris                        | 150~230 | PC5300           | 110(80~140)  | 0.18~0.35 | 0.20~0.40 | 0.25~0.45 |
|          |                             | Fundición Dúctil                      | 160~260 | PC5300           | 100(70~130)  | 0.18~0.35 | 0.20~0.40 | 0.25~0.45 |

※ En el caso de longitudes de 8D: reduzca condiciones de corte un 20-30% o mecanice un primer orificio (1.5D) antes de perforar.

※ En mecanizado con interrupción: reduzca el avance a 0,1-0,15 al mecanizar la parte que presenta interrupciones.

※ Refiérase al método de perforación recomendado en la página 37 para taladros 10D -12D

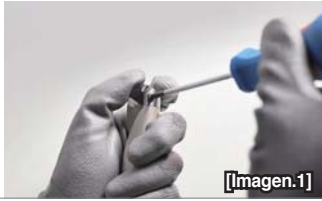
## ➤ Reemplazo de portaherramientas y tornillos

| Parte con desgaste   | Método de comprobación   | Descripción  |
|--|--|--|
| [Imagen.1]<br>  | [Imagen.2] Compruebe el espaciado<br> | <ul style="list-style-type: none"> <li>• Después de taladrar durante mucho tiempo, puede suceder que la parte A de la imagen 1 sufra cierto grado de desgaste y se rasgue o doble por el torque.</li> <li>• Como se muestra en la imagen 2, verifique el espacio entre inserto y el asiento girando el inserto de un lado a otro. Si hay un espacio entre ambos, reemplace el portaherramientas usado por uno nuevo.</li> </ul>  |
| [Imagen.3]<br>  | [Imagen.4] Compruebe si se mueve<br>  | <ul style="list-style-type: none"> <li>• El inserto podría llegar a moverse de arriba a abajo debido a la carga en el eje Z, después de haber usado la herramienta durante un largo periodo de tiempo, lo cual podría causar un desgaste extra en la parte B, tal y como se muestra en la imagen 3.</li> <li>• En caso de que después de insertar un inserto, éste se mueva o haya un espacio entre el inserto y el asiento, como se muestra en la imagen 4, reemplace el portaherramientas usado por uno nuevo.</li> </ul>    |
| [Imagen.5]<br>  | Compruebe si se mueve<br>             | <ul style="list-style-type: none"> <li>• El tornillo de sujeción, después de usarlo durante un periodo largo de tiempo, puede llegar a desgastarse, reduciendo la fuerza de sujeción como se muestra en la imagen 5, parte E. En este caso, se recomienda reemplazar el tornillo usado por uno nuevo (con cada broca se incluyen varios tornillos extra).</li> <li>• Se recomienda lubricar el tornillo para alargar la vida útil.</li> </ul>  |
| [Imagen.6]<br>① Compruebe las partes C y D, como se muestra en la imagen 6<br>② Compruebe si a medida que mecaniza las virutas cada vez son más largas |                                       | <ul style="list-style-type: none"> <li>• Virutas enrolladas o atascadas durante el mecanizado pueden desgastar o causar rozaduras en la parte C, como se muestra en la imagen 6. Esto puede ser debido al uso de condiciones de corte incorrectas. En ese caso, recomendamos reajustar las condiciones de corte y comprobar la excentricidad antes de volver a mecanizar.</li> <li>• El desgaste excesivo en la parte D mostrada en la imagen 6 puede ser causada por virutas largas enrolladas en torno al cuerpo.</li> </ul> |



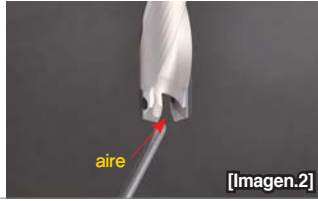
## 🔗 Sujeción de los insertos TPDB Plus: instrucciones

### Sujeción del inserto en el portaherramientas



- 1 Coloque el inserto en el asiento del portaherramientas
- 2 Como se muestra en la imagen 1, introduzca el inserto de tal forma que encaje en la ranura del portaherramientas
- 3 Atornille para sujetar el inserto

### Cambio de insertos



- 1 Desatornille y separe el inserto usado del portaherramienta
- 2 Limpie el asiento del inserto (imagen 2)
- 3 Coloque un nuevo inserto en el asiento
- 4 Como se muestra en la imagen 3, introduzca el inserto presionando con la mano para que no se separe del portaherramientas

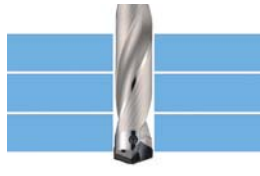
## 🔗 Precauciones a considerar en taladrado

### Rampa



1. El ángulo de aproximación/entrada entre la broca y la pieza al comienzo del taladrado debe ser de menos de 6°.
2. Reduzca el avance a un 30-50% de las condiciones de corte recomendadas en el comienzo o final del mecanizado en pendiente.

### Planos superpuestos



1. El espacio limitado entre las láminas puede dificultar la evacuación de virutas dañando el cuerpo del taladro.
2. Sujete las láminas de manera que el espacio intermedio sea lo más reducido posible (idealmente no debería haber espacio).

### Taladrado en plunge



1. La carga mecánica irregular en mecanizado en plunge puede causar la fractura o deformación de la broca.

### Mandrinado



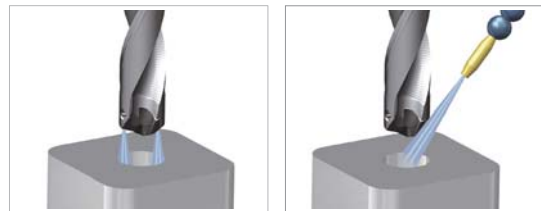
1. No se recomienda el mandrinado por el desgaste que se ocasiona en las esquinas de los insertos.

## 🔗 Parámetros a comprobar en taladrado.

- Condición de la pieza de trabajo y sujeción
- Revolución del eje principal de la máquina
- Condición del portaherramientas
- Excentricidad de la broca (Máx. 0.03 mm)
- Condición del suministro de refrigerante (presión, concentración, etc)
- Evacuación de viruta

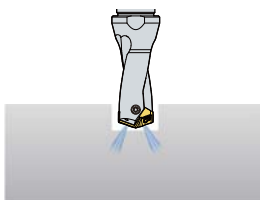
## 🔗 Suministro de refrigerante

- Suministre suficiente refrigerante al comienzo del mecanizado
- Presión mínima de refrigerante de aceite: 5 bares
- Flujo mínimo de refrigerante: 5 l/min



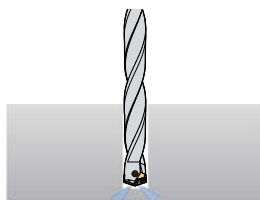
## 🔗 Método de taladrado recomendado (10D, 12D)

### Taladre un primer agujero (con broca guía)



Taladre un primer agujero de profundidad 0.5D, con velocidad de corte un 30% menor de la velocidad general recomendada usando una broca 1.5D o 3D

### Comience el proceso de taladro normal



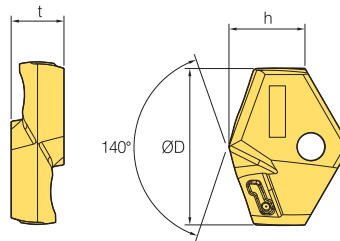
Cambie la broca guía por la deseada y comience a taladrar con las condiciones de corte recomendadas.

Buen acabado superficial

Resultados taladrado recomendado

Resultados taladrado general

**TPDB Plus** Inserto **new**



| Código | Recubierta |        |        | ØD          | h    | t    |
|--------|------------|--------|--------|-------------|------|------|
|        | PC5300     | PC5335 | PC330P |             |      |      |
| TPD    | 100B~109B  | ●      |        | 10.0 ~ 10.9 | 5.5  | 3.5  |
|        | 110B~119B  | ●      | ●      | 11.0 ~ 11.9 | 5.8  | 3.5  |
|        | 120B~129B  | ●      | ●      | 12.0 ~ 12.9 | 6.3  | 3.5  |
|        | 130B~139B  | ●      |        | 13.0 ~ 13.9 | 6.5  | 4.0  |
|        | 140B~149B  | ●      | ●      | 14.0 ~ 14.9 | 6.8  | 4.0  |
|        | 150B~159B  | ●      | ●      | 15.0 ~ 15.9 | 7.0  | 4.0  |
|        | 160B~169B  | ●      | ●      | 16.0 ~ 16.9 | 7.7  | 5.5  |
|        | 170B~179B  | ●      | ●      | 17.0 ~ 17.9 | 7.9  | 5.5  |
|        | 180B~189B  | ●      | ●      | 18.0 ~ 18.9 | 8.1  | 6.0  |
|        | 190B~199B  | ●      | ●      | 19.0 ~ 19.9 | 8.3  | 6.0  |
|        | 200B~209B  | ●      | ●      | 20.0 ~ 20.9 | 9.7  | 6.5  |
|        | 210B~219B  | ●      | ●      | 21.0 ~ 21.9 | 9.4  | 6.5  |
|        | 220B~229B  | ●      | ●      | 22.0 ~ 22.9 | 9.6  | 7.0  |
|        | 230B~239B  | ●      | ●      | 23.0 ~ 23.9 | 9.8  | 7.0  |
|        | 240B~249B  | ●      | ●      | 24.0 ~ 24.9 | 10.7 | 7.5  |
|        | 250B~259B  | ●      | ●      | 25.0 ~ 25.9 | 10.9 | 7.5  |
|        | 260B~269B  | ●      | ●      | 26.0 ~ 26.9 | 11.0 | 8.5  |
|        | 270B~279B  | ●      |        | 27.0 ~ 27.9 | 11.8 | 8.5  |
|        | 280B~289B  | ●      |        | 28.0 ~ 28.9 | 12.6 | 9.5  |
|        | 290B~299B  | ●      |        | 29.0 ~ 29.9 | 12.9 | 9.5  |
|        | 300B~309B  | ●      |        | 30.0 ~ 30.9 | 13.0 | 10.0 |
|        | 310B~319B  | ●      |        | 31.0 ~ 31.9 | 13.2 | 10.0 |
|        | 320B~329B  | ●      |        | 32.0 ~ 32.9 | 13.4 | 10.0 |

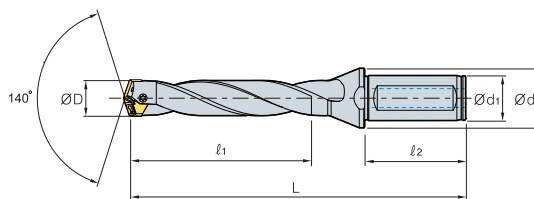
●: En Almacen

**Partes**

| Código | Diámetro de la broca (ØD) | Tornillo    | Llave    | Par de apriete (N·m) |
|--------|---------------------------|-------------|----------|----------------------|
| TPD    | 10.0 ~ 12.9               | FTNB0209-P  | TW06P    | 0.4                  |
|        | 13.0 ~ 14.9               | FTNB02512-P | TW07S    | 0.8                  |
|        | 15.0 ~ 17.9               | FTNB02514-P | TW07S    | 0.8                  |
|        | 18.0 ~ 19.9               | FTNB0316-P  | TW09S    | 1.2                  |
|        | 20.0 ~ 23.9               | FTNB0319    | TW09S    | 1.2                  |
|        | 24.0 ~ 25.9               | FTNB03522   | TW15S    | 3.0                  |
|        | 26.0 ~ 27.9               | FTNB03524   | TW15S    | 3.0                  |
|        | 28.0 ~ 29.9               | FTNB0426    | TW15S    | 3.0                  |
|        | 30.0 ~ 32.9               | FTNB0528    | TW20-100 | 4.0                  |



# TPDB Plus (3D) **new**

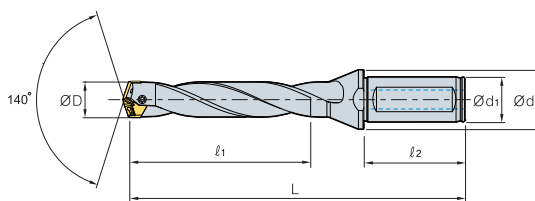


(mm)

|            | Código      | ØD          | Ød <sub>1</sub> | Ød <sub>2</sub> | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L              | Inserto        |
|------------|-------------|-------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| TPDB       | 100-16-3-P  | 10.0 ~ 10.4 | 16              | 20              | 30.0           | 48             | 95             | TPD100B ~ 104B |
|            | 105-16-3-P  | 10.5 ~ 10.9 | 16              | 20              | 31.5           | 48             | 96             | TPD105B ~ 109B |
|            | 110-16-3-P  | 11.0 ~ 11.4 | 16              | 20              | 33.0           | 48             | 98             | TPD110B ~ 114B |
|            | 115-16-3-P  | 11.5 ~ 11.9 | 16              | 20              | 34.5           | 48             | 99             | TPD115B ~ 119B |
|            | 120-16-3-P  | 12.0 ~ 12.4 | 16              | 20              | 36.0           | 48             | 102            | TPD120B ~ 124B |
|            | 125-16-3-P  | 12.5 ~ 12.9 | 16              | 20              | 37.5           | 48             | 104            | TPD125B ~ 129B |
|            | 130-16-3-P  | 13.0 ~ 13.4 | 16              | 20              | 39.0           | 48             | 107            | TPD130B ~ 134B |
|            | 135-16-3-P  | 13.5 ~ 13.9 | 16              | 20              | 40.5           | 48             | 109            | TPD135B ~ 139B |
|            | 140-16-3-P  | 14.0 ~ 14.4 | 16              | 20              | 42.0           | 48             | 111            | TPD140B ~ 144B |
|            | 145-16-3-P  | 14.5 ~ 14.9 | 16              | 20              | 43.5           | 48             | 114            | TPD145B ~ 149B |
|            | 150-20-3-P  | 15.0 ~ 15.4 | 20              | 25              | 45.0           | 50             | 118            | TPD150B ~ 154B |
|            | 155-20-3-P  | 15.5 ~ 15.9 | 20              | 25              | 46.5           | 50             | 120            | TPD155B ~ 159B |
|            | 160-20-3-P  | 16.0 ~ 16.4 | 20              | 25              | 48.0           | 50             | 122            | TPD160B ~ 164B |
|            | 165-20-3-P  | 16.5 ~ 16.9 | 20              | 25              | 49.5           | 50             | 124            | TPD165B ~ 169B |
|            | 170-20-3-P  | 17.0 ~ 17.4 | 20              | 25              | 51.0           | 50             | 127            | TPD170B ~ 174B |
|            | 175-20-3-P  | 17.5 ~ 17.9 | 20              | 25              | 52.5           | 50             | 129            | TPD175B ~ 179B |
|            | 180-25-3-P  | 18.0 ~ 18.4 | 25              | 33              | 54.0           | 56             | 137            | TPD180B ~ 184B |
|            | 185-25-3-P  | 18.5 ~ 18.9 | 25              | 33              | 55.5           | 56             | 139            | TPD185B ~ 189B |
|            | 190-25-3-P  | 19.0 ~ 19.4 | 25              | 33              | 57.0           | 56             | 142            | TPD190B ~ 194B |
|            | 195-25-3-P  | 19.5 ~ 19.9 | 25              | 33              | 58.5           | 56             | 144            | TPD195B ~ 199B |
|            | 200-25-3-P  | 20.0 ~ 20.4 | 25              | 33              | 60.0           | 56             | 146            | TPD200B ~ 204B |
|            | 205-25-3-P  | 20.5 ~ 20.9 | 25              | 33              | 61.5           | 56             | 148            | TPD205B ~ 209B |
|            | 210-25-3-P  | 21.0 ~ 21.4 | 25              | 33              | 63.0           | 60             | 151            | TPD210B ~ 214B |
|            | 215-25-3-P  | 21.5 ~ 21.9 | 25              | 33              | 64.5           | 60             | 153            | TPD215B ~ 219B |
|            | 220-25-3-P  | 22.0 ~ 22.4 | 25              | 33              | 66.0           | 60             | 155            | TPD220B ~ 224B |
|            | 225-25-3-P  | 22.5 ~ 22.9 | 25              | 33              | 67.5           | 60             | 157            | TPD225B ~ 229B |
|            | 230-25-3-P  | 23.0 ~ 23.4 | 25              | 33              | 69.0           | 60             | 160            | TPD230B ~ 234B |
|            | 235-25-3-P  | 23.5 ~ 23.9 | 25              | 33              | 70.5           | 60             | 162            | TPD235B ~ 239B |
|            | 240-32-3-P  | 24.0 ~ 24.4 | 32              | 43              | 72.0           | 60             | 168            | TPD240B ~ 244B |
|            | 245-32-3-P  | 24.5 ~ 24.9 | 32              | 43              | 73.5           | 60             | 170            | TPD245B ~ 249B |
|            | 250-32-3-P  | 25.0 ~ 25.4 | 32              | 43              | 75.0           | 60             | 173            | TPD250B ~ 254B |
|            | 255-32-3-P  | 25.5 ~ 25.9 | 32              | 43              | 76.5           | 60             | 175            | TPD255B ~ 259B |
| 260-32-3-P | 26.0 ~ 26.9 | 32          | 43              | 78.0            | 60             | 177            | TPD260B ~ 269B |                |
| 270-32-3-P | 27.0 ~ 27.9 | 32          | 43              | 81.0            | 60             | 182            | TPD270B ~ 279B |                |
| 280-32-3-P | 28.0 ~ 28.9 | 32          | 43              | 84.0            | 60             | 186            | TPD280B ~ 289B |                |
| 290-32-3-P | 29.0 ~ 29.9 | 32          | 43              | 87.0            | 60             | 191            | TPD290B ~ 299B |                |
| 300-32-3-P | 30.0 ~ 30.9 | 32          | 43              | 90.0            | 60             | 195            | TPD300B ~ 309B |                |
| 310-32-3-P | 31.0 ~ 31.9 | 32          | 43              | 93.0            | 60             | 200            | TPD310B ~ 319B |                |
| 320-32-3-P | 32.0 ~ 32.9 | 32          | 43              | 96.0            | 60             | 204            | TPD320B ~ 329B |                |

Placas Disponibles G38

# TPDB Plus (5D) new



(mm)

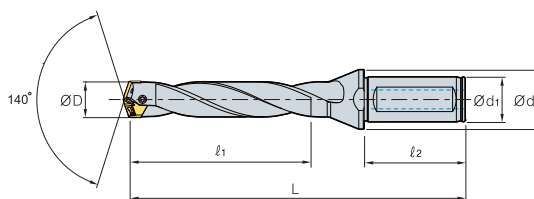
|            | Código      | ØD          | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L              | Inserto        |
|------------|-------------|-------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| TPDB       | 100-16-5-P  | 10.0 ~ 10.4 | 16              | 20              | 50.0           | 48             | 115            | TPD100B ~ 104B |
|            | 105-16-5-P  | 10.5 ~ 10.9 | 16              | 20              | 52.5           | 48             | 117            | TPD105B ~ 109B |
|            | 110-16-5-P  | 11.0 ~ 11.4 | 16              | 20              | 55.0           | 48             | 120            | TPD110B ~ 114B |
|            | 115-16-5-P  | 11.5 ~ 11.9 | 16              | 20              | 57.5           | 48             | 123            | TPD115B ~ 119B |
|            | 120-16-5-P  | 12.0 ~ 12.4 | 16              | 20              | 60.0           | 48             | 126            | TPD120B ~ 124B |
|            | 125-16-5-P  | 12.5 ~ 12.9 | 16              | 20              | 62.5           | 48             | 129            | TPD125B ~ 129B |
|            | 130-16-5-P  | 13.0 ~ 13.4 | 16              | 20              | 65.0           | 48             | 133            | TPD130B ~ 134B |
|            | 135-16-5-P  | 13.5 ~ 13.9 | 16              | 20              | 67.5           | 48             | 136            | TPD135B ~ 139B |
|            | 140-16-5-P  | 14.0 ~ 14.4 | 16              | 20              | 70.0           | 48             | 139            | TPD140B ~ 144B |
|            | 145-16-5-P  | 14.5 ~ 14.9 | 16              | 20              | 72.5           | 48             | 143            | TPD145B ~ 149B |
|            | 150-20-5-P  | 15.0 ~ 15.4 | 20              | 25              | 75.0           | 50             | 148            | TPD150B ~ 154B |
|            | 155-20-5-P  | 15.5 ~ 15.9 | 20              | 25              | 77.5           | 50             | 151            | TPD155B ~ 159B |
|            | 160-20-5-P  | 16.0 ~ 16.4 | 20              | 25              | 80.0           | 50             | 154            | TPD160B ~ 164B |
|            | 165-20-5-P  | 16.5 ~ 16.9 | 20              | 25              | 82.5           | 50             | 157            | TPD165B ~ 169B |
|            | 170-20-5-P  | 17.0 ~ 17.4 | 20              | 25              | 85.0           | 50             | 161            | TPD170B ~ 174B |
|            | 175-20-5-P  | 17.5 ~ 17.9 | 20              | 25              | 87.5           | 50             | 164            | TPD175B ~ 179B |
|            | 180-25-5-P  | 18.0 ~ 18.4 | 25              | 33              | 90.0           | 56             | 173            | TPD180B ~ 184B |
|            | 185-25-5-P  | 18.5 ~ 18.9 | 25              | 33              | 92.5           | 56             | 176            | TPD185B ~ 189B |
|            | 190-25-5-P  | 19.0 ~ 19.4 | 25              | 33              | 95.0           | 56             | 180            | TPD190B ~ 194B |
|            | 195-25-5-P  | 19.5 ~ 19.9 | 25              | 33              | 97.5           | 56             | 183            | TPD195B ~ 199B |
|            | 200-25-5-P  | 20.0 ~ 20.4 | 25              | 33              | 100.0          | 56             | 186            | TPD200B ~ 204B |
|            | 205-25-5-P  | 20.5 ~ 20.9 | 25              | 33              | 102.5          | 56             | 189            | TPD205B ~ 209B |
|            | 210-25-5-P  | 21.0 ~ 21.4 | 25              | 33              | 105.0          | 60             | 193            | TPD210B ~ 214B |
|            | 215-25-5-P  | 21.5 ~ 21.9 | 25              | 33              | 107.5          | 60             | 196            | TPD215B ~ 219B |
|            | 220-25-5-P  | 22.0 ~ 22.4 | 25              | 33              | 110.0          | 60             | 199            | TPD220B ~ 224B |
|            | 225-25-5-P  | 22.5 ~ 22.9 | 25              | 33              | 112.5          | 60             | 202            | TPD225B ~ 229B |
|            | 230-25-5-P  | 23.0 ~ 23.4 | 25              | 33              | 115.0          | 60             | 206            | TPD230B ~ 234B |
|            | 235-25-5-P  | 23.5 ~ 23.9 | 25              | 33              | 117.5          | 60             | 209            | TPD235B ~ 239B |
|            | 240-32-5-P  | 24.0 ~ 24.4 | 32              | 43              | 120.0          | 60             | 216            | TPD240B ~ 244B |
|            | 245-32-5-P  | 24.5 ~ 24.9 | 32              | 43              | 122.5          | 60             | 219            | TPD245B ~ 249B |
|            | 250-32-5-P  | 25.0 ~ 25.4 | 32              | 43              | 125.0          | 60             | 223            | TPD250B ~ 254B |
|            | 255-32-5-P  | 25.5 ~ 25.9 | 32              | 43              | 127.5          | 60             | 226            | TPD255B ~ 259B |
| 260-32-5-P | 26.0 ~ 26.9 | 32          | 43              | 130.0           | 60             | 229            | TPD260B ~ 269B |                |
| 270-32-5-P | 27.0 ~ 27.9 | 32          | 43              | 135.0           | 60             | 236            | TPD270B ~ 279B |                |
| 280-32-5-P | 28.0 ~ 28.9 | 32          | 43              | 140.0           | 60             | 242            | TPD280B ~ 289B |                |
| 290-32-5-P | 29.0 ~ 29.9 | 32          | 43              | 145.0           | 60             | 249            | TPD290B ~ 299B |                |
| 300-32-5-P | 30.0 ~ 30.9 | 32          | 43              | 150.0           | 60             | 255            | TPD300B ~ 309B |                |
| 310-32-5-P | 31.0 ~ 31.9 | 32          | 43              | 155.0           | 60             | 262            | TPD310B ~ 319B |                |
| 320-32-5-P | 32.0 ~ 32.9 | 32          | 43              | 160.0           | 60             | 268            | TPD320B ~ 329B |                |

Placas Disponibles G38





# TPDB Plus (8D) new

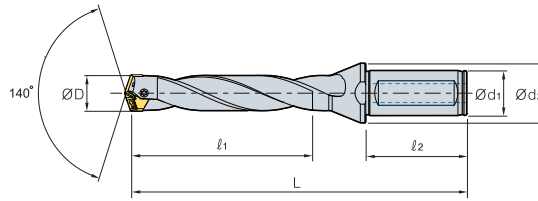


(mm)

|            | Código      | ØD          | Ød <sub>1</sub> | Ød <sub>2</sub> | l <sub>1</sub> | l <sub>2</sub> | L              | Inserto        |
|------------|-------------|-------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| TPDB       | 100-16-8-P  | 10.0 ~ 10.4 | 16              | 20              | 80             | 48             | 145            | TPD100B ~ 104B |
|            | 105-16-8-P  | 10.5 ~ 10.9 | 16              | 20              | 84             | 48             | 149            | TPD105B ~ 109B |
|            | 110-16-8-P  | 11.0 ~ 11.4 | 16              | 20              | 88             | 48             | 153            | TPD110B ~ 114B |
|            | 115-16-8-P  | 11.5 ~ 11.9 | 16              | 20              | 92             | 48             | 157            | TPD115B ~ 119B |
|            | 120-16-8-P  | 12.0 ~ 12.4 | 16              | 20              | 96             | 48             | 162            | TPD120B ~ 124B |
|            | 125-16-8-P  | 12.5 ~ 12.9 | 16              | 20              | 100            | 48             | 166.5          | TPD125B ~ 129B |
|            | 130-16-8-P  | 13.0 ~ 13.4 | 16              | 20              | 104            | 48             | 172            | TPD130B ~ 134B |
|            | 135-16-8-P  | 13.5 ~ 13.9 | 16              | 20              | 108            | 48             | 176.5          | TPD135B ~ 139B |
|            | 140-16-8-P  | 14.0 ~ 14.4 | 16              | 20              | 112            | 48             | 181            | TPD140B ~ 144B |
|            | 145-16-8-P  | 14.5 ~ 14.9 | 16              | 20              | 116            | 48             | 186.5          | TPD145B ~ 149B |
|            | 150-20-8-P  | 15.0 ~ 15.4 | 20              | 25              | 120            | 50             | 193            | TPD150B ~ 154B |
|            | 155-20-8-P  | 15.5 ~ 15.9 | 20              | 25              | 124            | 50             | 197.5          | TPD155B ~ 159B |
|            | 160-20-8-P  | 16.0 ~ 16.4 | 20              | 25              | 128            | 50             | 202            | TPD160B ~ 164B |
|            | 165-20-8-P  | 16.5 ~ 16.9 | 20              | 25              | 132            | 50             | 206.5          | TPD165B ~ 169B |
|            | 170-20-8-P  | 17.0 ~ 17.4 | 20              | 25              | 136            | 50             | 212            | TPD170B ~ 174B |
|            | 175-20-8-P  | 17.5 ~ 17.9 | 20              | 25              | 140            | 50             | 216.5          | TPD175B ~ 179B |
|            | 180-25-8-P  | 18.0 ~ 18.4 | 25              | 33              | 144            | 56             | 227            | TPD180B ~ 184B |
|            | 185-25-8-P  | 18.5 ~ 18.9 | 25              | 33              | 148            | 56             | 231.5          | TPD185B ~ 189B |
|            | 190-25-8-P  | 19.0 ~ 19.4 | 25              | 33              | 152            | 56             | 237            | TPD190B ~ 194B |
|            | 195-25-8-P  | 19.5 ~ 19.9 | 25              | 33              | 156            | 56             | 241.5          | TPD195B ~ 199B |
|            | 200-25-8-P  | 20.0 ~ 20.4 | 25              | 33              | 160            | 56             | 246            | TPD200B ~ 204B |
|            | 205-25-8-P  | 20.5 ~ 20.9 | 25              | 33              | 164            | 56             | 250.5          | TPD205B ~ 209B |
|            | 210-25-8-P  | 21.0 ~ 21.4 | 25              | 33              | 168            | 60             | 256            | TPD210B ~ 214B |
|            | 215-25-8-P  | 21.5 ~ 21.9 | 25              | 33              | 172            | 60             | 260.5          | TPD215B ~ 219B |
|            | 220-25-8-P  | 22.0 ~ 22.4 | 25              | 33              | 176            | 60             | 265            | TPD220B ~ 224B |
|            | 225-25-8-P  | 22.5 ~ 22.9 | 25              | 33              | 180            | 60             | 269.5          | TPD225B ~ 229B |
|            | 230-25-8-P  | 23.0 ~ 23.4 | 25              | 33              | 184            | 60             | 275            | TPD230B ~ 234B |
|            | 235-25-8-P  | 23.5 ~ 23.9 | 25              | 33              | 188            | 60             | 279.5          | TPD235B ~ 239B |
|            | 240-32-8-P  | 24.0 ~ 24.4 | 32              | 43              | 192            | 60             | 288            | TPD240B ~ 244B |
|            | 245-32-8-P  | 24.5 ~ 24.9 | 32              | 43              | 196            | 60             | 292.5          | TPD245B ~ 249B |
|            | 250-32-8-P  | 25.0 ~ 25.4 | 32              | 43              | 200            | 60             | 298            | TPD250B ~ 254B |
|            | 255-32-8-P  | 25.5 ~ 25.9 | 32              | 43              | 204            | 60             | 302.5          | TPD255B ~ 259B |
| 260-32-8-P | 26.0 ~ 26.9 | 32          | 43              | 208             | 60             | 307            | TPD260B ~ 269B |                |
| 270-32-8-P | 27.0 ~ 27.9 | 32          | 43              | 216             | 60             | 317            | TPD270B ~ 279B |                |
| 280-32-8-P | 28.0 ~ 28.9 | 32          | 43              | 224             | 60             | 326            | TPD280B ~ 289B |                |
| 290-32-8-P | 29.0 ~ 29.9 | 32          | 43              | 232             | 60             | 336            | TPD290B ~ 299B |                |
| 300-32-8-P | 30.0 ~ 30.9 | 32          | 43              | 240             | 60             | 344            | TPD300B ~ 309B |                |
| 310-32-8-P | 31.0 ~ 31.9 | 32          | 43              | 248             | 60             | 354            | TPD310B ~ 319B |                |
| 320-32-8-P | 32.0 ~ 32.9 | 32          | 43              | 256             | 60             | 361            | TPD320B ~ 329B |                |

Placas Disponibles G38

# TPDB Plus (10D) new



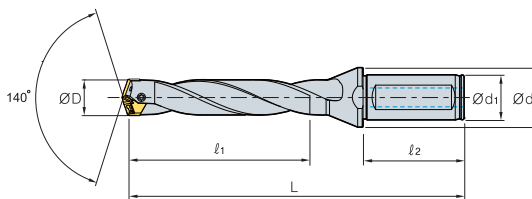
(mm)

|             | Código      | ØD          | Ød <sub>1</sub> | Ød <sub>2</sub> | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L              | Inserto        |
|-------------|-------------|-------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| TPDB        | 100-16-10-P | 10.0 ~ 10.4 | 16              | 20              | 100            | 48             | 165            | TPD100B ~ 104B |
|             | 105-16-10-P | 10.5 ~ 10.9 | 16              | 20              | 105            | 48             | 170            | TPD105B ~ 109B |
|             | 110-16-10-P | 11.0 ~ 11.4 | 16              | 20              | 110            | 48             | 175            | TPD110B ~ 114B |
|             | 115-16-10-P | 11.5 ~ 11.9 | 16              | 20              | 115            | 48             | 180            | TPD115B ~ 119B |
|             | 120-16-10-P | 12.0 ~ 12.4 | 16              | 20              | 120            | 48             | 186            | TPD120B ~ 124B |
|             | 125-16-10-P | 12.5 ~ 12.9 | 16              | 20              | 125            | 48             | 191.5          | TPD125B ~ 129B |
|             | 130-16-10-P | 13.0 ~ 13.4 | 16              | 20              | 130            | 48             | 198            | TPD130B ~ 134B |
|             | 135-16-10-P | 13.5 ~ 13.9 | 16              | 20              | 135            | 48             | 203.5          | TPD135B ~ 139B |
|             | 140-16-10-P | 14.0 ~ 14.4 | 16              | 20              | 140            | 48             | 209            | TPD140B ~ 144B |
|             | 145-16-10-P | 14.5 ~ 14.9 | 16              | 20              | 145            | 48             | 215.5          | TPD145B ~ 149B |
|             | 150-20-10-P | 15.0 ~ 15.4 | 20              | 25              | 150            | 50             | 223            | TPD150B ~ 154B |
|             | 155-20-10-P | 15.5 ~ 15.9 | 20              | 25              | 155            | 50             | 228.5          | TPD155B ~ 159B |
|             | 160-20-10-P | 16.0 ~ 16.4 | 20              | 25              | 160            | 50             | 234            | TPD160B ~ 164B |
|             | 165-20-10-P | 16.5 ~ 16.9 | 20              | 25              | 165            | 50             | 239.5          | TPD165B ~ 169B |
|             | 170-20-10-P | 17.0 ~ 17.4 | 20              | 25              | 170            | 50             | 246            | TPD170B ~ 174B |
|             | 175-20-10-P | 17.5 ~ 17.9 | 20              | 25              | 175            | 50             | 251.5          | TPD175B ~ 179B |
|             | 180-25-10-P | 18.0 ~ 18.4 | 25              | 33              | 180            | 56             | 263            | TPD180B ~ 184B |
|             | 185-25-10-P | 18.5 ~ 18.9 | 25              | 33              | 185            | 56             | 268.5          | TPD185B ~ 189B |
|             | 190-25-10-P | 19.0 ~ 19.4 | 25              | 33              | 190            | 56             | 275            | TPD190B ~ 194B |
|             | 195-25-10-P | 19.5 ~ 19.9 | 25              | 33              | 195            | 56             | 280.5          | TPD195B ~ 199B |
|             | 200-25-10-P | 20.0 ~ 20.4 | 25              | 33              | 200            | 56             | 286            | TPD200B ~ 204B |
|             | 205-25-10-P | 20.5 ~ 20.9 | 25              | 33              | 205            | 56             | 291.5          | TPD205B ~ 209B |
|             | 210-25-10-P | 21.0 ~ 21.4 | 25              | 33              | 210            | 60             | 298            | TPD210B ~ 214B |
|             | 215-25-10-P | 21.5 ~ 21.9 | 25              | 33              | 215            | 60             | 303.5          | TPD215B ~ 219B |
|             | 220-25-10-P | 22.0 ~ 22.4 | 25              | 33              | 220            | 60             | 309            | TPD220B ~ 224B |
|             | 225-25-10-P | 22.5 ~ 22.9 | 25              | 33              | 225            | 60             | 314.5          | TPD225B ~ 229B |
|             | 230-25-10-P | 23.0 ~ 23.4 | 25              | 33              | 230            | 60             | 321            | TPD230B ~ 234B |
|             | 235-25-10-P | 23.5 ~ 23.9 | 25              | 33              | 235            | 60             | 326.5          | TPD235B ~ 239B |
|             | 240-32-10-P | 24.0 ~ 24.4 | 32              | 43              | 240            | 60             | 336            | TPD240B ~ 244B |
|             | 245-32-10-P | 24.5 ~ 24.9 | 32              | 43              | 245            | 60             | 341.5          | TPD245B ~ 249B |
|             | 250-32-10-P | 25.0 ~ 25.4 | 32              | 43              | 250            | 60             | 348            | TPD250B ~ 254B |
|             | 255-32-10-P | 25.5 ~ 25.9 | 32              | 43              | 255            | 60             | 353.5          | TPD255B ~ 259B |
| 260-32-10-P | 26.0 ~ 26.9 | 32          | 43              | 260             | 60             | 359            | TPD260B ~ 269B |                |
| 270-32-10-P | 27.0 ~ 27.9 | 32          | 43              | 270             | 60             | 371            | TPD270B ~ 279B |                |
| 280-32-10-P | 28.0 ~ 28.9 | 32          | 43              | 280             | 60             | 382            | TPD280B ~ 289B |                |
| 290-32-10-P | 29.0 ~ 29.9 | 32          | 43              | 290             | 60             | 394            | TPD290B ~ 299B |                |
| 300-32-10-P | 30.0 ~ 30.9 | 32          | 43              | 300             | 60             | 404            | TPD300B ~ 309B |                |
| 310-32-10-P | 31.0 ~ 31.9 | 32          | 43              | 310             | 60             | 416            | TPD310B ~ 319B |                |
| 320-32-10-P | 32.0 ~ 32.9 | 32          | 43              | 320             | 60             | 425            | TPD320B ~ 329B |                |

Placas Disponibles G38



# TPDB Plus (12D) new



(mm)

|             | Código      | ØD          | Ød <sub>1</sub> | Ød <sub>2</sub> | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L              | Inserto        |
|-------------|-------------|-------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| TPDB        | 100-16-12-P | 10.0 ~ 10.4 | 16              | 20              | 120            | 48             | 185            | TPD100B ~ 104B |
|             | 105-16-12-P | 10.5 ~ 10.9 | 16              | 20              | 126            | 48             | 191            | TPD105B ~ 109B |
|             | 110-16-12-P | 11.0 ~ 11.4 | 16              | 20              | 132            | 48             | 197            | TPD110B ~ 114B |
|             | 115-16-12-P | 11.5 ~ 11.9 | 16              | 20              | 138            | 48             | 203            | TPD115B ~ 119B |
|             | 120-16-12-P | 12.0 ~ 12.4 | 16              | 20              | 144            | 48             | 210            | TPD120B ~ 124B |
|             | 125-16-12-P | 12.5 ~ 12.9 | 16              | 20              | 150            | 48             | 216.5          | TPD125B ~ 129B |
|             | 130-16-12-P | 13.0 ~ 13.4 | 16              | 20              | 156            | 48             | 224            | TPD130B ~ 134B |
|             | 135-16-12-P | 13.5 ~ 13.9 | 16              | 20              | 162            | 48             | 230.5          | TPD135B ~ 139B |
|             | 140-16-12-P | 14.0 ~ 14.4 | 16              | 20              | 168            | 48             | 237            | TPD140B ~ 144B |
|             | 145-16-12-P | 14.5 ~ 14.9 | 16              | 20              | 174            | 48             | 244.5          | TPD145B ~ 149B |
|             | 150-20-12-P | 15.0 ~ 15.4 | 20              | 25              | 180            | 50             | 253            | TPD150B ~ 154B |
|             | 155-20-12-P | 15.5 ~ 15.9 | 20              | 25              | 186            | 50             | 259.5          | TPD155B ~ 159B |
|             | 160-20-12-P | 16.0 ~ 16.4 | 20              | 25              | 192            | 50             | 266            | TPD160B ~ 164B |
|             | 165-20-12-P | 16.5 ~ 16.9 | 20              | 25              | 198            | 50             | 272.5          | TPD165B ~ 169B |
|             | 170-20-12-P | 17.0 ~ 17.4 | 20              | 25              | 204            | 50             | 280            | TPD170B ~ 174B |
|             | 175-20-12-P | 17.5 ~ 17.9 | 20              | 25              | 210            | 50             | 286.5          | TPD175B ~ 179B |
|             | 180-25-12-P | 18.0 ~ 18.4 | 25              | 33              | 216            | 56             | 299            | TPD180B ~ 184B |
|             | 185-25-12-P | 18.5 ~ 18.9 | 25              | 33              | 222            | 56             | 305.5          | TPD185B ~ 189B |
|             | 190-25-12-P | 19.0 ~ 19.4 | 25              | 33              | 228            | 56             | 313            | TPD190B ~ 194B |
|             | 195-25-12-P | 19.5 ~ 19.9 | 25              | 33              | 234            | 56             | 319.5          | TPD195B ~ 199B |
|             | 200-25-12-P | 20.0 ~ 20.4 | 25              | 33              | 240            | 56             | 326            | TPD200B ~ 204B |
|             | 205-25-12-P | 20.5 ~ 20.9 | 25              | 33              | 246            | 56             | 332.5          | TPD205B ~ 209B |
|             | 210-25-12-P | 21.0 ~ 21.4 | 25              | 33              | 252            | 60             | 340            | TPD210B ~ 214B |
|             | 215-25-12-P | 21.5 ~ 21.9 | 25              | 33              | 258            | 60             | 346.5          | TPD215B ~ 219B |
|             | 220-25-12-P | 22.0 ~ 22.4 | 25              | 33              | 264            | 60             | 353            | TPD220B ~ 224B |
|             | 225-25-12-P | 22.5 ~ 22.9 | 25              | 33              | 270            | 60             | 359.5          | TPD225B ~ 229B |
|             | 230-25-12-P | 23.0 ~ 23.4 | 25              | 33              | 276            | 60             | 367            | TPD230B ~ 234B |
|             | 235-25-12-P | 23.5 ~ 23.9 | 25              | 33              | 282            | 60             | 373.5          | TPD235B ~ 239B |
|             | 240-32-12-P | 24.0 ~ 24.4 | 32              | 43              | 288            | 60             | 384            | TPD240B ~ 244B |
|             | 245-32-12-P | 24.5 ~ 24.9 | 32              | 43              | 294            | 60             | 390.5          | TPD245B ~ 249B |
|             | 250-32-12-P | 25.0 ~ 25.4 | 32              | 43              | 300            | 60             | 398            | TPD250B ~ 254B |
|             | 255-32-12-P | 25.5 ~ 25.9 | 32              | 43              | 306            | 60             | 404.5          | TPD255B ~ 259B |
| 260-32-12-P | 26.0 ~ 26.9 | 32          | 43              | 312             | 60             | 411            | TPD260B ~ 269B |                |
| 270-32-12-P | 27.0 ~ 27.9 | 32          | 43              | 324             | 60             | 425            | TPD270B ~ 279B |                |
| 280-32-12-P | 28.0 ~ 28.9 | 32          | 43              | 336             | 60             | 438            | TPD280B ~ 289B |                |
| 290-32-12-P | 29.0 ~ 29.9 | 32          | 43              | 348             | 60             | 452            | TPD290B ~ 299B |                |
| 300-32-12-P | 30.0 ~ 30.9 | 32          | 43              | 360             | 60             | 464            | TPD300B ~ 309B |                |
| 310-32-12-P | 31.0 ~ 31.9 | 32          | 43              | 372             | 60             | 478            | TPD310B ~ 319B |                |
| 320-32-12-P | 32.0 ~ 32.9 | 32          | 43              | 384             | 60             | 489            | TPD320B ~ 329B |                |

Placas Disponibles G38

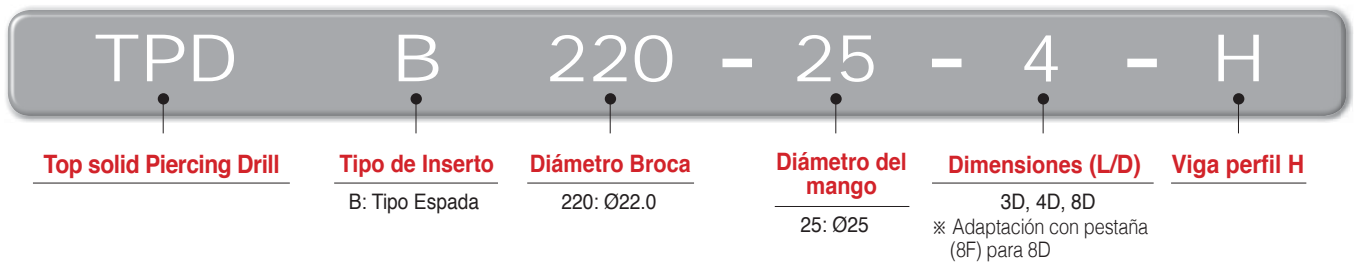
## Broca indexable exclusiva para taladrado de vigas y otras piezas estructurales, Perfil H

# TPDB-H new

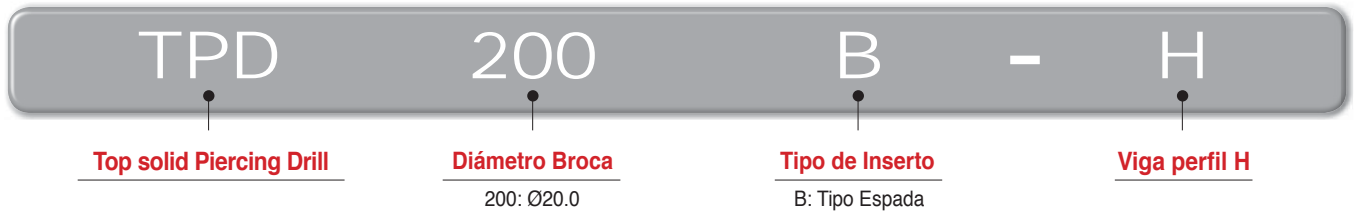
- Broca exclusiva de alto rendimiento para el taladrado de vigas y estructuras de acero, como vigas perfil H, planchas de acero, etc.
- Sistema de sujeción de alta precisión: rectificado de alta precisión y sistema de auto-centrado que aumentan la calidad de la sujeción
- Sujeción con tornillo: fácil de reemplazar
- Inserto diseñado con capacidad de autocentrado: reducción de carga de corte y mejor control de viruta
- Portaherramienta de gran durabilidad: Superficie tratada especialmnete para mejorar resistencia y durabilidad
- Portaherramientas con excelente evacuación de viruta: Ángulo helicoidal optimizado para asegurar una buena evacuación de viruta y reducir la carga mecánica
- Conducto de lubricación óptimo: alarga vida útil

### 🔗 Sistema de Codificación

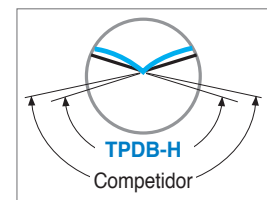
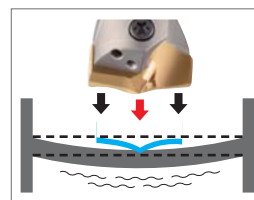
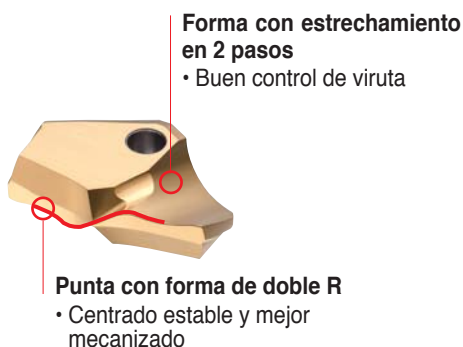
#### Broca



#### Inserto

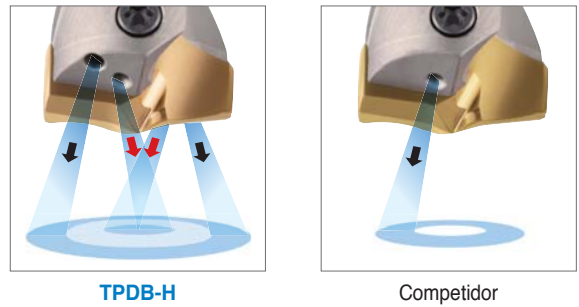


### 🔗 Características del inserto



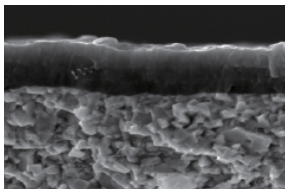
- ↓ Punta optimizada con forma de doble R para reducir la vibración y el traqueteo mejora la capacidad de centrado y asegura un mejor mecanizado
- ↓ Se reduce el astillado en las esquinas del filo de corte gracias a la flexión y la vuelta a la forma original de la viga

## Características del portaherramientas



↓ ↓ La concentración de la lubricación en puntos más delicados del filo de corte ayudan a prolongar la vida útil

## Grados recomendados



### • PC340Q

- Recubrimiento PVD de alta tecnología: recubrimiento de alta dureza y lubricación con resistencia al desgaste, a la soldadura y al astillado.
- El tratamiento especial de la superficie mejora la evacuación de la viruta y reduce el desgaste en las caras del inserto.
- Sustrato ultra fino de alta dureza que garantiza un filo de corte de alta rigidez y buena resistencia al astillamiento

## Evaluación de desempeño

### Control de viruta

- **Pieza de trabajo** Acero al Carbón (SS400, SM490A)
- **Condiciones de corte** Diámetro del taladro (mm) =  $\varnothing 27$ , vc (m/min) = 80  
fn (mm/rev) = 0.2, ap (mm) = 30, con refrigerante
- **Herramientas** **Insertos** TPD270B-H (PC340Q)  
**Porta** TPDB270-32-4-H



SS400



SM490A

Control de viruta excelente

### Resistencia al desgaste

- **Pieza de trabajo** Acero al Carbón (SS400)
- **Condiciones de corte** Diámetro del taladro (mm) =  $\varnothing 22$ , vc (m/min) = 65  
fn (mm/rev) = 0.25, ap (mm) = 30, con refrigerante
- **Herramientas** **Insertos** TPD220B-H (PC340Q)  
**Porta** TPDB220-25-4-H
- **Pieza de trabajo** Acero al Carbón (SM490A)
- **Condiciones de corte** Diámetro del taladro (mm) =  $\varnothing 27$ , vc (m/min) = 70  
fn (mm/rev) = 0.25, ap (mm) = 30, con refrigerante
- **Herramientas** **Insertos** TPD270B-H (PC340Q)  
**Porta** TPDB270-32-4-H

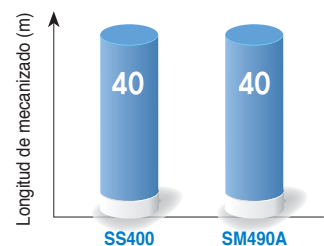


SS400







SM490A

### ■ Resultado de la prueba



Desgaste normal y en buenas condiciones para seguir usando

## 🔗 Pieza de trabajo y condiciones de corte recomendadas

| Material |                               |   | Grado                    | vc (m/min) | Dimensiones (L/D) = 3D, 4D                             |                 |                 |
|----------|-------------------------------|---|--------------------------|------------|--|-----------------|-----------------|
| ISO      | Material                      | Materiales pieza de trabajo   |                          |            | Avance (mm/rev) Dependiendo del Diam. de la broca (mm) |                 |                 |
|          |                               |   |                          |            | Ø14.0~Ø21.0  | Ø22.0~Ø30.0     |                 |
| P        | Viga perfil H                 |  | SS400<br>SM490<br>SHN490 | PC340Q     | 65 (60~75)   | 0.22 (0.2~0.25) | 0.25 (0.2~0.3)  |
|          | Ángulo                        |  | SS400<br>SM490<br>SHN490 | PC340Q     | 65 (60~75)   | 0.22 (0.2~0.25) | 0.25 (0.2~0.3)  |
|          | Plancha de metal              |  | SS400<br>SM490<br>SHN490 | PC340Q     | 65 (60~75)   | 0.22 (0.2~0.25) | 0.25 (0.2~0.3)  |
|          | Planchas de metal (laminadas) |  | SS400<br>SM490<br>SHN490 | PC340Q     | 60 (55~65)   | 0.2 (0.15~0.25) | 0.2 (0.15~0.25) |

## 🔗 Sujeción de insertos TPDB-H

### Sujeción de inserto en portaherramientas



[imagen.1]

1. Coloque el inserto en el asiento de la punta del portaherramientas
2. Como se muestra en la [imagen 1], introduzca el inserto en la ranura con forma de v
3. Atornille para sujetar el inserto

### Cambio de inserto



[imagen.2]



[imagen.3]

1. Desatornille y separe el inserto usado del portaherramientas
2. Como se muestra en la [imagen 2], limpie la ranura donde se sujeta el inserto
3. Coloque un nuevo inserto en el asiento de la punta
4. Como se muestra en la [imagen 3], introduzca el inserto y atornillelo mientras lo sujeta con una mano para que no se separe del portaherramientas

## 🔗 Precauciones a considerar en taladrado

### Rampa



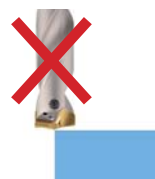
1. El ángulo de aproximación/entrada entre la broca y la pieza al comienzo del taladrado debe ser de menos de 6°.
2. Reduzca el avance a un 30-50% de las condiciones de corte recomendadas en el comienzo o final del mecanizado en pendiente.

### Planos superpuestos



1. El espacio limitado entre las láminas puede dificultar la evacuación de virutas dañando el cuerpo del taladro.
2. Sujete las láminas de manera que el espacio intermedio sea lo más reducido posible (idealmente no debería haber espacio).

### Taladrado en plunje



1. La carga mecánica irregular en mecanizado en plunje puede causar la fractura o deformación de la broca.

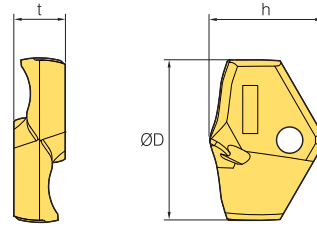
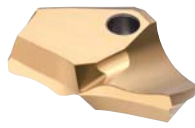
### Mandrinado



1. No se recomienda el mandrinado por el desgaste que se ocasiona en las esquinas de los insertos.



# TPDB-H Inserto **new**



| Código        |               | Recubierta<br>PC340Q | ØD        | h    | t   |
|---------------|---------------|----------------------|-----------|------|-----|
| TPD           | 140B-H~149B-H |                      | 14.0-14.9 | 10.0 | 4.0 |
|               | 150B-H~159B-H |                      | 15.0-15.9 | 10.5 | 4.0 |
|               | 160B-H~169B-H |                      | 16.0-16.9 | 11.5 | 5.5 |
|               | 170B-H~179B-H |                      | 17.0-17.9 | 12.0 | 5.5 |
|               | 180B-H~189B-H |                      | 18.0-18.9 | 13.0 | 6.0 |
|               | 190B-H~199B-H |                      | 19.0-19.9 | 13.5 | 6.0 |
|               | 200B-H~209B-H |                      | 20.0-20.9 | 14.5 | 6.5 |
|               | 210B-H~219B-H |                      | 21.0-21.9 | 15.0 | 6.5 |
|               | 220B-H~229B-H |                      | 22.0-22.9 | 15.5 | 7.0 |
|               | 230B-H~239B-H |                      | 23.0-23.9 | 16.0 | 7.0 |
|               | 240B-H~249B-H |                      | 24.0-24.9 | 16.5 | 7.5 |
|               | 250B-H~259B-H |                      | 25.0-25.9 | 17.0 | 7.5 |
|               | 260B-H~269B-H |                      | 26.0-26.9 | 17.5 | 8.5 |
|               | 270B-H~279B-H |                      | 27.0-27.9 | 18.5 | 8.5 |
|               | 280B-H~289B-H |                      | 28.0-28.9 | 19.5 | 9.5 |
|               | 290B-H~299B-H |                      | 29.0-29.9 | 20.0 | 9.5 |
| 300B-H~309B-H |               | 30.0-30.9            | 20.5      | 10.0 |     |

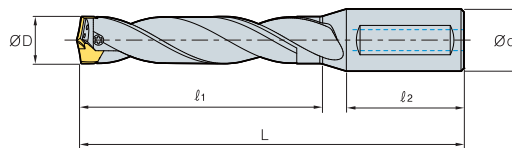
(mm)

● : En Almacen

## Partes

| Código | Díámetro de la broca (ØD) | Tornillo  | Llave       | Par de apriete (N·m) |     |
|--------|---------------------------|-----------|-------------|----------------------|-----|
| TPD    | 140B-H~149B-H             | 14.0-14.9 | FTNB02512-P | TW07S                | 0.8 |
|        | 150B-H~179B-H             | 15.0-17.9 | FTNB02514-P | TW07S                | 0.8 |
|        | 180B-H~199B-H             | 18.0-19.9 | FTNB0316-P  | TW09S                | 1.2 |
|        | 200B-H~239B-H             | 20.0-23.9 | FTNB0319    | TW09S                | 1.2 |
|        | 240B-H~259B-H             | 24.0-25.9 | FTNB03522   | TW15S                | 3.0 |
|        | 260B-H~279B-H             | 26.0-27.9 | FTNB03524   | TW15S                | 3.0 |
|        | 280B-H~299B-H             | 28.0-29.9 | FTNB0426    | TW15S                | 3.0 |
|        | 300B-H~309B-H             | 30.0-30.9 | FTNB0528    | TW20-100             | 4.0 |

# TPDB-H (3D) new



(mm)

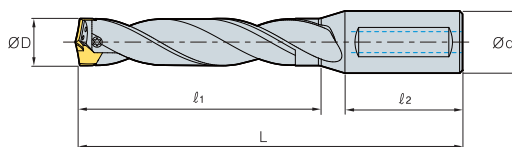
|            | Código     | ØD        | Ød   | l <sub>1</sub> | l <sub>2</sub> | L              | Inserto        |
|------------|------------|-----------|------|----------------|----------------|----------------|----------------|
| TPDB       | 140-16-3-H | 14.0-14.4 | 16   | 42             | 48             | 97.5           | TPD140B-144B-H |
|            | 145-16-3-H | 14.5-14.9 | 16   | 43.5           | 48             | 99.5           | TPD145B-149B-H |
|            | 150-20-3-H | 15.0-15.4 | 20   | 45             | 50             | 103.0          | TPD150B-154B-H |
|            | 155-20-3-H | 15.5-15.9 | 20   | 46.5           | 50             | 105.0          | TPD155B-159B-H |
|            | 160-20-3-H | 16.0-16.4 | 20   | 48             | 50             | 106.5          | TPD160B-164B-H |
|            | 165-20-3-H | 16.5-16.9 | 20   | 49.5           | 50             | 108.5          | TPD165B-169B-H |
|            | 170-20-3-H | 17.0-17.4 | 20   | 51             | 50             | 110.0          | TPD170B-174B-H |
|            | 175-20-3-H | 17.5-17.9 | 20   | 52.5           | 50             | 112.0          | TPD175B-179B-H |
|            | 180-20-3-H | 18.0-18.4 | 20   | 54             | 50             | 113.5          | TPD180B-184B-H |
|            | 185-20-3-H | 18.5-18.9 | 20   | 55.5           | 50             | 115.5          | TPD185B-189B-H |
|            | 190-20-3-H | 19.0-19.4 | 20   | 57             | 50             | 117.0          | TPD190B-194B-H |
|            | 195-20-3-H | 19.5-19.9 | 20   | 58.5           | 50             | 119.0          | TPD195B-199B-H |
|            | 200-25-3-H | 20.0-20.4 | 25   | 60             | 56             | 126.5          | TPD200B-204B-H |
|            | 205-25-3-H | 20.5-20.9 | 25   | 61.5           | 56             | 128.5          | TPD205B-209B-H |
|            | 210-25-3-H | 21.0-21.4 | 25   | 63             | 56             | 130.0          | TPD210B-214B-H |
|            | 215-25-3-H | 21.5-21.9 | 25   | 64.5           | 56             | 132.0          | TPD215B-219B-H |
|            | 220-25-3-H | 22.0-22.4 | 25   | 66             | 56             | 133.5          | TPD220B-224B-H |
|            | 225-25-3-H | 22.5-22.9 | 25   | 67.5           | 56             | 135.5          | TPD225B-229B-H |
|            | 230-25-3-H | 23.0-23.4 | 25   | 69             | 56             | 137.0          | TPD230B-234B-H |
|            | 235-25-3-H | 23.5-23.9 | 25   | 70.5           | 56             | 139.0          | TPD235B-239B-H |
|            | 240-32-3-H | 24.0-24.4 | 32   | 72             | 60             | 144.5          | TPD240B-244B-H |
|            | 245-32-3-H | 24.5-24.9 | 32   | 73.5           | 60             | 146.5          | TPD245B-249B-H |
|            | 250-32-3-H | 25.0-25.4 | 32   | 75             | 60             | 148.0          | TPD250B-254B-H |
|            | 255-32-3-H | 25.5-25.9 | 32   | 76.5           | 60             | 150.0          | TPD255B-259B-H |
|            | 260-32-3-H | 26.0-26.4 | 32   | 78             | 60             | 151.5          | TPD260B-264B-H |
|            | 265-32-3-H | 26.5-26.9 | 32   | 79.5           | 60             | 153.5          | TPD265B-269B-H |
|            | 270-32-3-H | 27.0-27.4 | 32   | 81             | 60             | 155.0          | TPD270B-274B-H |
|            | 275-32-3-H | 27.5-27.9 | 32   | 82.5           | 60             | 157.0          | TPD275B-279B-H |
|            | 280-32-3-H | 28.0-28.4 | 32   | 84             | 60             | 158.5          | TPD280B-284B-H |
|            | 285-32-3-H | 28.5-28.9 | 32   | 85.5           | 60             | 160.5          | TPD285B-289B-H |
| 290-32-3-H | 29.0-29.4  | 32        | 87   | 60             | 162.0          | TPD290B-294B-H |                |
| 295-32-3-H | 29.5-29.9  | 32        | 88.5 | 60             | 164.0          | TPD295B-299B-H |                |
| 300-32-3-H | 30.0-30.9  | 32        | 90   | 60             | 165.5          | TPD300B-309B-H |                |

Placas Disponibles G47





# TPDB-H (4D) **new**

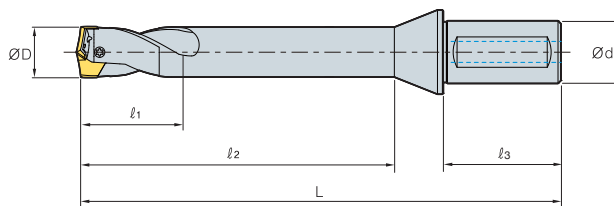


(mm)

|            | Código     | ØD        | Ød  | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L              | Inserto        |
|------------|------------|-----------|-----|----------------|----------------|----------------|----------------|
| TPDB       | 140-16-4-H | 14.0-14.4 | 16  | 56             | 48             | 111.5          | TPD140B-144B-H |
|            | 145-16-4-H | 14.5-14.9 | 16  | 58             | 48             | 114.0          | TPD145B-149B-H |
|            | 150-20-4-H | 15.0-15.4 | 20  | 60             | 50             | 118.0          | TPD150B-154B-H |
|            | 155-20-4-H | 15.5-15.9 | 20  | 62             | 50             | 120.5          | TPD155B-159B-H |
|            | 160-20-4-H | 16.0-16.4 | 20  | 64             | 50             | 122.5          | TPD160B-164B-H |
|            | 165-20-4-H | 16.5-16.9 | 20  | 66             | 50             | 125.0          | TPD165B-169B-H |
|            | 170-20-4-H | 17.0-17.4 | 20  | 68             | 50             | 127.0          | TPD170B-174B-H |
|            | 175-20-4-H | 17.5-17.9 | 20  | 70             | 50             | 129.5          | TPD175B-179B-H |
|            | 180-20-4-H | 18.0-18.4 | 20  | 72             | 50             | 131.5          | TPD180B-184B-H |
|            | 185-20-4-H | 18.5-18.9 | 20  | 74             | 50             | 134.0          | TPD185B-189B-H |
|            | 190-20-4-H | 19.0-19.4 | 20  | 76             | 50             | 136.0          | TPD190B-194B-H |
|            | 195-20-4-H | 19.5-19.9 | 20  | 78             | 50             | 138.5          | TPD195B-199B-H |
|            | 200-25-4-H | 20.0-20.4 | 25  | 80             | 56             | 146.5          | TPD200B-204B-H |
|            | 205-25-4-H | 20.5-20.9 | 25  | 82             | 56             | 149.0          | TPD205B-209B-H |
|            | 210-25-4-H | 21.0-21.4 | 25  | 84             | 56             | 151.0          | TPD210B-214B-H |
|            | 215-25-4-H | 21.5-21.9 | 25  | 86             | 56             | 153.5          | TPD215B-219B-H |
|            | 220-25-4-H | 22.0-22.4 | 25  | 88             | 56             | 155.5          | TPD220B-224B-H |
|            | 225-25-4-H | 22.5-22.9 | 25  | 90             | 56             | 158.0          | TPD225B-229B-H |
|            | 230-25-4-H | 23.0-23.4 | 25  | 92             | 56             | 160.0          | TPD230B-234B-H |
|            | 235-25-4-H | 23.5-23.9 | 25  | 94             | 56             | 162.5          | TPD235B-239B-H |
|            | 240-32-4-H | 24.0-24.4 | 32  | 96             | 60             | 168.5          | TPD240B-244B-H |
|            | 245-32-4-H | 24.5-24.9 | 32  | 98             | 60             | 171.0          | TPD245B-249B-H |
|            | 250-32-4-H | 25.0-25.4 | 32  | 100            | 60             | 173.0          | TPD250B-254B-H |
|            | 255-32-4-H | 25.5-25.9 | 32  | 102            | 60             | 175.5          | TPD255B-259B-H |
|            | 260-32-4-H | 26.0-26.4 | 32  | 104            | 60             | 177.5          | TPD260B-264B-H |
|            | 265-32-4-H | 26.5-26.9 | 32  | 106            | 60             | 180.0          | TPD265B-269B-H |
|            | 270-32-4-H | 27.0-27.4 | 32  | 108            | 60             | 182.0          | TPD270B-274B-H |
|            | 275-32-4-H | 27.5-27.9 | 32  | 110            | 60             | 184.5          | TPD275B-279B-H |
|            | 280-32-4-H | 28.0-28.4 | 32  | 112            | 60             | 186.5          | TPD280B-284B-H |
|            | 285-32-4-H | 28.5-28.9 | 32  | 114            | 60             | 189.0          | TPD285B-289B-H |
| 290-32-4-H | 29.0-29.4  | 32        | 116 | 60             | 191.0          | TPD290B-294B-H |                |
| 295-32-4-H | 29.5-29.9  | 32        | 118 | 60             | 193.5          | TPD295B-299B-H |                |
| 300-32-4-H | 30.0-30.9  | 32        | 120 | 60             | 195.5          | TPD300B-309B-H |                |

➔ Placas Disponibles G47

# TPDB-H (8D) new



(mm)

|             | Código      | ØD        | Ød | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | L              | Inserto        |
|-------------|-------------|-----------|----|----------------|----------------|----------------|----------------|----------------|
| TPDB        | 140-16-8F-H | 14.0-14.4 | 16 | 50             | 112            | 48             | 175.0          | TPD140B-144B-H |
|             | 145-16-8F-H | 14.5-14.9 | 16 | 50             | 116            | 48             | 179.0          | TPD145B-149B-H |
|             | 150-20-8F-H | 15.0-15.4 | 20 | 50             | 120            | 50             | 186.0          | TPD150B-154B-H |
|             | 155-20-8F-H | 15.5-15.9 | 20 | 50             | 124            | 50             | 190.0          | TPD155B-159B-H |
|             | 160-20-8F-H | 16.0-16.4 | 20 | 50             | 128            | 50             | 195.0          | TPD160B-164B-H |
|             | 165-20-8F-H | 16.5-16.9 | 20 | 50             | 132            | 50             | 199.0          | TPD165B-169B-H |
|             | 170-20-8F-H | 17.0-17.4 | 20 | 50             | 136            | 50             | 204.0          | TPD170B-174B-H |
|             | 175-20-8F-H | 17.5-17.9 | 20 | 50             | 140            | 50             | 208.0          | TPD175B-179B-H |
|             | 180-20-8F-H | 18.0-18.4 | 20 | 50             | 144            | 50             | 214.0          | TPD180B-184B-H |
|             | 185-20-8F-H | 18.5-18.9 | 20 | 50             | 148            | 50             | 218.0          | TPD185B-189B-H |
|             | 190-20-8F-H | 19.0-19.4 | 20 | 50             | 152            | 50             | 222.0          | TPD190B-194B-H |
|             | 195-20-8F-H | 19.5-19.9 | 20 | 50             | 156            | 50             | 226.0          | TPD195B-199B-H |
|             | 200-25-8F-H | 20.0-20.4 | 25 | 50             | 160            | 56             | 236.0          | TPD200B-204B-H |
|             | 205-25-8F-H | 20.5-20.9 | 25 | 50             | 164            | 56             | 240.0          | TPD205B-209B-H |
|             | 210-25-8F-H | 21.0-21.4 | 25 | 50             | 168            | 56             | 244.0          | TPD210B-214B-H |
|             | 215-25-8F-H | 21.5-21.9 | 25 | 50             | 172            | 56             | 248.0          | TPD215B-219B-H |
|             | 220-25-8F-H | 22.0-22.4 | 25 | 50             | 176            | 56             | 252.0          | TPD220B-224B-H |
|             | 225-25-8F-H | 22.5-22.9 | 25 | 50             | 180            | 56             | 261.0          | TPD225B-229B-H |
|             | 230-25-8F-H | 23.0-23.4 | 25 | 50             | 184            | 56             | 265.0          | TPD230B-234B-H |
|             | 235-25-8F-H | 23.5-23.9 | 25 | 50             | 188            | 56             | 269.0          | TPD235B-239B-H |
|             | 240-32-8F-H | 24.0-24.4 | 32 | 50             | 192            | 60             | 277.0          | TPD240B-244B-H |
|             | 245-32-8F-H | 24.5-24.9 | 32 | 50             | 196            | 60             | 281.0          | TPD245B-249B-H |
|             | 250-32-8F-H | 25.0-25.4 | 32 | 50             | 200            | 60             | 285.0          | TPD250B-254B-H |
|             | 255-32-8F-H | 25.5-25.9 | 32 | 50             | 204            | 60             | 289.0          | TPD255B-259B-H |
|             | 260-32-8F-H | 26.0-26.4 | 32 | 50             | 208            | 60             | 293.0          | TPD260B-264B-H |
|             | 265-32-8F-H | 26.5-26.9 | 32 | 50             | 212            | 60             | 297.0          | TPD265B-269B-H |
|             | 270-32-8F-H | 27.0-27.4 | 32 | 50             | 216            | 60             | 301.0          | TPD270B-274B-H |
|             | 275-32-8F-H | 27.5-27.9 | 32 | 50             | 220            | 60             | 305.0          | TPD275B-279B-H |
|             | 280-32-8F-H | 28.0-28.4 | 32 | 50             | 224            | 60             | 311.0          | TPD280B-284B-H |
|             | 285-32-8F-H | 28.5-28.9 | 32 | 50             | 228            | 60             | 315.0          | TPD285B-289B-H |
|             | 290-32-8F-H | 29.0-29.4 | 32 | 50             | 232            | 60             | 320.0          | TPD290B-294B-H |
|             | 295-32-8F-H | 29.5-29.9 | 32 | 50             | 236            | 60             | 324.0          | TPD295B-299B-H |
| 300-32-8F-H | 30.0-30.9   | 32        | 50 | 240            | 60             | 328.0          | TPD300B-309B-H |                |

Placas Disponibles G47

• La longitud máxima de los canales puede ser de hasta l<sub>2</sub>



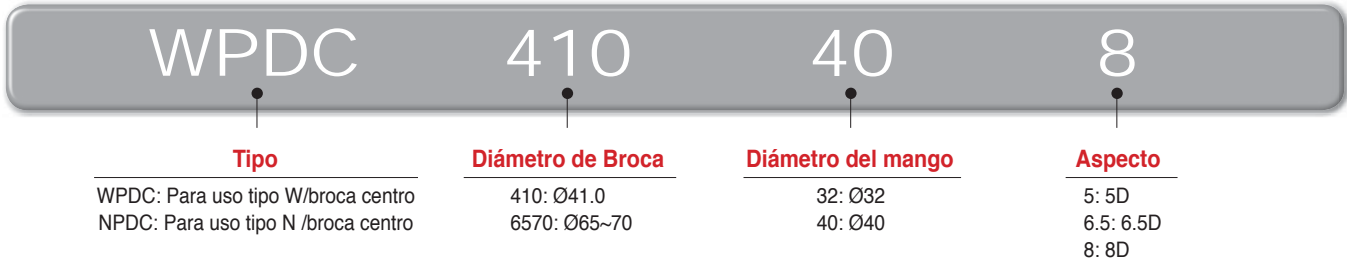
Conveniente y rápido ajuste de altura de la broca

# WPDC

## Broca indexable con broca de centro

### ➤ Sistema de Codificación

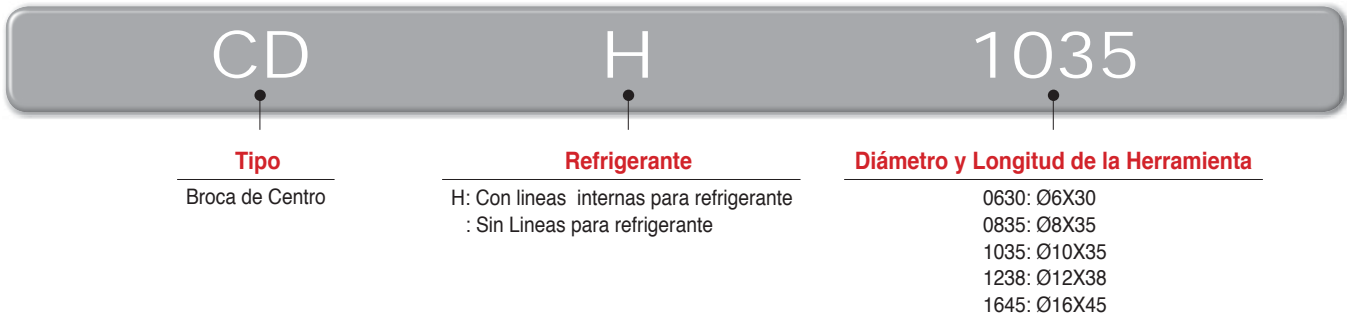
#### Sistema de Codificación de la broca



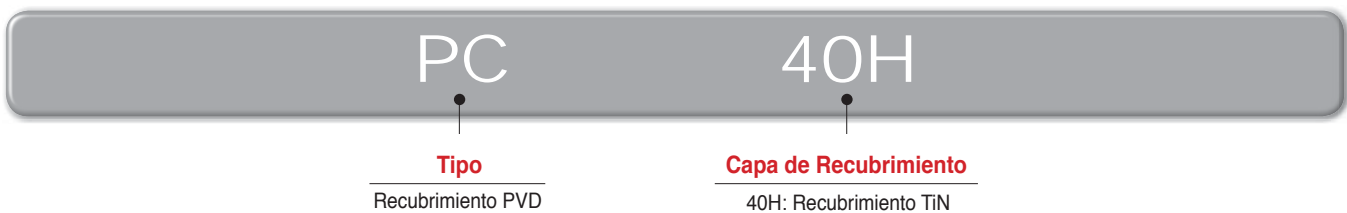
#### Sistema de codificación del Cartucho



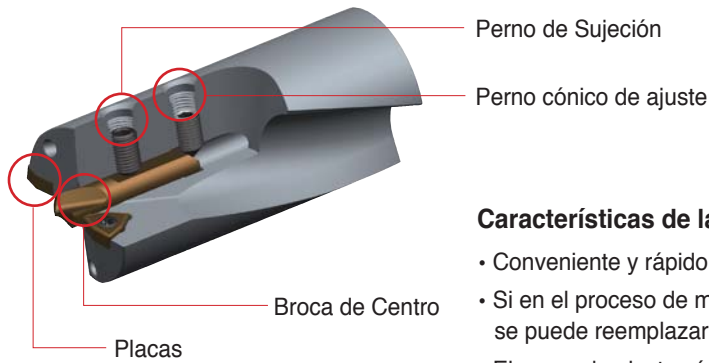
#### Sistema de Codificación para Broca de Centro



#### Grado de la Broca de Centro



## Como Sujetar las brocas



### Características de la broca de centro

- Conveniente y rápido ajuste de altura y sujeción de la broca de centro
- Si en el proceso de maquinado, se llega a fracturar o quebrar fácilmente se puede reemplazar
- El perno de ajuste cónico previene despostillamientos en la broca de centro

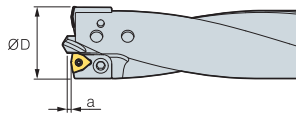
## Sujeción

| 1                             | 2                            | 3  | 4  | 5  |
|-------------------------------|------------------------------|--|--|--|
|                               |                              |  |  |  |
| Introduzca la Broca de centro | Apriete (Cartucho e inserto) | Ajuste la broca de centro con el tornillo cónico | Apriete fuertemente el perno de sujeción | Cerciórese de que los pernos estén debidamente apretados |

- ※ Sea cuidadoso con el filo de corte, se recomienda utilizar guantes y equipo de seguridad
- ※ Tenga cuidado con el disco, en caso de mecanizado en torneado

## Longitud de 'a' en la Broca de Centro

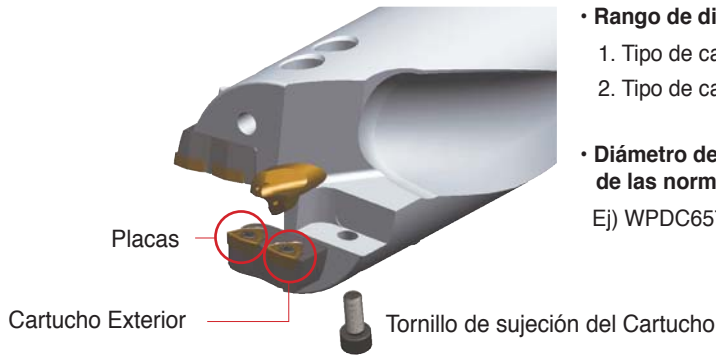
Si la longitud de 'a' es demasiado corto puede causar un mal acabado en la superficie o alta carga de corte. Por otro lado, si la longitud de 'a' es demasiado largo puede provocar fallas en la herramienta y traqueteo durante la perforación



| Diámetro (ØD) | Longitud de 'a' en la Broca de Centro |                   |                     |
|---------------|---------------------------------------|-------------------|---------------------|
|               | Acero                                 | Aleación de Acero | Metales No-Ferrosos |
| 25~30         | 1.2                                   | 1.0               | 1.5                 |
| 31~40         | 1.5                                   | 1.3               | 1.8                 |
| 41~50         | 1.8                                   | 1.5               | 2.2                 |
| 51~59         | 2.2                                   | 1.8               | 2.5                 |
| 60~75         | 2.5                                   | 2.0               | 2.8                 |
| 76~80         | 3.0                                   | 2.5               | 3.5                 |

## ⦿ Ajuste del Diámetro del Cartucho

- Desmontar un cartucho de la Broca aflojando el tornillo fijado para el cartucho exterior
- Maquinar después de calcular el tamaño del orificio con en el lado del cartucho exterior
- Corte la parte aguda después del mecanizado
- Coloque el tornillo de fijación del cartucho sin ningún espacio entre la broca y el cartucho exterior para el maquinado



### • Rango de diámetro de la broca ajustable

1. Tipo de cartucho individual (diámetro de perforación  $\varnothing 41 \sim \varnothing 59$ )  $\rightarrow -1.0\text{mm}$
2. Tipo de cartucho dual (diámetro de perforación  $\varnothing 60 \sim \varnothing 80$ )  $\rightarrow -5.0\text{mm}$

### • Diámetro de los taladros estándar está equipada con tamaño máximo de las normas

Ej) WPDC6570-40-6.5  $\rightarrow$  El diam. de la broca es de 70.0mm

Ej) Cómo ajustar el diámetro de perforación para  $\varnothing 66.0$  maquinado con WPDC6570-40-8

$\rightarrow$  Para hacer que el diámetro de la broca de cartucho exterior de 2.0 mm de la máquina, ( $\varnothing 70.0 \sim \varnothing 66.0 = 4 \rightarrow 4 \div 2 = 2$  (radio) )

## ⦿ Condiciones de Corte Recomendadas

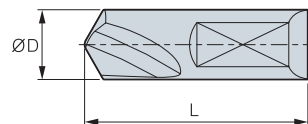
| Material |                                 |  | Rompeviruta | Grado | vc (m/min) | Dimensiones (L/D) = 5D, 6.5D, 8D                       |                                      |                                      |                                      |                                      |                                      |
|----------|---------------------------------|--|-------------|-------|------------|--|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| ISO      | Materiales pieza de trabajo     | HB   |             |       |            | Avance (mm/rev) Dependiendo del Diam. de la broca (mm) |                                      |                                      |                                      |                                      |                                      |
|          |                                 |  |             |       |            | $\sim \varnothing 30$                                  | $\varnothing 31 \sim \varnothing 40$ | $\varnothing 41 \sim \varnothing 50$ | $\varnothing 51 \sim \varnothing 59$ | $\varnothing 60 \sim \varnothing 75$ | $\varnothing 76 \sim \varnothing 80$ |
| P        | Acero al Carbon                 | Acero al carbono bajo contenido (~0.25%)     | 80~180      | C21N  | PC5335     | 190 (160~220)  | 0.07~0.11                            | 0.08~0.12                            | 0.10~0.14                            | 0.12~0.16                            | 0.12~0.16                            |
|          |                                 | Acero al carbono alto contenido (0.25%~)     | 180~280     | C21N  | PC5335     | 140 (110~170)  | 0.07~0.11                            | 0.08~0.12                            | 0.10~0.14                            | 0.12~0.16                            | 0.12~0.16                            |
|          | Aleación de Acero               | Acero aleado de baja aleación                | 140~260     | C21N  | PC5335     | 130 (100~160)  | 0.08~0.12                            | 0.08~0.12                            | 0.10~0.14                            | 0.12~0.18                            | 0.12~0.18                            |
|          |                                 | Acero aleado de baja aleación pre-endurecido | 50~260      | C21N  | PC5335     | 100 (70~130)   | 0.06~0.10                            | 0.08~0.12                            | 0.08~0.12                            | 0.10~0.16                            | 0.10~0.16                            |
| M        | Acero Inoxidable                | Acero Inoxidable                             | 135~275     | C21N  | PC5335     | 100 (70~130)   | 0.06~0.10                            | 0.08~0.12                            | 0.10~0.12                            | 0.12~0.14                            | 0.12~0.14                            |
| K        | Fundición                       | Fundición Gris                               | 150~220     | C21N  | PC5335     | 160 (130~190)  | 0.09~0.15                            | 0.10~0.16                            | 0.12~0.2                             | 0.14~0.22                            | 0.14~0.22                            |
|          |                                 | Fundición Dúctil                             | 200~300     | C21N  | PC5335     | 140 (170~110)  | 0.09~0.15                            | 0.10~0.16                            | 0.12~0.2                             | 0.14~0.22                            | 0.14~0.22                            |
|          |                                 | Fundición Maleable                           | 130~230     | C21N  | PC5335     | 150 (180~120)  | 0.09~0.15                            | 0.10~0.16                            | 0.12~0.2                             | 0.14~0.22                            | 0.14~0.22                            |
| N        | Aleación de Aluminio            | Aleación de Aluminio                         | 30~150      | C21N  | PC5335     | 300 (250~350)  | 0.08~0.12                            | 0.10~0.14                            | 0.12~0.16                            | 0.14~0.18                            | 0.14~0.18                            |
|          | Aleación de Cobre               | Aleación de Cobre                            | 150~160     | C21N  | PC5335     | 250 (200~300)  | 0.08~0.12                            | 0.10~0.14                            | 0.12~0.16                            | 0.14~0.18                            | 0.14~0.18                            |
| S        | Aleaciones resistentes al calor | Aleaciones resistentes al calor              | 130~400     | C21N  | PC5335     | 50 (70~30)   | 0.05~0.08                            | 0.05~0.08                            | 0.06~0.10                            | 0.06~0.10                            | 0.06~0.10                            |

## Partes para broca Tipo WPDC

| Código           | ØD    | Inserto         |           |         | Broca Centro |                 |                 | Cartucho |          |                |          |          |         |         |
|------------------|-------|-----------------|-----------|---------|--------------|-----------------|-----------------|----------|----------|----------------|----------|----------|---------|---------|
|                  |       | Inserto         | Tornillo  | Llave   | Broca Centro | Perno Sujecion  | Perno Retencion | Interno  | Externo  | Perno sujecion |          |          |         |         |
| WPDC250-32-□     | 25    | WC□T030204-C21N | FTKA02206 | TW06S   | CD0630       | KHA0508         | KHC0510         |          |          |                |          |          |         |         |
| WPDC260~280-32-□ | 26~28 | WC□T040204-C21N | FTNA02555 | TW07S   |              | KHA0510         |                 |          |          |                |          |          |         |         |
| WPDC290~300-32-□ | 29~30 |                 |           |         |              | WC□T050308-C21N | FTKA0307        |          |          |                | TW09S    | KHA0610  | KHC0610 |         |
| WPDC310~350-32-□ | 31~35 |                 |           |         |              |                 |                 |          |          |                |          |          |         |         |
| WPDC360~400-32-□ | 36~40 |                 |           |         |              |                 |                 |          |          |                |          |          |         |         |
| WPDC410-40-□     | 41    | WC□T06T308-C21N | FTKA03508 | TW15S   | CDH1035      | KHA0812         | KHC0812         |          |          |                | CWP4145C | CWP410P  | BHA0510 |         |
| WPDC420-40-□     | 42    |                 |           |         |              |                 |                 | CWP420P  |          |                |          |          |         |         |
| WPDC430-40-□     | 43    |                 |           |         |              |                 |                 | CWP430P  |          |                |          |          |         |         |
| WPDC440-40-□     | 44    |                 |           |         |              |                 |                 | CWP440P  |          |                |          |          |         |         |
| WPDC450-40-□     | 45    |                 |           |         |              |                 |                 | CWP450P  |          |                |          |          |         |         |
| WPDC460-40-□     | 46    |                 |           |         |              |                 |                 | CWP460P  | CWP4650C | BHA0512        |          |          |         |         |
| WPDC470-40-□     | 47    |                 |           |         |              | CWP470P         |                 |          |          |                |          |          |         |         |
| WPDC480-40-□     | 48    |                 |           |         |              | CWP480P         |                 |          |          |                |          |          |         |         |
| WPDC490-40-□     | 49    |                 |           |         |              | CWP490P         |                 |          |          |                |          |          |         |         |
| WPDC500-40-□     | 50    |                 |           |         |              | WC□T080408-C21N | FTKA0411K       | TW15S    | CDH1238  | KHA1015        | KHC1016  | CWP5155C | CWP500P | BHA0612 |
| WPDC510-40-□     | 51    |                 |           |         |              |                 |                 |          |          |                |          |          | CWP510P |         |
| WPDC520-40-□     | 52    |                 |           |         |              |                 |                 |          |          |                |          |          | CWP520P |         |
| WPDC530-40-□     | 53    |                 |           |         |              |                 |                 |          |          |                |          |          | CWP530P |         |
| WPDC540-40-□     | 54    |                 |           |         |              |                 |                 |          |          |                |          |          | CWP540P |         |
| WPDC550-40-□     | 55    | CWP550P         |           |         |              |                 |                 |          |          |                |          |          |         |         |
| WPDC560-40-□     | 56    | CWP5659C        | BHA0614   |         |              |                 |                 |          |          |                |          |          |         |         |
| WPDC570-40-□     | 57    |                 |           | CWP560P |              |                 |                 |          |          |                |          |          |         |         |
| WPDC580-40-□     | 58    |                 |           | CWP570P |              |                 |                 |          |          |                |          |          |         |         |
| WPDC590-40-□     | 59    |                 |           | CWP580P |              |                 |                 |          |          |                |          |          |         |         |
| WPDC6065-40-□    | 60~65 | WC□T050308-C21N | FTKA0307  | TW09S   | CDH1645      | KHA1020         | KHA1020         | CWP6065C | CWP6065P | BHA0510        |          |          |         |         |
| WPDC6570-40-□    | 65~70 |                 |           |         |              |                 |                 |          | CWP6570C |                | CWP6570P |          |         |         |
| WPDC7075-40-□    | 70~75 |                 |           |         |              |                 |                 |          | CWP7075C |                | CWP7075P |          |         |         |
| WPDC7580-40-□    | 75~80 | WC□T06T308-C21N | FTKA03508 | TW15S   | CDH1645      |                 |                 | CWP7580C | CWP7580T | BHA0612        |          |          |         |         |

Placas Disponibles G04-05

## Center Drill



(mm)

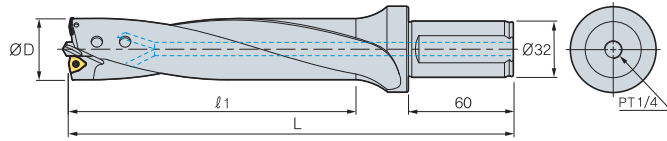
| Código  | Grado | ØD | L  | Linea refrigeracion |
|---------|-------|----|----|---------------------|
| CD0630  | PC40H | 6  | 30 | ×                   |
| CD0835  | PC40H | 8  | 35 | ×                   |
| CDH1035 | PC40H | 10 | 35 | ○                   |
| CDH1238 | PC40H | 12 | 38 | ○                   |
| CDH1645 | PC40H | 16 | 45 | ○                   |

• Broca de alta velocidad con recubrimiento de Titanio



# WPDC (5D/6.5D/8D)

Tipo estándar



(mm)

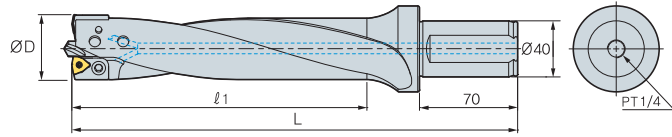
| Código        | ØD | 5D             |     | 6.5D           |     | 8D             |     | Inserto         | Broca Centro |
|---------------|----|----------------|-----|----------------|-----|----------------|-----|-----------------|--------------|
|               |    | ℓ <sub>1</sub> | L   | ℓ <sub>1</sub> | L   | ℓ <sub>1</sub> | L   |                 |              |
| WPDC 250-32-□ | 25 | 150            | 240 | 185            | 275 | 220            | 310 | WC□T030204-C21N | CD0630       |
| 260-32-□      | 26 | 150            | 240 | 185            | 275 | 220            | 310 | WC□T040204-C21N |              |
| 270-32-□      | 27 | 150            | 240 | 185            | 275 | 220            | 310 |                 |              |
| 280-32-□      | 28 | 150            | 240 | 185            | 275 | 220            | 310 |                 |              |
| 290-32-□      | 29 | 150            | 240 | 185            | 275 | 220            | 310 |                 |              |
| 300-32-□      | 30 | 150            | 240 | 185            | 275 | 220            | 310 |                 |              |
| 310-32-□      | 31 | 175            | 265 | 218            | 308 | 260            | 350 | WC□T050308-C21N | CD0835       |
| 320-32-□      | 32 | 175            | 265 | 218            | 308 | 260            | 350 |                 |              |
| 330-32-□      | 33 | 175            | 265 | 218            | 308 | 260            | 350 |                 |              |
| 340-32-□      | 34 | 175            | 265 | 218            | 308 | 260            | 350 |                 |              |
| 350-32-□      | 35 | 175            | 265 | 218            | 308 | 260            | 350 |                 |              |
| 360-32-□      | 36 | 200            | 290 | 250            | 340 | 300            | 390 |                 |              |
| 370-32-□      | 37 | 200            | 290 | 250            | 340 | 300            | 390 |                 |              |
| 380-32-□      | 38 | 200            | 290 | 250            | 340 | 300            | 390 |                 |              |
| 390-32-□      | 39 | 200            | 290 | 250            | 340 | 300            | 390 |                 |              |
| 400-32-□      | 40 | 200            | 290 | 250            | 340 | 300            | 390 |                 |              |

Placas Disponibles G04~05

\* Podemos proporcionarle el diametro que requiera  
Ej) Agujero 32.5mm + 6.5D → WPDC325-32-6.5

# WPDC (5D/6.5D/8D)

## Cartucho C/1Placa



(mm)

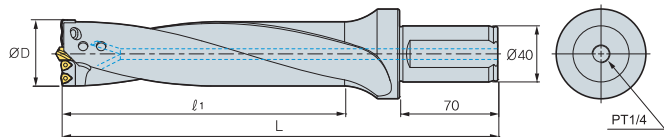
| Código | ØD       | 5D             |         | 6.5D           |         | 8D              |         | Inserto         | Broca Centro | Cartucho |         |
|--------|----------|----------------|---------|----------------|---------|-----------------|---------|-----------------|--------------|----------|---------|
|        |          | l <sub>1</sub> | L       | l <sub>1</sub> | L       | l <sub>1</sub>  | L       |                 |              | Interno  | Externo |
| WPDC   | 410-40-□ | 41             | 225 330 | 283 388        | 340 445 | WC□T06T308-C21N | CDH1035 | CWP4145C        | CWP410P      |          |         |
|        | 420-40-□ | 42             | 225 330 | 283 388        | 340 445 |                 |         |                 | CWP420P      |          |         |
|        | 430-40-□ | 43             | 225 330 | 283 388        | 340 445 |                 |         |                 | CWP430P      |          |         |
|        | 440-40-□ | 44             | 225 330 | 283 388        | 340 445 |                 |         |                 | CWP440P      |          |         |
|        | 450-40-□ | 45             | 225 330 | 283 388        | 340 445 |                 |         |                 | CWP450P      |          |         |
|        | 460-40-□ | 46             | 250 355 | 315 420        | 380 485 |                 |         | CWP4650C        | CWP460P      |          |         |
|        | 470-40-□ | 47             | 250 355 | 315 420        | 380 485 |                 |         |                 | CWP470P      |          |         |
|        | 480-40-□ | 48             | 250 355 | 315 420        | 380 485 |                 |         |                 | CWP480P      |          |         |
|        | 490-40-□ | 49             | 250 355 | 315 420        | 380 485 |                 |         |                 | CWP490P      |          |         |
|        | 500-40-□ | 50             | 250 355 | 315 420        | 380 485 |                 |         |                 | CWP500P      |          |         |
|        | 510-40-□ | 51             | 275 380 | 348 453        | 420 525 |                 |         | WC□T080408-C21N | CDH1238      | CWP5155C | CWP510P |
|        | 520-40-□ | 52             | 275 380 | 348 453        | 420 525 |                 |         |                 |              |          | CWP520P |
|        | 530-40-□ | 53             | 275 380 | 348 453        | 420 525 |                 |         |                 |              |          | CWP530P |
|        | 540-40-□ | 54             | 275 380 | 348 453        | 420 525 |                 |         |                 |              | CWP5659C | CWP540P |
|        | 550-40-□ | 55             | 275 380 | 348 453        | 420 525 |                 |         |                 |              |          | CWP550P |
|        | 560-40-□ | 56             | 300 405 | 380 485        | 460 565 |                 |         |                 |              |          | CWP560P |
|        | 570-40-□ | 57             | 300 405 | 380 485        | 460 565 |                 |         |                 |              |          | CWP570P |
|        | 580-40-□ | 58             | 300 405 | 380 485        | 460 565 |                 |         |                 |              |          | CWP580P |
|        | 590-40-□ | 59             | 300 405 | 380 485        | 460 565 |                 |         |                 |              |          | CWP590P |

Placas Disponibles G04~05

\* Podemos proporcionarle el diametro que requiera  
Ej) Agujero 47.5mm \* 5D -> WPDC475-40-5

# WPDC (5D/6.5D/8D)

## Cartucho C/2 placa



(mm)

| Código | ØD        | 5D             |         | 6.5D           |         | 8D              |         | Inserto         | Broca Centro | Cartucho |          |
|--------|-----------|----------------|---------|----------------|---------|-----------------|---------|-----------------|--------------|----------|----------|
|        |           | l <sub>1</sub> | L       | l <sub>1</sub> | L       | l <sub>1</sub>  | L       |                 |              | Interno  | Externo  |
| WPDC   | 6065-40-□ | 60~65          | 325 430 | 423 528        | 520 625 | WC□T050308-C21N | CDH1238 | CWP6065C        | CWP6065P     |          |          |
|        | 6570-40-□ | 65~70          | 350 455 | 455 560        | 560 665 |                 |         | CWP6570C        | CWP6570P     |          |          |
|        | 7075-40-□ | 70~75          | 375 480 | 488 593        | 600 705 |                 |         | CWP7075C        | CWP7075P     |          |          |
|        | 7580-40-□ | 75~80          | 400 505 | 520 625        | 640 745 |                 |         | WC□T06T308-C21N | CDH1645      | CWP7580C | CWP7580P |

Placas Disponibles G04~05

\* Podemos proporcionarle el diametro que requiera  
Ej) Agujero 70.5mm \* 6.5D -> WPDC705-40-6.5





Perforaciones altamente eficientes para diversas piezas, incluidos componentes de automóviles.

# MSD Plus **new**

## Mach Solid Drill Plus

### ➤ Sistema de código

Tipo especial

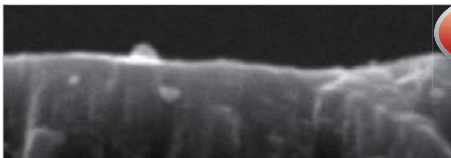
MSDP(H) 040 - 5 P - 100L - 5S

|                               |                                 |                                     |   |                       |                             |
|-------------------------------|---------------------------------|-------------------------------------|---|-----------------------|-----------------------------|
| <b>Salida de refrigerante</b> | <b>Diámetro perforación(ØD)</b> | <b>Tipo estándar</b>                | <b>Área de mecanizado</b>   | <b>Longitud total</b> | <b>Diámetro del vástago</b> |
| Sin: MSDP<br>Con: MSDPH       | 040: Ø4.0                       | relación de largo (L/D) 3D, 5D, 7D  | P: acero al carbono, acero aleado<br>M: acero inoxidable<br>K: hierro fundido<br>N: Aluminio, aleación de cobre | 100L: 100mm           | 5S: Ø5                      |
|                               |                                 | <b>Tipo especial</b>                |   |                       |                             |
|                               |                                 | Longitud de la flauta<br>100: 100mm |   |                       |                             |

### ➤ Características

#### Nuevo grado (PC325U)

- La capa de recubrimiento lubricante mejora la resistencia a la soldadura en condiciones de alta velocidad.
- Aumentar la resistencia al desgaste en el mecanizado de acero al carbono.



Resistencia al desgaste mejorada

PC325U

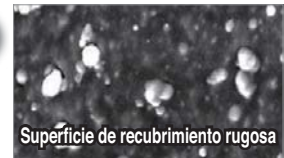
#### Superficie de la capa de recubrimiento

- Mayor resistencia a la adhesión (aporte por soldadura) y menor carga de corte
- Resistencia a la fricción reducida en los filos de corte y en la flauta



Superficie de revestimiento lisa

PC325U



Superficie de recubrimiento rugosa

Competidor

Lubricación mejorada

#### Control de viruta

- **pieza de trabajo** SCM440
- **Condiciones de corte** vc (m/min) = 90, fn (mm/rev) = 0.2  
ap (mm) = 30, con refrigerante
- **Herramientas** MSDPH060-5P (PC325U)

Virutas en buen estado



MSD Plus



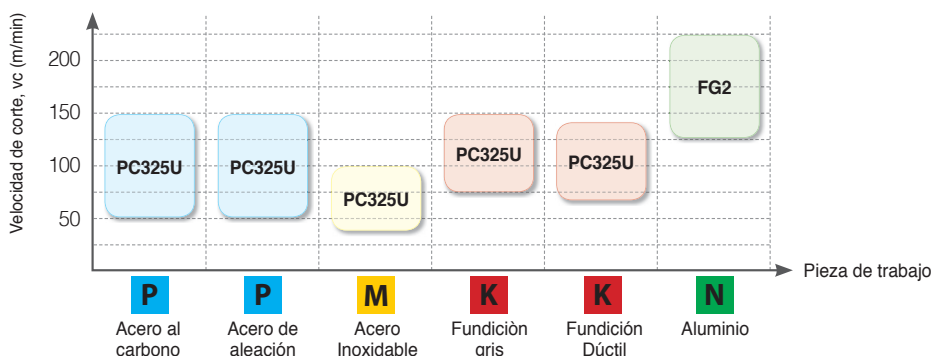
Competidor

#### Forma de la flauta

- Evacuación de viruta mejorada gracias a superficie de desalajo de viruta más ancho

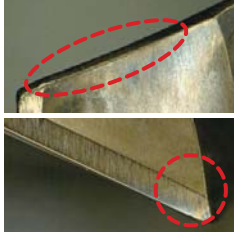


### ➤ Área de aplicación

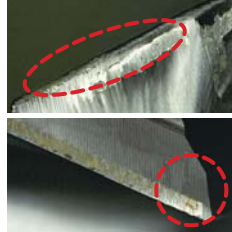


## Ejemplos de aplicación

- **Uso** parte del automóvil
- **Pieza de trabajo** SM45C
- **Condiciones de corte**  $vc$  (m/min) = 124,  $fn$  (mm/rev) = 0.15  
 $ap$  (mm) = 30, refrigerante interno
- **Herramientas** MSDP120-5P (PC325U)

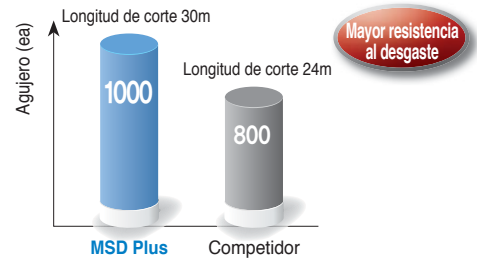


MSD Plus



Competitor

### Resultado de la prueba

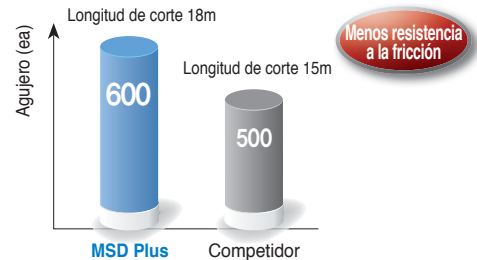


Capa de recubrimiento lubricante del nuevo grado PC325U maximiza la resistencia al desgaste.

- **Uso** parte del automóvil
- **Pieza de trabajo** SM53C
- **Condiciones de corte**  $vc$  (m/min) = 60,  $fn$  (mm/rev) = 0.25  
 $ap$  (mm) = 30, refrigeración externa
- **Herramientas** MSDP120-5P (PC325U)



### Resultado de la prueba



Brocas con recubrimiento especial para minimizar la resistencia generada por fricción

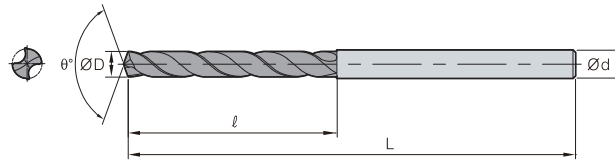
## Condiciones de Corte Recomendadas

| Material |                             |  | Grado    | vc (m/min) | Dimensiones  |           |            |             |             |           |
|----------|-----------------------------|--|----------|------------|--|-----------|------------|-------------|-------------|-----------|
| ISO      | Materiales pieza de trabajo | HB                                       |          |            | Avance (mm/rev) Dependiendo del Diam. de la broca (mm) |           |            |             |             |           |
|          |                             |  |          |            | Ø1.0~Ø4.0  | Ø4.1~Ø8.0 | Ø8.1~Ø12.0 | Ø12.1~Ø16.0 | Ø16.1~Ø20.0 |           |
| P        | Acero al Carbon             | Acero al carbono bajo contenido          | 80~120   | PC325U     | 90 (80~150)  | 0.10~0.15 | 0.16~0.24  | 0.20~0.30   | 0.25~0.36   | 0.30~0.40 |
|          |                             | Acero al carbono alto contenido          | Over 250 | PC325U     | 50 (40~80)   | 0.08~0.20 | 0.08~0.20  | 0.10~0.25   | 0.15~0.25   | 0.15~0.30 |
|          | Aleación de Acero           | Acero aleado de baja aleación            | 140~260  | PC325U     | 90 (80~150)  | 0.10~0.15 | 0.16~0.24  | 0.20~0.30   | 0.25~0.36   | 0.30~0.40 |
|          |                             | Acero aleado de baja aleación endurecido | 200~400  | PC325U     | 60 (50~100)  | 0.10~0.15 | 0.16~0.24  | 0.20~0.30   | 0.25~0.36   | 0.30~0.40 |
|          |                             | Acero aleado de alta aleación            | 50~260   | PC325U     | 50 (40~80)   | 0.08~0.20 | 0.08~0.20  | 0.10~0.25   | 0.15~0.25   | 0.15~0.30 |
|          |                             | Acero aleado de alta aleación endurecido | Over 250 | PC325U     | 50 (40~80)   | 0.08~0.20 | 0.08~0.20  | 0.10~0.25   | 0.15~0.25   | 0.15~0.30 |
| M        | Acero Inoxidable            | Austenítico                              | 135~275  | PC325U     | 45 (25~80)   | 0.05~0.20 | 0.05~0.20  | 0.10~0.25   | 0.10~0.25   | 0.15~0.30 |
|          |                             | Ferítico y martensítico                  | 135~275  | PC325U     | 50 (30~80)   | 0.05~0.20 | 0.05~0.20  | 0.10~0.25   | 0.10~0.25   | 0.15~0.30 |
| K        | Fundición                   | Gris                                     | 150~230  | PC325U     | 100 (80~150)   | 0.10~0.15 | 0.16~0.24  | 0.20~0.30   | 0.25~0.36   | 0.30~0.40 |
|          |                             | Dúctil                                   | 160~260  | PC325U     | 90 (70~140)  | 0.10~0.15 | 0.16~0.24  | 0.20~0.30   | 0.25~0.36   | 0.30~0.40 |
| N        | Aluminio                    | Aleaciones de aluminio                   | 30~150   | FG2        | 150 (125~220)  | 0.24~0.38 | 0.38~0.53  | 0.53~0.75   | 0.61~0.85   | 0.68~0.98 |
|          | Aleación de Cobre           | Aleación de cobre                        | 150~160  | FG2        | 150 (125~220)  | 0.10~0.15 | 0.16~0.24  | 0.20~0.30   | 0.25~0.36   | 0.30~0.40 |

- Las condiciones de corte anteriores son para el caso de una profundidad de corte inferior a 5D y aplicación de sistema de refrigerante interno
- En el caso de un sistema de refrigerante externo, reduzca los valores de avance anteriores en un 20%



# MSDP-□(P/M/K/N)

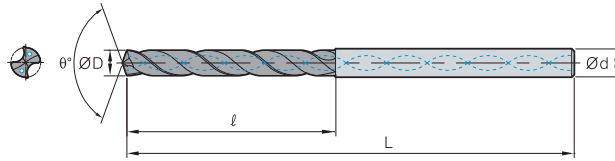


| Terminología                      | P       | M | K    | N   |
|-----------------------------------|---------|---|------|-----|
| Grado                             | PC325U  |   |      | FG2 |
| Tolerancia (diámetro del taladro) | h7      |   |      |     |
| Tolerancia (vástago Dia.)         | h6      |   |      |     |
| Ángulo de punta                   | 140°    |   | 135° |     |
| Ángulo de giro                    | 30°     |   |      |     |
| Angostamiento                     | tipo X  |   |      |     |
| Refrigerante                      | Externo |   |      |     |

■ Acero ■ Acero inoxidable ■ Hierro fundido ■ Metales no ferrosos

| Código                      | ØD  | Ød  | 3P,M,K,N |    | 5P,M,K,N |    |
|-----------------------------|-----|-----|----------|----|----------|----|
|                             |     |     | ℓ        | L  | ℓ        | L  |
| <b>MSDP</b> 010 - □ P,M,K,N | 1.0 | 3.0 | 6        | 45 | 12       | 66 |
| 011 - □ P,M,K,N             | 1.1 | 3.0 | 7        | 45 | 12       | 66 |
| 012 - □ P,M,K,N             | 1.2 | 3.0 | 8        | 45 | 12       | 66 |
| 013 - □ P,M,K,N             | 1.3 | 3.0 | 8        | 45 | 12       | 66 |
| 014 - □ P,M,K,N             | 1.4 | 3.0 | 9        | 45 | 12       | 66 |
| 015 - □ P,M,K,N             | 1.5 | 3.0 | 9        | 45 | 12       | 66 |
| 016 - □ P,M,K,N             | 1.6 | 3.0 | 10       | 45 | 15       | 66 |
| 017 - □ P,M,K,N             | 1.7 | 3.0 | 10       | 45 | 15       | 66 |
| 018 - □ P,M,K,N             | 1.8 | 3.0 | 11       | 45 | 15       | 66 |
| 019 - □ P,M,K,N             | 1.9 | 3.0 | 11       | 45 | 15       | 66 |
| 020 - □ P,M,K,N             | 2.0 | 3.0 | 14       | 53 | 20       | 66 |
| 021 - □ P,M,K,N             | 2.1 | 3.0 | 14       | 53 | 20       | 66 |
| 022 - □ P,M,K,N             | 2.2 | 3.0 | 14       | 53 | 20       | 66 |
| 023 - □ P,M,K,N             | 2.3 | 3.0 | 14       | 53 | 20       | 66 |
| 024 - □ P,M,K,N             | 2.4 | 3.0 | 14       | 53 | 20       | 66 |

## MSDP(H)- □(P/M/K/N)



| Terminología                      | P               | M    | K | N   |
|-----------------------------------|-----------------|------|---|-----|
| Grado                             | PC325U          |      |   | FG2 |
| Tolerancia (diámetro del taladro) | h7              |      |   |     |
| Tolerancia (vástago Dia.)         | h6              |      |   |     |
| Ángulo de punta                   | 140°            | 135° |   |     |
| Ángulo de giro                    | 30°             |      |   |     |
| Angostamiento                     | tipo X          |      |   |     |
| Refrigerante                      | Interno/Externo |      |   |     |

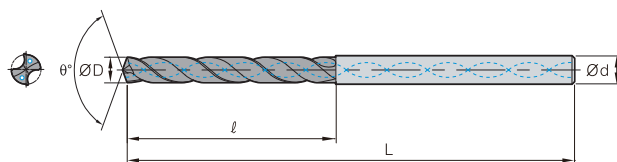
■ Acero ■ Acero inoxidable ■ Hierro fundido ■ Metales no ferrosos

(mm)

| Código                  | ØD  | Ød  | 3P,M,K,N |    | 5P,M,K,N |    | 7P,M,K,N |     |
|-------------------------|-----|-----|----------|----|----------|----|----------|-----|
|                         |     |     | ℓ        | L  | ℓ        | L  | ℓ        | L   |
| MSDP(H) 025 - □ P,M,K,N | 2.5 | 3.0 | 14       | 53 | 20       | 66 | 30       | 70  |
| 026 - □ P,M,K,N         | 2.6 | 3.0 | 17       | 53 | 20       | 66 | 30       | 70  |
| 027 - □ P,M,K,N         | 2.7 | 3.0 | 17       | 53 | 20       | 66 | 30       | 70  |
| 028 - □ P,M,K,N         | 2.8 | 3.0 | 17       | 53 | 20       | 66 | 30       | 70  |
| 029 - □ P,M,K,N         | 2.9 | 3.0 | 17       | 53 | 20       | 66 | 30       | 70  |
| 030 - □ P,M,K,N         | 3.0 | 3.0 | 17       | 53 | 20       | 66 | 30       | 70  |
| 031 - □ P,M,K,N         | 3.1 | 4.0 | 20       | 58 | 28       | 74 | 30       | 70  |
| 032 - □ P,M,K,N         | 3.2 | 4.0 | 20       | 58 | 28       | 74 | 30       | 70  |
| 033 - □ P,M,K,N         | 3.3 | 4.0 | 20       | 58 | 28       | 74 | 30       | 70  |
| 034 - □ P,M,K,N         | 3.4 | 4.0 | 20       | 58 | 28       | 74 | 37.5     | 75  |
| 035 - □ P,M,K,N         | 3.5 | 4.0 | 20       | 58 | 28       | 74 | 37.5     | 75  |
| 036 - □ P,M,K,N         | 3.6 | 4.0 | 22       | 58 | 32       | 74 | 37.5     | 75  |
| 037 - □ P,M,K,N         | 3.7 | 4.0 | 22       | 58 | 32       | 74 | 37.5     | 75  |
| 038 - □ P,M,K,N         | 3.8 | 4.0 | 22       | 58 | 32       | 74 | 37.5     | 75  |
| 039 - □ P,M,K,N         | 3.9 | 4.0 | 22       | 58 | 32       | 74 | 37.5     | 75  |
| 040 - □ P,M,K,N         | 4.0 | 4.0 | 22       | 58 | 32       | 74 | 37.5     | 75  |
| 041 - □ P,M,K,N         | 4.1 | 5.0 | 24       | 62 | 36       | 82 | 37.5     | 75  |
| 042 - □ P,M,K,N         | 4.2 | 5.0 | 24       | 62 | 36       | 82 | 37.5     | 75  |
| 043 - □ P,M,K,N         | 4.3 | 5.0 | 24       | 62 | 36       | 82 | 45       | 85  |
| 044 - □ P,M,K,N         | 4.4 | 5.0 | 24       | 62 | 36       | 82 | 45       | 85  |
| 045 - □ P,M,K,N         | 4.5 | 5.0 | 24       | 62 | 36       | 82 | 45       | 85  |
| 046 - □ P,M,K,N         | 4.6 | 5.0 | 26       | 62 | 38       | 82 | 45       | 85  |
| 047 - □ P,M,K,N         | 4.7 | 5.0 | 26       | 62 | 38       | 82 | 45       | 85  |
| 048 - □ P,M,K,N         | 4.8 | 5.0 | 26       | 62 | 38       | 82 | 50       | 90  |
| 049 - □ P,M,K,N         | 4.9 | 5.0 | 26       | 62 | 38       | 82 | 50       | 90  |
| 050 - □ P,M,K,N         | 5.0 | 5.0 | 26       | 62 | 38       | 82 | 50       | 90  |
| 051 - □ P,M,K,N         | 5.1 | 6.0 | 28       | 66 | 44       | 82 | 50       | 90  |
| 052 - □ P,M,K,N         | 5.2 | 6.0 | 28       | 66 | 44       | 82 | 50       | 90  |
| 053 - □ P,M,K,N         | 5.3 | 6.0 | 28       | 66 | 44       | 82 | 50       | 90  |
| 054 - □ P,M,K,N         | 5.4 | 6.0 | 28       | 66 | 44       | 82 | 50       | 90  |
| 055 - □ P,M,K,N         | 5.5 | 6.0 | 28       | 66 | 44       | 82 | 57       | 97  |
| 056 - □ P,M,K,N         | 5.6 | 6.0 | 28       | 66 | 44       | 82 | 57       | 97  |
| 057 - □ P,M,K,N         | 5.7 | 6.0 | 28       | 66 | 44       | 82 | 57       | 97  |
| 058 - □ P,M,K,N         | 5.8 | 6.0 | 28       | 66 | 44       | 82 | 57       | 97  |
| 059 - □ P,M,K,N         | 5.9 | 6.0 | 28       | 66 | 44       | 82 | 57       | 97  |
| 060 - □ P,M,K,N         | 6.0 | 6.0 | 28       | 66 | 44       | 82 | 57       | 97  |
| 061 - □ P,M,K,N         | 6.1 | 7.0 | 34       | 74 | 50       | 91 | 66       | 106 |
| 062 - □ P,M,K,N         | 6.2 | 7.0 | 34       | 74 | 50       | 91 | 66       | 106 |
| 063 - □ P,M,K,N         | 6.3 | 7.0 | 34       | 74 | 50       | 91 | 66       | 106 |
| 064 - □ P,M,K,N         | 6.4 | 7.0 | 34       | 74 | 50       | 91 | 66       | 106 |
| 065 - □ P,M,K,N         | 6.5 | 7.0 | 34       | 74 | 50       | 91 | 66       | 106 |
| 066 - □ P,M,K,N         | 6.6 | 7.0 | 34       | 74 | 50       | 91 | 66       | 106 |
| 067 - □ P,M,K,N         | 6.7 | 7.0 | 34       | 74 | 50       | 91 | 66       | 106 |
| 068 - □ P,M,K,N         | 6.8 | 7.0 | 34       | 74 | 50       | 91 | 66       | 106 |
| 069 - □ P,M,K,N         | 6.9 | 7.0 | 34       | 74 | 50       | 91 | 76       | 116 |
| 070 - □ P,M,K,N         | 7.0 | 7.0 | 34       | 74 | 50       | 91 | 76       | 116 |
| 071 - □ P,M,K,N         | 7.1 | 8.0 | 41       | 79 | 53       | 91 | 76       | 116 |
| 072 - □ P,M,K,N         | 7.2 | 8.0 | 41       | 79 | 53       | 91 | 76       | 116 |



# MSDP(H)-□(P/M/K/N)



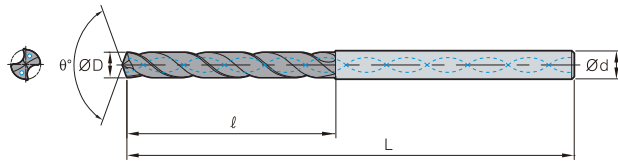
| Terminología                      | P               | M    | K | N   |
|-----------------------------------|-----------------|------|---|-----|
| Grado                             | PC325U          |      |   | FG2 |
| Tolerancia (diámetro del taladro) | h7              |      |   |     |
| Tolerancia (vástago Dia.)         | h6              |      |   |     |
| Ángulo de punta                   | 140°            | 135° |   |     |
| Ángulo de giro                    | 30°             |      |   |     |
| Angostamiento                     | tipo X          |      |   |     |
| Refrigerante                      | Interno/Externo |      |   |     |

■ Acero ■ Acero inoxidable ■ Hierro fundido ■ Metales no ferrosos

| Código                  | ØD   | Ød   | 3P,M,K,N |     | 5P,M,K,N |     | 7P,M,K,N |     |
|-------------------------|------|------|----------|-----|----------|-----|----------|-----|
|                         |      |      | ℓ        | L   | ℓ        | L   | ℓ        | L   |
| MSDP(H) 073 - □ P,M,K,N | 7.3  | 8.0  | 41       | 79  | 53       | 91  | 76       | 116 |
| 074 - □ P,M,K,N         | 7.4  | 8.0  | 41       | 79  | 53       | 91  | 76       | 116 |
| 075 - □ P,M,K,N         | 7.5  | 8.0  | 41       | 79  | 53       | 91  | 76       | 116 |
| 076 - □ P,M,K,N         | 7.6  | 8.0  | 41       | 79  | 53       | 91  | 76       | 116 |
| 077 - □ P,M,K,N         | 7.7  | 8.0  | 41       | 79  | 53       | 91  | 76       | 116 |
| 078 - □ P,M,K,N         | 7.8  | 8.0  | 41       | 79  | 53       | 91  | 76       | 116 |
| 079 - □ P,M,K,N         | 7.9  | 8.0  | 41       | 79  | 53       | 91  | 76       | 116 |
| 080 - □ P,M,K,N         | 8.0  | 8.0  | 43       | 84  | 58       | 98  | 87       | 131 |
| 081 - □ P,M,K,N         | 8.1  | 9.0  | 43       | 84  | 58       | 98  | 87       | 131 |
| 082 - □ P,M,K,N         | 8.2  | 9.0  | 43       | 84  | 58       | 98  | 87       | 131 |
| 083 - □ P,M,K,N         | 8.3  | 9.0  | 43       | 84  | 58       | 98  | 87       | 131 |
| 084 - □ P,M,K,N         | 8.4  | 9.0  | 43       | 84  | 58       | 98  | 87       | 131 |
| 085 - □ P,M,K,N         | 8.5  | 9.0  | 43       | 84  | 58       | 98  | 87       | 131 |
| 086 - □ P,M,K,N         | 8.6  | 9.0  | 43       | 84  | 58       | 98  | 87       | 131 |
| 087 - □ P,M,K,N         | 8.7  | 9.0  | 43       | 84  | 58       | 98  | 87       | 131 |
| 088 - □ P,M,K,N         | 8.8  | 9.0  | 43       | 84  | 58       | 98  | 87       | 131 |
| 089 - □ P,M,K,N         | 8.9  | 9.0  | 43       | 84  | 58       | 98  | 87       | 131 |
| 090 - □ P,M,K,N         | 9.0  | 9.0  | 43       | 84  | 58       | 98  | 87       | 131 |
| 091 - □ P,M,K,N         | 9.1  | 10.0 | 47       | 89  | 61       | 105 | 95       | 139 |
| 092 - □ P,M,K,N         | 9.2  | 10.0 | 47       | 89  | 61       | 105 | 95       | 139 |
| 093 - □ P,M,K,N         | 9.3  | 10.0 | 47       | 89  | 61       | 105 | 95       | 139 |
| 094 - □ P,M,K,N         | 9.4  | 10.0 | 47       | 89  | 61       | 105 | 95       | 139 |
| 095 - □ P,M,K,N         | 9.5  | 10.0 | 47       | 89  | 61       | 105 | 95       | 139 |
| 096 - □ P,M,K,N         | 9.6  | 10.0 | 47       | 89  | 61       | 105 | 95       | 139 |
| 097 - □ P,M,K,N         | 9.7  | 10.0 | 47       | 89  | 61       | 105 | 95       | 139 |
| 098 - □ P,M,K,N         | 9.8  | 10.0 | 47       | 89  | 61       | 105 | 95       | 139 |
| 099 - □ P,M,K,N         | 9.9  | 10.0 | 47       | 89  | 61       | 105 | 95       | 139 |
| 100 - □ P,M,K,N         | 10.0 | 10.0 | 47       | 89  | 61       | 105 | 95       | 139 |
| 101 - □ P,M,K,N         | 10.1 | 11.0 | 55       | 95  | 68       | 114 | 106      | 155 |
| 102 - □ P,M,K,N         | 10.2 | 11.0 | 55       | 95  | 68       | 114 | 106      | 155 |
| 103 - □ P,M,K,N         | 10.3 | 11.0 | 55       | 95  | 68       | 114 | 106      | 155 |
| 104 - □ P,M,K,N         | 10.4 | 11.0 | 55       | 95  | 68       | 114 | 106      | 155 |
| 105 - □ P,M,K,N         | 10.5 | 11.0 | 55       | 95  | 68       | 114 | 106      | 155 |
| 106 - □ P,M,K,N         | 10.6 | 11.0 | 55       | 95  | 68       | 114 | 106      | 155 |
| 107 - □ P,M,K,N         | 10.7 | 11.0 | 55       | 95  | 68       | 114 | 106      | 155 |
| 108 - □ P,M,K,N         | 10.8 | 11.0 | 55       | 95  | 68       | 114 | 106      | 155 |
| 109 - □ P,M,K,N         | 10.9 | 11.0 | 55       | 95  | 68       | 114 | 106      | 155 |
| 110 - □ P,M,K,N         | 11.0 | 11.0 | 55       | 95  | 68       | 114 | 106      | 155 |
| 111 - □ P,M,K,N         | 11.1 | 12.0 | 55       | 102 | 71       | 120 | 114      | 163 |
| 112 - □ P,M,K,N         | 11.2 | 12.0 | 55       | 102 | 71       | 120 | 114      | 163 |
| 113 - □ P,M,K,N         | 11.3 | 12.0 | 55       | 102 | 71       | 120 | 114      | 163 |
| 114 - □ P,M,K,N         | 11.4 | 12.0 | 55       | 102 | 71       | 120 | 114      | 163 |
| 115 - □ P,M,K,N         | 11.5 | 12.0 | 55       | 102 | 71       | 120 | 114      | 163 |
| 116 - □ P,M,K,N         | 11.6 | 12.0 | 55       | 102 | 71       | 120 | 114      | 163 |
| 117 - □ P,M,K,N         | 11.7 | 12.0 | 55       | 102 | 71       | 120 | 114      | 163 |
| 118 - □ P,M,K,N         | 11.8 | 12.0 | 55       | 102 | 71       | 120 | 114      | 163 |
| 119 - □ P,M,K,N         | 11.9 | 12.0 | 55       | 102 | 71       | 120 | 114      | 163 |
| 120 - □ P,M,K,N         | 12.0 | 12.0 | 55       | 102 | 71       | 120 | 114      | 163 |



## MSDP(H)- □(P/M/K/N)



| Terminología                      | P               | M    | K | N |
|-----------------------------------|-----------------|------|---|---|
| Grado                             | PC325U FG2      |      |   |   |
| Tolerancia (diámetro del taladro) | h7              |      |   |   |
| Tolerancia (vástago Dia.)         | h6              |      |   |   |
| Ángulo de punta                   | 140°            | 135° |   |   |
| Ángulo de giro                    | 30°             |      |   |   |
| Angostamiento                     | tipo X          |      |   |   |
| Refrigerante                      | Interno/Externo |      |   |   |

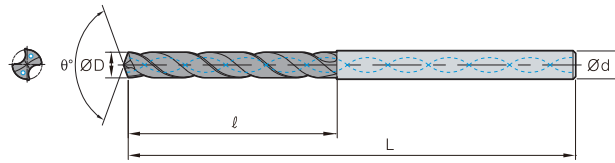
■ Acero 
 ■ Acero inoxidable 
 ■ Hierro fundido 
 ■ Metales no ferrosos

(mm)

| Código                  | ØD   | Ød   | 3P,M,K,N |     | 5P,M,K,N |     | 7P,M,K,N |     |
|-------------------------|------|------|----------|-----|----------|-----|----------|-----|
|                         |      |      | ℓ        | L   | ℓ        | L   | ℓ        | L   |
| MSDP(H) 121 - □ P,M,K,N | 12.1 | 13.0 | 60       | 107 | 77       | 124 | 133      | 182 |
| 122 - □ P,M,K,N         | 12.2 | 13.0 | 60       | 107 | 77       | 124 | 133      | 182 |
| 123 - □ P,M,K,N         | 12.3 | 13.0 | 60       | 107 | 77       | 124 | 133      | 182 |
| 124 - □ P,M,K,N         | 12.4 | 13.0 | 60       | 107 | 77       | 124 | 133      | 182 |
| 125 - □ P,M,K,N         | 12.5 | 13.0 | 60       | 107 | 77       | 124 | 133      | 182 |
| 126 - □ P,M,K,N         | 12.6 | 13.0 | 60       | 107 | 77       | 124 | 133      | 182 |
| 127 - □ P,M,K,N         | 12.7 | 13.0 | 60       | 107 | 77       | 124 | 133      | 182 |
| 128 - □ P,M,K,N         | 12.8 | 13.0 | 60       | 107 | 77       | 124 | 133      | 182 |
| 129 - □ P,M,K,N         | 12.9 | 13.0 | 60       | 107 | 77       | 124 | 133      | 182 |
| 130 - □ P,M,K,N         | 13.0 | 13.0 | 60       | 107 | 77       | 124 | 133      | 182 |
| 131 - □ P,M,K,N         | 13.1 | 14.0 | 62       | 107 | 80       | 133 | 133      | 182 |
| 132 - □ P,M,K,N         | 13.2 | 14.0 | 62       | 107 | 80       | 133 | 133      | 182 |
| 133 - □ P,M,K,N         | 13.3 | 14.0 | 62       | 107 | 80       | 133 | 133      | 182 |
| 134 - □ P,M,K,N         | 13.4 | 14.0 | 62       | 107 | 80       | 133 | 133      | 182 |
| 135 - □ P,M,K,N         | 13.5 | 14.0 | 62       | 107 | 80       | 133 | 133      | 182 |
| 136 - □ P,M,K,N         | 13.6 | 14.0 | 62       | 107 | 80       | 133 | 133      | 182 |
| 137 - □ P,M,K,N         | 13.7 | 14.0 | 62       | 107 | 80       | 133 | 133      | 182 |
| 138 - □ P,M,K,N         | 13.8 | 14.0 | 62       | 107 | 80       | 133 | 133      | 182 |
| 139 - □ P,M,K,N         | 13.9 | 14.0 | 62       | 107 | 80       | 133 | 133      | 182 |
| 140 - □ P,M,K,N         | 14.0 | 14.0 | 62       | 107 | 80       | 133 | 133      | 182 |
| 141 - □ P,M,K,N         | 14.1 | 15.0 | 65       | 115 | 85       | 143 | 152      | 204 |
| 142 - □ P,M,K,N         | 14.2 | 15.0 | 65       | 115 | 85       | 143 | 152      | 204 |
| 143 - □ P,M,K,N         | 14.3 | 15.0 | 65       | 115 | 85       | 143 | 152      | 204 |
| 144 - □ P,M,K,N         | 14.4 | 15.0 | 65       | 115 | 85       | 143 | 152      | 204 |
| 145 - □ P,M,K,N         | 14.5 | 15.0 | 65       | 115 | 85       | 143 | 152      | 204 |
| 146 - □ P,M,K,N         | 14.6 | 15.0 | 65       | 115 | 85       | 143 | 152      | 204 |
| 147 - □ P,M,K,N         | 14.7 | 15.0 | 65       | 115 | 85       | 143 | 152      | 204 |
| 148 - □ P,M,K,N         | 14.8 | 15.0 | 65       | 115 | 85       | 143 | 152      | 204 |
| 149 - □ P,M,K,N         | 14.9 | 15.0 | 65       | 115 | 85       | 143 | 152      | 204 |
| 150 - □ P,M,K,N         | 15.0 | 15.0 | 65       | 115 | 85       | 143 | 152      | 204 |
| 151 - □ P,M,K,N         | 15.1 | 16.0 | 68       | 115 | 88       | 143 | 152      | 204 |
| 152 - □ P,M,K,N         | 15.2 | 16.0 | 68       | 115 | 88       | 143 | 152      | 204 |
| 153 - □ P,M,K,N         | 15.3 | 16.0 | 68       | 115 | 88       | 143 | 152      | 204 |
| 154 - □ P,M,K,N         | 15.4 | 16.0 | 68       | 115 | 88       | 143 | 152      | 204 |
| 155 - □ P,M,K,N         | 15.5 | 16.0 | 68       | 115 | 88       | 143 | 152      | 204 |
| 156 - □ P,M,K,N         | 15.6 | 16.0 | 68       | 115 | 88       | 143 | 152      | 204 |
| 157 - □ P,M,K,N         | 15.7 | 16.0 | 68       | 115 | 88       | 143 | 152      | 204 |
| 158 - □ P,M,K,N         | 15.8 | 16.0 | 68       | 115 | 88       | 143 | 152      | 204 |
| 159 - □ P,M,K,N         | 15.9 | 16.0 | 68       | 115 | 88       | 143 | 152      | 204 |
| 160 - □ P,M,K,N         | 16.0 | 16.0 | 68       | 115 | 88       | 143 | 152      | 204 |
| 161 - □ P,M,K,N         | 16.1 | 17.0 | 73       | 123 | 93       | 153 | 171      | 223 |
| 162 - □ P,M,K,N         | 16.2 | 17.0 | 73       | 123 | 93       | 153 | 171      | 223 |
| 163 - □ P,M,K,N         | 16.3 | 17.0 | 73       | 123 | 93       | 153 | 171      | 223 |
| 164 - □ P,M,K,N         | 16.4 | 17.0 | 73       | 123 | 93       | 153 | 171      | 223 |
| 165 - □ P,M,K,N         | 16.5 | 17.0 | 73       | 123 | 93       | 153 | 171      | 223 |
| 166 - □ P,M,K,N         | 16.6 | 17.0 | 73       | 123 | 93       | 153 | 171      | 223 |
| 167 - □ P,M,K,N         | 16.7 | 17.0 | 73       | 123 | 93       | 153 | 171      | 223 |
| 168 - □ P,M,K,N         | 16.8 | 17.0 | 73       | 123 | 93       | 153 | 171      | 223 |



# MSDP(H)- □(P/M/K/N)



| Terminología                      | P               | M | K    | N |
|-----------------------------------|-----------------|---|------|---|
| Grado                             | PC325U          |   | FG2  |   |
| Tolerancia (diámetro del taladro) | h7              |   |      |   |
| Tolerancia (vástago Dia.)         | h6              |   |      |   |
| Ángulo de punta                   | 140°            |   | 135° |   |
| Ángulo de giro                    | 30°             |   |      |   |
| Angostamiento                     | tipo X          |   |      |   |
| Refrigerante                      | Interno/Externo |   |      |   |

■ Acero ■ Acero inoxidable ■ Hierro fundido ■ Metales no ferrosos

| Código                  | ØD   | Ød   | 3P,M,K,N |     | 5P,M,K,N |     | 7P,M,K,N |     |
|-------------------------|------|------|----------|-----|----------|-----|----------|-----|
|                         |      |      | ℓ        | L   | ℓ        | L   | ℓ        | L   |
| MSDP(H) 169 - □ P,M,K,N | 16.9 | 17.0 | 73       | 123 | 93       | 153 | 171      | 223 |
| 170 - □ P,M,K,N         | 17.0 | 17.0 | 73       | 123 | 93       | 153 | 171      | 223 |
| 171 - □ P,M,K,N         | 17.1 | 18.0 | 73       | 123 | 98       | 153 | 171      | 223 |
| 172 - □ P,M,K,N         | 17.2 | 18.0 | 73       | 123 | 98       | 153 | 171      | 223 |
| 173 - □ P,M,K,N         | 17.3 | 18.0 | 73       | 123 | 98       | 153 | 171      | 223 |
| 174 - □ P,M,K,N         | 17.4 | 18.0 | 73       | 123 | 98       | 153 | 171      | 223 |
| 175 - □ P,M,K,N         | 17.5 | 18.0 | 73       | 123 | 98       | 153 | 171      | 223 |
| 176 - □ P,M,K,N         | 17.6 | 18.0 | 73       | 123 | 98       | 153 | 171      | 223 |
| 177 - □ P,M,K,N         | 17.7 | 18.0 | 73       | 123 | 98       | 153 | 171      | 223 |
| 178 - □ P,M,K,N         | 17.8 | 18.0 | 73       | 123 | 98       | 153 | 171      | 223 |
| 179 - □ P,M,K,N         | 17.9 | 18.0 | 73       | 123 | 98       | 153 | 171      | 223 |
| 180 - □ P,M,K,N         | 18.0 | 18.0 | 73       | 123 | 98       | 153 | 171      | 223 |
| 181 - □ P,M,K,N         | 18.1 | 19.0 | 79       | 131 | 103      | 153 | 190      | 244 |
| 182 - □ P,M,K,N         | 18.2 | 19.0 | 79       | 131 | 103      | 153 | 190      | 244 |
| 183 - □ P,M,K,N         | 18.3 | 19.0 | 79       | 131 | 103      | 153 | 190      | 244 |
| 184 - □ P,M,K,N         | 18.4 | 19.0 | 79       | 131 | 103      | 153 | 190      | 244 |
| 185 - □ P,M,K,N         | 18.5 | 19.0 | 79       | 131 | 103      | 153 | 190      | 244 |
| 186 - □ P,M,K,N         | 18.6 | 19.0 | 79       | 131 | 103      | 153 | 190      | 244 |
| 187 - □ P,M,K,N         | 18.7 | 19.0 | 79       | 131 | 103      | 153 | 190      | 244 |
| 188 - □ P,M,K,N         | 18.8 | 19.0 | 79       | 131 | 103      | 153 | 190      | 244 |
| 189 - □ P,M,K,N         | 18.9 | 19.0 | 79       | 131 | 103      | 153 | 190      | 244 |
| 190 - □ P,M,K,N         | 19.0 | 19.0 | 79       | 131 | 103      | 153 | 190      | 244 |
| 191 - □ P,M,K,N         | 19.1 | 20.0 | 79       | 131 | 107      | 153 | 190      | 244 |
| 192 - □ P,M,K,N         | 19.2 | 20.0 | 79       | 131 | 107      | 153 | 190      | 244 |
| 193 - □ P,M,K,N         | 19.3 | 20.0 | 79       | 131 | 107      | 153 | 190      | 244 |
| 194 - □ P,M,K,N         | 19.4 | 20.0 | 79       | 131 | 107      | 153 | 190      | 244 |
| 195 - □ P,M,K,N         | 19.5 | 20.0 | 79       | 131 | 107      | 153 | 190      | 244 |
| 196 - □ P,M,K,N         | 19.6 | 20.0 | 79       | 131 | 107      | 153 | 190      | 244 |
| 197 - □ P,M,K,N         | 19.7 | 20.0 | 79       | 131 | 107      | 153 | 190      | 244 |
| 198 - □ P,M,K,N         | 19.8 | 20.0 | 79       | 131 | 107      | 153 | 190      | 244 |
| 199 - □ P,M,K,N         | 19.9 | 20.0 | 79       | 131 | 107      | 153 | 190      | 244 |
| 200 - □ P,M,K,N         | 20.0 | 20.0 | 79       | 131 | 107      | 153 | 190      | 244 |

# G Información Técnica para Mach Solid Drill Plus-S

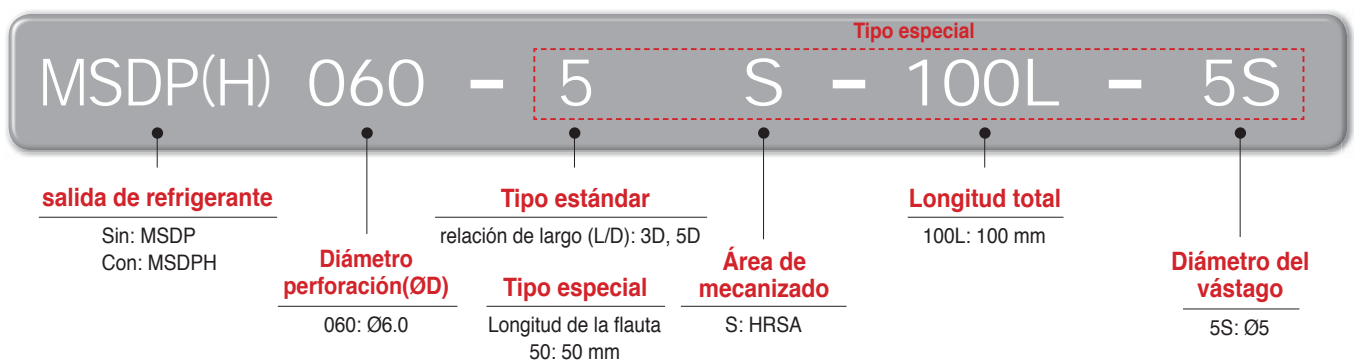
Broca especializada en aleaciones termorresistentes usados en las industrias aeroespacial, generación de energía y automotriz

## MSD Plus-S new

### Mach Solid Drill Plus-S

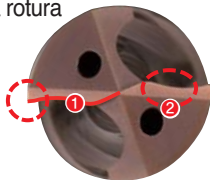
- Productividad mejorada y excelente maquinabilidad: garantizamos una mejor maquinabilidad gracias al diseño optimizado de los filos de corte y los canales
- Resistencia al desgaste mejorada: mayor vida útil debido a la excelente resistencia al astillado en mecanizado a altas temperaturas

#### ➤ Sistema de código

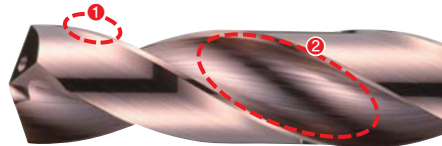


#### ➤ Características

- Filo de corte diseñado para controlar la aparición de la muesca en filo. Tratamiento especial para prevenir el astillado y la rotura
- Margen optimizado y canales con reducción interna

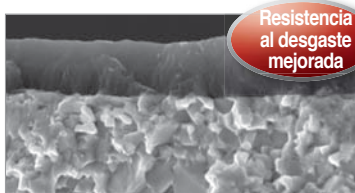


- ① Filos diseñados para disminuir la resistencia de corte
- ② Ángulo de incidencia en punta y forma optimizada para evacuación de calor

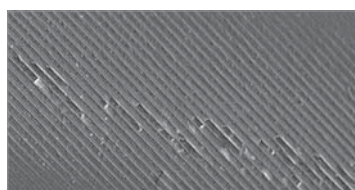


- ① Resistencia a la fricción y temperatura de corte reducida
- ② Canales anchos para una buena evacuación de viruta

- Grado PC325T: mejorando la resistencia al calor y a la oxidación
- Resistencia a la fricción reducida y mejorada la evacuación de viruta gracias al excelente acabado superficial
- Excepcional resistencia al desgaste al mecanizar aleaciones resistentes al calor a altas temperaturas.



PC325T



Superficie del recubrimiento lisa





## Evaluación de desempeño

- **Pieza de trabajo** Inconel718 (HRC40~45)
- **Condiciones de corte** Diámetro del taladro (mm) = Ø10, vc (m/min) = 20, fn (mm/rev) = 0.09, ap (mm) = 30, con refrigerante
- **Herramientas** MSDPH100-5S (PC325T)

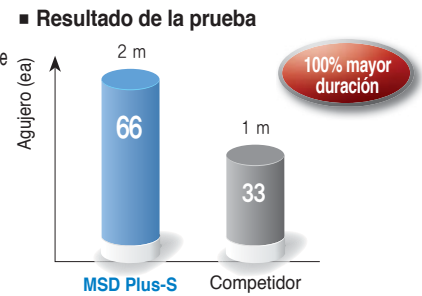


- **Pieza de trabajo** Ti-6Al-4V (HRC42~47)
- **Condiciones de corte** Diámetro del taladro (mm) = Ø10, vc (m/min) = 40, fn (mm/rev) = 0.09, ap (mm) = 30, con refrigerante
- **Herramientas** MSDPH100-5S (PC325T)

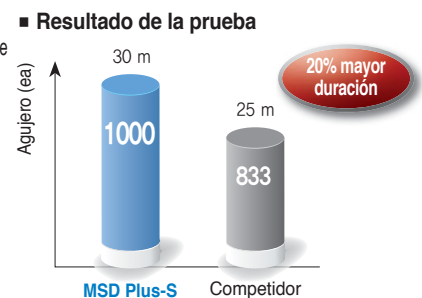


## Cadena de eslabones de arbusto

- **Uso** Partes y componentes industria aeroespacial (turbinas, álabes, ejes de turbina, etc.) y componentes utilizados en la industria de generación de energía.
- **Pieza de trabajo** Inconel718 (HRC40~45)
- **Condiciones de corte** Diámetro del taladro (mm) = Ø6.0, vc (m/min) = 20, fn (mm/rev) = 0.09, ap (mm) = 30, con refrigerante
- **Herramientas** MSDPH060-5S



- **Uso** Partes y componentes industria aeroespacial (partes motores de reacción, turbinas, álabes, etc.) y componentes utilizados en la industria de generación de energía.
- **Pieza de trabajo** Ti-6Al-4V (HRC42~47)
- **Condiciones de corte** Diámetro del taladro (mm) = Ø6.0, vc (m/min) = 40, fn (mm/rev) = 0.09, ap (mm) = 30, con refrigerante
- **Herramientas** MSDPH060-5S

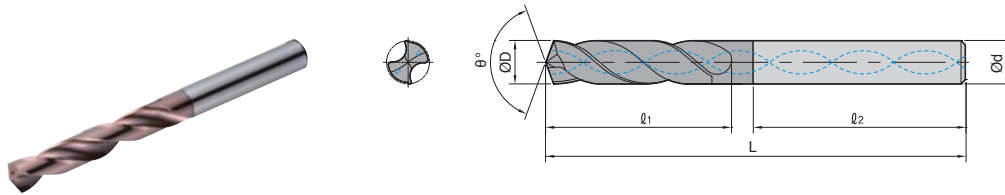


## Condiciones de Corte Recomendadas

| Material |   |                  |  | Grado  | vc (m/min) | Dimensiones (L/D) = 3D~5D |            |             |           |
|----------|---|------------------|--|--------|------------|---------------------------|------------|-------------|-----------|
| ISO      | Materiales pieza de trabajo                             | HB               | Avance (mm/rev) Dependiendo del Diam. de la broca (mm) |        |            |                           |            |             |           |
|          |   |                  | Ø2.5~Ø5.0  |        |            | Ø5.1~Ø8.0                 | Ø8.1~Ø12.0 | Ø12.1~Ø16.0 |           |
| S        | Aleaciones termorresistentes (Como Inconel 718 y otras) | De Hierro        | 25~35  | PC325T | 25~30      | 0.055~0.07                | 0.07~0.10  | 0.08~0.13   | 0.10~0.15 |
|          |   | De Ni o Co       | 35~45  | PC325T | 20~25      | 0.045~0.06                | 0.06~0.09  | 0.07~0.12   | 0.09~0.14 |
|          | Aleaciones de titanio (Ti-6Al-4V y otras)               | Titanio puro     | 10~15  | PC325T | 40~50      | 0.07~0.11                 | 0.09~0.14  | 0.12~0.18   | 0.16~0.23 |
|          |   | Aleaciones α y β | 35~45  | PC325T | 30~40      | 0.05~0.09                 | 0.07~0.12  | 0.10~0.16   | 0.14~0.21 |

\* Las condiciones de corte indicadas arriba son para perforaciones con longitudes máximas de 5D y con refrigeración.

## MSDPH-S



| Especificaciones        | S           |
|-------------------------|-------------|
| Grado                   | PC325T      |
| Tolerancia (diá. broca) | h7          |
| Tolerancia (diá. mango) | h6          |
| Ángulo de punta (°)     | 140°        |
| Ángulo de hélice        | 30°         |
| Forma de la punta       | Tipo X      |
| Estándar internacional  | DIN 6537    |
| Tipo del mango          | DIN 6535 HA |
| Refrigerante            | Interno     |

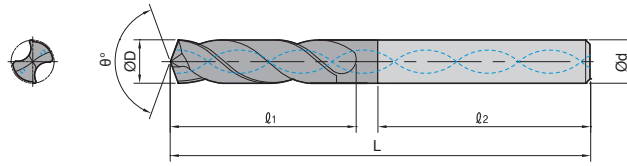
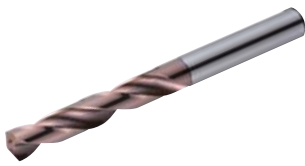
S Aleaciones termorresistentes

(mm)

| Código       | ØD   | Ød | 3S |    | 5S |    | ℓ2 |
|--------------|------|----|----|----|----|----|----|
|              |      |    | ℓ1 | L  | ℓ1 | L  |    |
| MSDPH 030-□S | 3.0  | 6  | 20 | 62 | 28 | 66 | 36 |
| 031-□S       | 3.1  | 6  | 20 | 62 | 28 | 66 | 36 |
| 0318-□S      | 3.18 | 6  | 20 | 62 | 28 | 66 | 36 |
| 032-□S       | 3.2  | 6  | 20 | 62 | 28 | 66 | 36 |
| 033-□S       | 3.3  | 6  | 20 | 62 | 28 | 66 | 36 |
| 034-□S       | 3.4  | 6  | 20 | 62 | 28 | 66 | 36 |
| 035-□S       | 3.5  | 6  | 20 | 62 | 28 | 66 | 36 |
| 0357-□S      | 3.57 | 6  | 20 | 62 | 28 | 66 | 36 |
| 036-□S       | 3.6  | 6  | 20 | 62 | 28 | 66 | 36 |
| 037-□S       | 3.7  | 6  | 20 | 62 | 28 | 66 | 36 |
| 038-□S       | 3.8  | 6  | 24 | 66 | 36 | 74 | 36 |
| 039-□S       | 3.9  | 6  | 24 | 66 | 36 | 74 | 36 |
| 0397-□S      | 3.97 | 6  | 24 | 66 | 36 | 74 | 36 |
| 040-□S       | 4.0  | 6  | 24 | 66 | 36 | 74 | 36 |
| 041-□S       | 4.1  | 6  | 24 | 66 | 36 | 74 | 36 |
| 042-□S       | 4.2  | 6  | 24 | 66 | 36 | 74 | 36 |
| 043-□S       | 4.3  | 6  | 24 | 66 | 36 | 74 | 36 |
| 0437-□S      | 4.37 | 6  | 24 | 66 | 36 | 74 | 36 |
| 044-□S       | 4.4  | 6  | 24 | 66 | 36 | 74 | 36 |
| 045-□S       | 4.5  | 6  | 24 | 66 | 36 | 74 | 36 |
| 046-□S       | 4.6  | 6  | 24 | 66 | 36 | 74 | 36 |
| 047-□S       | 4.7  | 6  | 24 | 66 | 36 | 74 | 36 |
| 0476-□S      | 4.76 | 6  | 28 | 66 | 44 | 82 | 36 |
| 048-□S       | 4.8  | 6  | 28 | 66 | 44 | 82 | 36 |
| 049-□S       | 4.9  | 6  | 28 | 66 | 44 | 82 | 36 |
| 050-□S       | 5.0  | 6  | 28 | 66 | 44 | 82 | 36 |
| 051-□S       | 5.1  | 6  | 28 | 66 | 44 | 82 | 36 |
| 0516-□S      | 5.16 | 6  | 28 | 66 | 44 | 82 | 36 |
| 052-□S       | 5.2  | 6  | 28 | 66 | 44 | 82 | 36 |
| 053-□S       | 5.3  | 6  | 28 | 66 | 44 | 82 | 36 |
| 054-□S       | 5.4  | 6  | 28 | 66 | 44 | 82 | 36 |
| 055-□S       | 5.5  | 6  | 28 | 66 | 44 | 82 | 36 |
| 0556-□S      | 5.56 | 6  | 28 | 66 | 44 | 82 | 36 |
| 056-□S       | 5.6  | 6  | 28 | 66 | 44 | 82 | 36 |
| 057-□S       | 5.7  | 6  | 28 | 66 | 44 | 82 | 36 |
| 058-□S       | 5.8  | 6  | 28 | 66 | 44 | 82 | 36 |
| 059-□S       | 5.9  | 6  | 28 | 66 | 44 | 82 | 36 |
| 0595-□S      | 5.95 | 6  | 28 | 66 | 44 | 82 | 36 |
| 060-□S       | 6.0  | 6  | 28 | 66 | 44 | 82 | 36 |
| 061-□S       | 6.1  | 8  | 34 | 79 | 53 | 91 | 36 |
| 062-□S       | 6.2  | 8  | 34 | 79 | 53 | 91 | 36 |
| 063-□S       | 6.3  | 8  | 34 | 79 | 53 | 91 | 36 |
| 0635-□S      | 6.35 | 8  | 34 | 79 | 53 | 91 | 36 |
| 064-□S       | 6.4  | 8  | 34 | 79 | 53 | 91 | 36 |
| 065-□S       | 6.5  | 8  | 34 | 79 | 53 | 91 | 36 |



# MSDPH-S

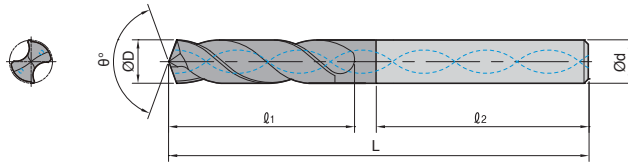
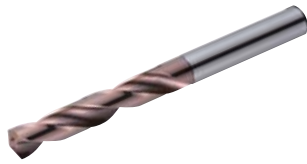


| Especificaciones        | S           |
|-------------------------|-------------|
| Grado                   | PC325T      |
| Tolerancia (diá. broca) | h7          |
| Tolerancia (diá. mango) | h6          |
| Ángulo de punta (θ°)    | 140°        |
| Ángulo de hélice        | 30°         |
| Forma de la punta       | Tipo X      |
| Estándar internacional  | DIN 6537    |
| Tipo del mango          | DIN 6535 HA |
| Refrigerante            | Interno     |

**S** Aleaciones termorresistentes

| MSDPH | Código  | ØD   | Ød | 3S   |    | 5S |     | Ø2 |
|-------|---------|------|----|------|----|----|-----|----|
|       |         |      |    | l1   | L  | l1 | L   |    |
|       |         |      |    | (mm) |    |    |     |    |
|       | 066-□S  | 6.6  | 8  | 34   | 79 | 53 | 91  | 36 |
|       | 067-□S  | 6.7  | 8  | 34   | 79 | 53 | 91  | 36 |
|       | 0675-□S | 6.75 | 8  | 34   | 79 | 53 | 91  | 36 |
|       | 068-□S  | 6.8  | 8  | 34   | 79 | 53 | 91  | 36 |
|       | 069-□S  | 6.9  | 8  | 34   | 79 | 53 | 91  | 36 |
|       | 070-□S  | 7.0  | 8  | 34   | 79 | 53 | 91  | 36 |
|       | 071-□S  | 7.1  | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 0714-□S | 7.14 | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 072-□S  | 7.2  | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 073-□S  | 7.3  | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 074-□S  | 7.4  | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 075-□S  | 7.5  | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 0754-□S | 7.54 | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 076-□S  | 7.6  | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 077-□S  | 7.7  | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 078-□S  | 7.8  | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 079-□S  | 7.9  | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 0794-□S | 7.94 | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 080-□S  | 8.0  | 8  | 41   | 79 | 53 | 91  | 36 |
|       | 081-□S  | 8.1  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 082-□S  | 8.2  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 083-□S  | 8.3  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 0833-□S | 8.33 | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 084-□S  | 8.4  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 085-□S  | 8.5  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 086-□S  | 8.6  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 087-□S  | 8.7  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 0873-□S | 8.73 | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 088-□S  | 8.8  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 089-□S  | 8.9  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 090-□S  | 9.0  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 091-□S  | 9.1  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 0913-□S | 9.13 | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 092-□S  | 9.2  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 093-□S  | 9.3  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 094-□S  | 9.4  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 095-□S  | 9.5  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 0953-□S | 9.53 | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 096-□S  | 9.6  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 097-□S  | 9.7  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 098-□S  | 9.8  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 099-□S  | 9.9  | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 0992-□S | 9.92 | 10 | 47   | 89 | 61 | 103 | 40 |
|       | 100-□S  | 10.0 | 10 | 47   | 89 | 61 | 103 | 40 |

## MSDPH-S



| Especificaciones        | S           |
|-------------------------|-------------|
| Grado                   | PC325T      |
| Tolerancia (diá. broca) | h7          |
| Tolerancia (diá. mango) | h6          |
| Ángulo de punta (φ°)    | 140°        |
| Ángulo de hélice        | 30°         |
| Forma de la punta       | Tipo X      |
| Estándar internacional  | DIN 6537    |
| Tipo del mango          | DIN 6535 HA |
| Refrigerante            | Interno     |

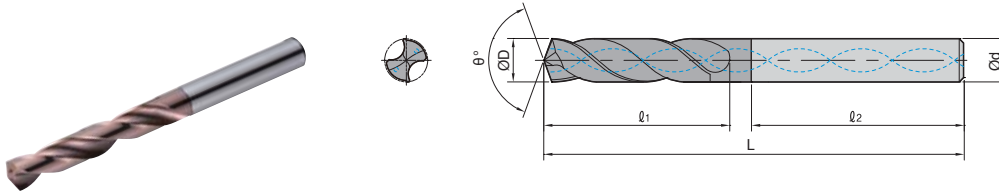
S Aleaciones termorresistentes

(mm)

| Código       | ØD    | Ød | 3S |     | 5S |     | ℓ2 |
|--------------|-------|----|----|-----|----|-----|----|
|              |       |    | ℓ1 | L   | ℓ1 | L   |    |
| MSDPH 101-□S | 10.1  | 12 | 55 | 102 | 71 | 118 | 45 |
| 102-□S       | 10.2  | 12 | 55 | 102 | 71 | 118 | 45 |
| 103-□S       | 10.3  | 12 | 55 | 102 | 71 | 118 | 45 |
| 1032-□S      | 10.32 | 12 | 55 | 102 | 71 | 118 | 45 |
| 104-□S       | 10.4  | 12 | 55 | 102 | 71 | 118 | 45 |
| 105-□S       | 10.5  | 12 | 55 | 102 | 71 | 118 | 45 |
| 106-□S       | 10.6  | 12 | 55 | 102 | 71 | 118 | 45 |
| 107-□S       | 10.7  | 12 | 55 | 102 | 71 | 118 | 45 |
| 1072-□S      | 10.72 | 12 | 55 | 102 | 71 | 118 | 45 |
| 108-□S       | 10.8  | 12 | 55 | 102 | 71 | 118 | 45 |
| 109-□S       | 10.9  | 12 | 55 | 102 | 71 | 118 | 45 |
| 110-□S       | 11.0  | 12 | 55 | 102 | 71 | 118 | 45 |
| 111-□S       | 11.1  | 12 | 55 | 102 | 71 | 118 | 45 |
| 1111-□S      | 11.11 | 12 | 55 | 102 | 71 | 118 | 45 |
| 112-□S       | 11.2  | 12 | 55 | 102 | 71 | 118 | 45 |
| 113-□S       | 11.3  | 12 | 55 | 102 | 71 | 118 | 45 |
| 114-□S       | 11.4  | 12 | 55 | 102 | 71 | 118 | 45 |
| 115-□S       | 11.5  | 12 | 55 | 102 | 71 | 118 | 45 |
| 1151-□S      | 11.51 | 12 | 55 | 102 | 71 | 118 | 45 |
| 116-□S       | 11.6  | 12 | 55 | 102 | 71 | 118 | 45 |
| 117-□S       | 11.7  | 12 | 55 | 102 | 71 | 118 | 45 |
| 118-□S       | 11.8  | 12 | 55 | 102 | 71 | 118 | 45 |
| 119-□S       | 11.9  | 12 | 55 | 102 | 71 | 118 | 45 |
| 1191-□S      | 11.91 | 12 | 55 | 102 | 71 | 118 | 45 |
| 120-□S       | 12.0  | 12 | 55 | 102 | 71 | 118 | 45 |
| 121-□S       | 12.1  | 14 | 60 | 107 | 77 | 124 | 45 |
| 122-□S       | 12.2  | 14 | 60 | 107 | 77 | 124 | 45 |
| 123-□S       | 12.3  | 14 | 60 | 107 | 77 | 124 | 45 |
| 124-□S       | 12.4  | 14 | 60 | 107 | 77 | 124 | 45 |
| 125-□S       | 12.5  | 14 | 60 | 107 | 77 | 124 | 45 |
| 126-□S       | 12.6  | 14 | 60 | 107 | 77 | 124 | 45 |
| 127-□S       | 12.7  | 14 | 60 | 107 | 77 | 124 | 45 |
| 128-□S       | 12.8  | 14 | 60 | 107 | 77 | 124 | 45 |
| 129-□S       | 12.9  | 14 | 60 | 107 | 77 | 124 | 45 |
| 130-□S       | 13.0  | 14 | 60 | 107 | 77 | 124 | 45 |
| 131-□S       | 13.1  | 14 | 60 | 107 | 77 | 124 | 45 |
| 132-□S       | 13.2  | 14 | 60 | 107 | 77 | 124 | 45 |
| 133-□S       | 13.3  | 14 | 60 | 107 | 77 | 124 | 45 |
| 134-□S       | 13.4  | 14 | 60 | 107 | 77 | 124 | 45 |
| 1349-□S      | 13.49 | 14 | 60 | 107 | 77 | 124 | 45 |
| 135-□S       | 13.5  | 14 | 60 | 107 | 77 | 124 | 45 |



# MSDPH-S



| Especificaciones        | S           |
|-------------------------|-------------|
| Grado                   | PC325T      |
| Tolerancia (diá. broca) | h7          |
| Tolerancia (diá. mango) | h6          |
| Ángulo de punta (θ°)    | 140°        |
| Ángulo de hélice        | 30°         |
| Forma de la punta       | Tipo X      |
| Estándar internacional  | DIN 6537    |
| Tipo del mango          | DIN 6535 HA |
| Refrigerante            | Interno     |

**S** Aleaciones termorresistentes

| MSDPH | Código  | ØD    | Ød | 3S   |     | 5S |     | ℓ2 |
|-------|---------|-------|----|------|-----|----|-----|----|
|       |         |       |    | ℓ1   | L   | ℓ1 | L   |    |
|       |         |       |    | (mm) |     |    |     |    |
|       | 136-□S  | 13.6  | 14 | 60   | 107 | 77 | 124 | 45 |
|       | 137-□S  | 13.7  | 14 | 60   | 107 | 77 | 124 | 45 |
|       | 138-□S  | 13.8  | 14 | 60   | 107 | 77 | 124 | 45 |
|       | 139-□S  | 13.9  | 14 | 60   | 107 | 77 | 124 | 45 |
|       | 140-□S  | 14.0  | 14 | 60   | 107 | 77 | 124 | 45 |
|       | 141-□S  | 14.1  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 142-□S  | 14.2  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 1429-□S | 14.29 | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 143-□S  | 14.3  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 144-□S  | 14.4  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 145-□S  | 14.5  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 146-□S  | 14.6  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 147-□S  | 14.7  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 148-□S  | 14.8  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 149-□S  | 14.9  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 150-□S  | 15.0  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 151-□S  | 15.1  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 152-□S  | 15.2  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 153-□S  | 15.3  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 154-□S  | 15.4  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 155-□S  | 15.5  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 156-□S  | 15.6  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 157-□S  | 15.7  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 158-□S  | 15.8  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 1587-□S | 15.87 | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 159-□S  | 15.9  | 16 | 65   | 115 | 83 | 133 | 48 |
|       | 160-□S  | 16.0  | 16 | 65   | 115 | 83 | 133 | 48 |

# G Información Técnica para Mach Solid Drill Plus CFRP

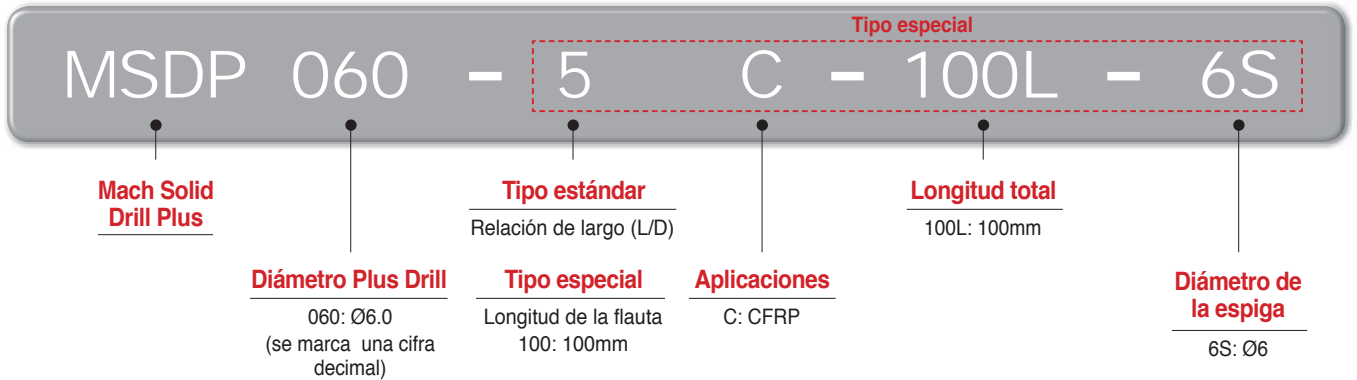
Herramienta optimizada para la fabricación de agujeros de polímero de fibra de carbono reforzada CFRP

## MSD Plus CFRP **new**

### Mach Solid Drill Plus para Mecanizado CFRP

- Excelente resistencia al desgaste gracias al nuevo grado con recubrimiento de diamante, ND2100
- Reducción de rebabas al mecanizar CFRP gracias a bordes de corte positivos

#### ➤ Sistema de Codificación

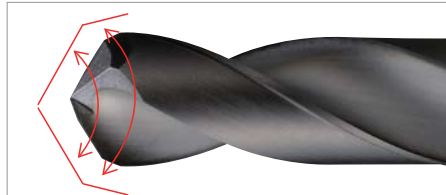


#### ➤ Características

- El filo con forma de 2 pasos reduce la carga de corte
- El ángulo óptimo de punta del filo reduce las rebabas
- Alta dureza del filo aumenta la resistencia al desgaste



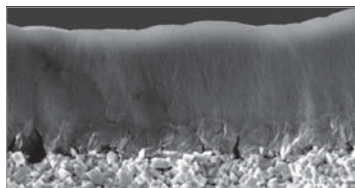
ND2100



- Recubrimiento diamantado especializado en mecanizado CFRP
- Sustrato recubierto de diamante optimizado para corte CFRP



Recubrimiento de diamante de alta dureza; manteniendo una forma en buen estado



El fuerte adhesión del recubrimiento de diamante al sustrato

- Reducción de la formación rebabas al mantener los filos en mejor forma



Desconchado inhibido

Menos desgaste y descamado en la superficie del filo



Menos rebabas en las piezas



## Evaluación de desempeño

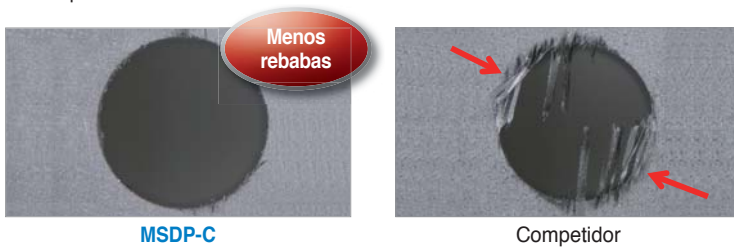
- **Pieza de trabajo** CFRP
- **Condiciones de corte**  $vc$  (m/min) = 100,  $fn$  (mm/rev) = 0.05,  $ap$  (mm) = 10, Aire
- **Longitud de corte** 7.2m (720 agujeros)
- **Herramientas** MSDP060-5C (ND2100)

Calidad de rendimiento mejorada



- **Pieza de trabajo** CFRP
- **Condiciones de corte**  $vc$  (m/min) = 100,  $fn$  (mm/rev) = 0.05,  $ap$  (mm) = 10, Aire
- **Longitud de corte** 7.2m (720 agujeros)
- **Herramientas** MSDP060-5C (ND2100)

Mejor maquinabilidad en la fabricación de perforaciones de alta calidad

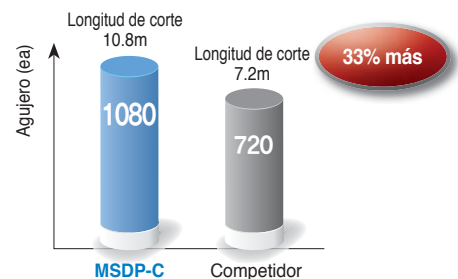


## Ejemplos de aplicación

- **Uso** la cola del ala
- **Pieza de trabajo** CFRP
- **Condiciones de corte**  $vc$  (m/min) = 100,  $fn$  (mm/rev) = 0.05,  $ap$  (mm) = 10, Aire
- **Herramientas** MSDP060-5C (ND2100)



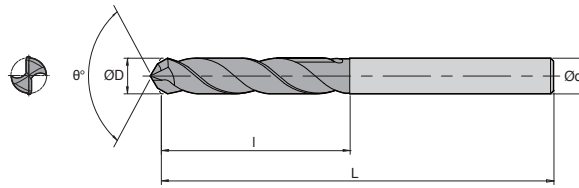
### Resultado de la prueba



## Condiciones de Corte Recomendadas

| Pieza de trabajo | Grado  | vc (m/min)    | Dimensiones (L/D) = 5D                                 |           |            |
|------------------|--------|---------------|--|-----------|------------|
|                  |        |               | Avance (mm/rev) Dependiendo del Diam. de la broca (mm) |           |            |
|                  |        |               | Ø2.5~Ø4.0  | Ø4.1~Ø8.0 | Ø8.1~Ø12.0 |
| CFRP             | ND2100 | 100 (100~150) | 0.03~0.07  | 0.03~0.07 | 0.03~0.07  |

## MSDP (5C)



| Especificación                    | C       |
|-----------------------------------|---------|
| Grado                             | ND2100  |
| Tolerancia (diámetro del taladro) | m7      |
| Tolerancia (vástago Dia.)         | h6      |
| Ángulo de punto                   | 118°    |
| Ángulo de giro                    | 30°     |
| Angostamiento                     | tipo X  |
| Refrigerante                      | Externo |
| ☑ CFRP                            |         |

(mm)

| Código             | ØD    |      | Ød | 5C |     |
|--------------------|-------|------|----|----|-----|
|                    | mm    | inch |    | l  | L   |
| <b>MSDP</b> 030-5C | 3     | -    | 6  | 28 | 66  |
| 040-5C             | 4     | -    | 6  | 36 | 74  |
| 0476-5C            | 4.76  | 3/16 | 6  | 44 | 82  |
| 050-5C             | 5     | -    | 6  | 44 | 82  |
| 060-5C             | 6     | -    | 6  | 44 | 82  |
| 0635-5C            | 6.35  | 1/4  | 8  | 53 | 91  |
| 070-5C             | 7     | -    | 8  | 53 | 91  |
| 0794-5C            | 7.94  | 5/16 | 8  | 53 | 91  |
| 080-5C             | 8     | -    | 8  | 53 | 91  |
| 090-5C             | 9     | -    | 10 | 61 | 103 |
| 0952-5C            | 9.52  | 3/8  | 10 | 61 | 103 |
| 100-5C             | 10    | -    | 10 | 61 | 103 |
| 110-5C             | 11    | -    | 12 | 71 | 118 |
| 1111-5C            | 11.11 | 7/16 | 12 | 71 | 118 |
| 120-5C             | 12    | -    | 12 | 71 | 118 |
| 127-5C             | 12.7  | 1/2  | 14 | 71 | 124 |





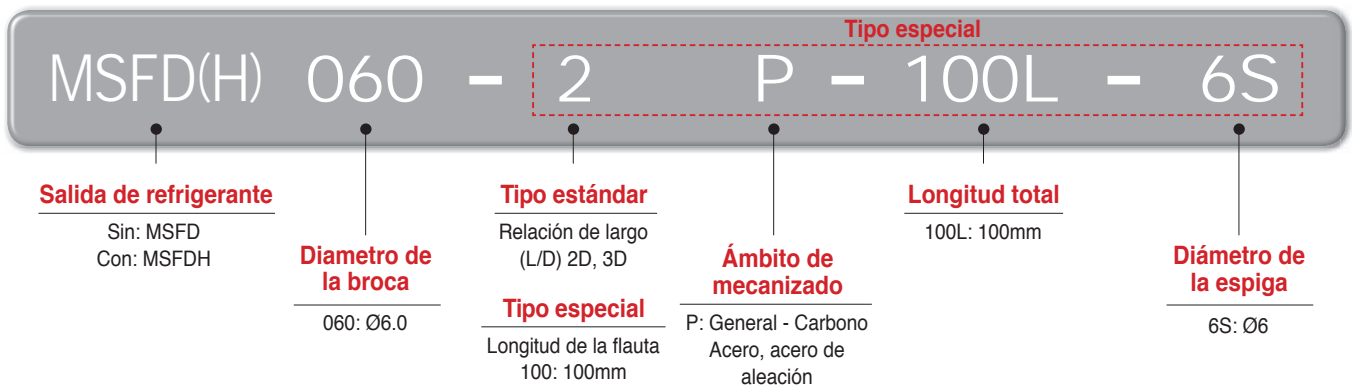
La mejor herramienta para piezas de trabajo en rampa, curvas o planas

**MSFD** *new*

## Mach Solid Flat Drill

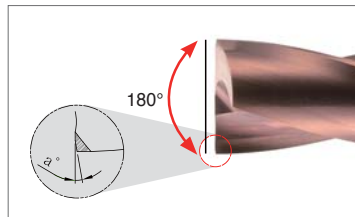
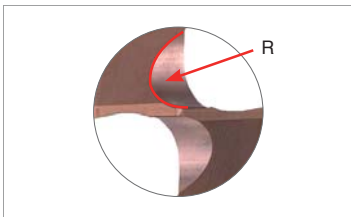
- Capacidad de fabricación de perforaciones de alta calidad con ángulo de 180°
- Mejora de la resistencia al astillamiento y adhesión por soldadura mediante el afilado y biselado de bordes
- Formación mínima de rebabas en comparación con los taladros generales

### ➤ Sistema de codificación

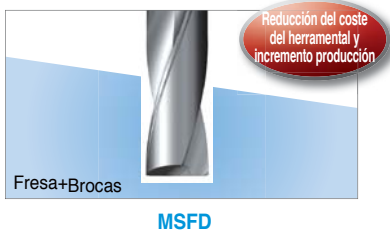


### ➤ Características

- Excelente rectitud con su ángulo de 180° cuando se perfora en una superficie en rampa
- Mayor resistencia al astillado gracias a chaflán en el vértice
- Salidas de viruta ampliadas mediante el uso de la forma 'R' en la parte que se angosta

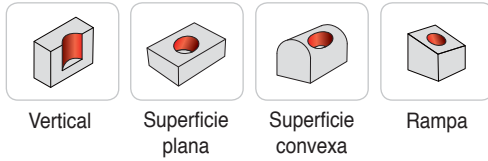


- Capacidad multifuncional: fresado y taladrado con solo MSFD



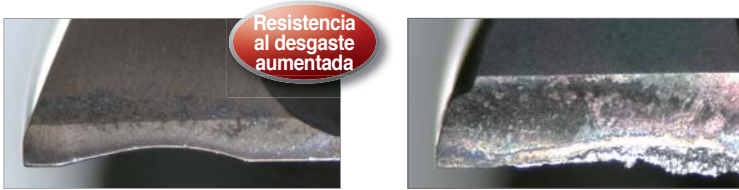
## Amplias aplicaciones

- Una amplia gama de aplicaciones y un rendimiento de corte mejorado



## Evaluación de desempeño

- Pieza de trabajo** SM48C
- Condiciones de corte**  $vc$  (m/min) = 80,  $fn$  (mm/min) = 0.10,  $ap$  (mm) = 15, con refrigerante
- Longitud de corte** 7.2m (600 perforaciones)
- Herramientas** MSFD060-2P (PC325U)

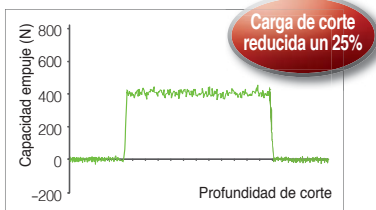


**MSFD**

prolonga la vida útil de la herramienta

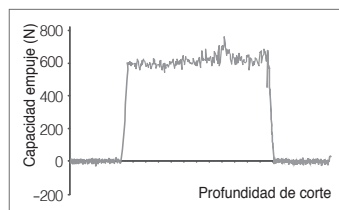
Competidor

- Pieza de trabajo** SM45C
- Condiciones de corte**  $vc$  (m/min) = 70,  $fn$  (mm/min) = 0.10,  $ap$  (mm) = 15, con refrigerante
- Herramientas** MSDPH060-3P (PC325U)



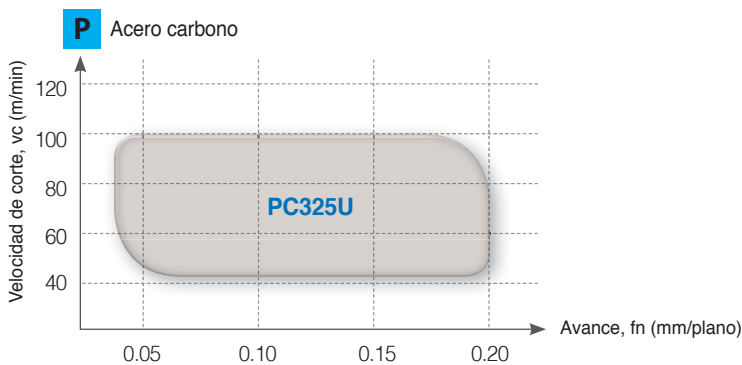
**MSFD (presión promedio de 160N)**

Consistencia en la estabilidad del tamaño de la perforación y mejor acabado de la superficie

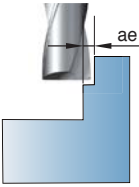
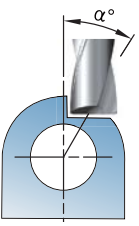


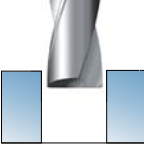
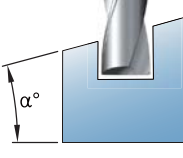
Competidor (presión promedio de 214N)

## Rango de aplicación



## Métodos de aplicación

| Tipo de aplicación  | Condiciones de mecanizado recomendadas   |              |                          |             |                  |        |       |   |      |            |   |     |       |   |     |
|---|--|--------------|--------------------------|-------------|------------------|--------|-------|---|------|------------|---|-----|-------|---|-----|
|  | <ul style="list-style-type: none"> <li>La profundidad radial del corte debe ser inferior a la mitad del radio de perforación</li> <li>En caso de aumentar la profundidad de corte, dividir el proceso de mecanizado en dos pasadas</li> </ul>  |              |                          |             |                  |        |       |   |      |            |   |     |       |   |     |
|  | <ul style="list-style-type: none"> <li>Utilice la herramienta dentro de 30 ° desde el centro de la curva</li> <li>Reducir el avance cuando la herramienta penetra la pieza de trabajo y en la salida</li> </ul> <table border="1"> <thead> <tr> <th>Material (Ø)</th> <th>Ángulo de pendiente (α°)</th> <th>Rendimiento</th> <th>Avance a aplicar</th> </tr> </thead> <tbody> <tr> <td rowspan="3">≤ Ø100</td> <td>≤ 20°</td> <td>◎</td> <td>100%</td> </tr> <tr> <td>20° &lt; ~40°</td> <td>○</td> <td>80%</td> </tr> <tr> <td>≥ 40°</td> <td>△</td> <td>60%</td> </tr> </tbody> </table> | Material (Ø) | Ángulo de pendiente (α°) | Rendimiento | Avance a aplicar | ≤ Ø100 | ≤ 20° | ◎ | 100% | 20° < ~40° | ○ | 80% | ≥ 40° | △ | 60% |
| Material (Ø)  | Ángulo de pendiente (α°)   | Rendimiento  | Avance a aplicar         |             |                  |        |       |   |      |            |   |     |       |   |     |
| ≤ Ø100  | ≤ 20°  | ◎            | 100%                     |             |                  |        |       |   |      |            |   |     |       |   |     |
|   | 20° < ~40°   | ○            | 80%                      |             |                  |        |       |   |      |            |   |     |       |   |     |
|   | ≥ 40°  | △            | 60%                      |             |                  |        |       |   |      |            |   |     |       |   |     |

| Tipo de aplicación  | Condiciones de mecanizado recomendadas   |                          |             |                  |       |   |      |            |   |     |       |   |     |
|---|--|--------------------------|-------------|------------------|-------|---|------|------------|---|-----|-------|---|-----|
|  | <ul style="list-style-type: none"> <li>Reducir el avance a la mitad del recomendado cuando la herramienta entra en la pieza de trabajo</li> <li>Reducir el avance a la mitad de la condición recomendada cuando la herramienta penetra en la pieza y en la salida</li> <li>La profundidad de corte recomendada es inferior a 2D</li> </ul>   |                          |             |                  |       |   |      |            |   |     |       |   |     |
|  | <ul style="list-style-type: none"> <li>El rango de ángulo de inclinación recomendado es inferior a 30°</li> <li>En el caso de mecanizado en un ángulo de inclinación superior a 30°, reducir la velocidad de avance cuando la herramienta entra en la pieza de trabajo</li> </ul> <table border="1"> <thead> <tr> <th>Ángulo de pendiente (α°)</th> <th>Rendimiento</th> <th>Avance a aplicar</th> </tr> </thead> <tbody> <tr> <td>≤ 20°</td> <td>◎</td> <td>100%</td> </tr> <tr> <td>20° &lt; ~40°</td> <td>○</td> <td>80%</td> </tr> <tr> <td>≥ 40°</td> <td>△</td> <td>60%</td> </tr> </tbody> </table> | Ángulo de pendiente (α°) | Rendimiento | Avance a aplicar | ≤ 20° | ◎ | 100% | 20° < ~40° | ○ | 80% | ≥ 40° | △ | 60% |
| Ángulo de pendiente (α°)  | Rendimiento  | Avance a aplicar         |             |                  |       |   |      |            |   |     |       |   |     |
| ≤ 20°   | ◎  | 100%                     |             |                  |       |   |      |            |   |     |       |   |     |
| 20° < ~40°  | ○  | 80%                      |             |                  |       |   |      |            |   |     |       |   |     |
| ≥ 40°   | △  | 60%                      |             |                  |       |   |      |            |   |     |       |   |     |

## Condiciones de corte recomendadas

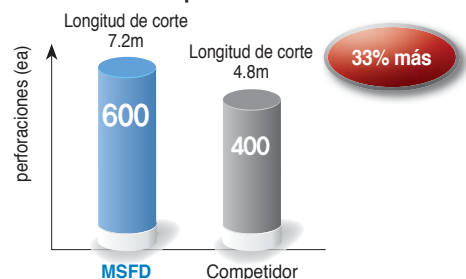
| Material |                             |                                     | Grado   | vc (m/min) | Dimensiones (L/D) = 2D~3D                              |           |            |           |
|----------|-----------------------------|-------------------------------------|---------|------------|--|-----------|------------|-----------|
| ISO      | Materiales pieza de trabajo | Dureza (HB)                         |         |            | Avance (mm/rev) Dependiendo del Diam. de la broca (mm) |           |            |           |
|          |                             |                                     |         |            | Ø2.5~Ø4.0  | Ø4.1~Ø8.0 | Ø8.1~Ø12.0 |           |
| P        | Acero al carbono            | Acero con bajo contenido de carbono | 80~120  | PC325U     | 75 (60~90)   | 0.03~0.10 | 0.05~0.15  | 0.10~0.20 |
|          |                             | Acero con alto contenido de carbono | 180~280 | PC325U     | 75 (60~80)   | 0.03~0.10 | 0.05~0.15  | 0.10~0.20 |
|          | Acero aleado                | Acero aleado baja aleación          | 140~260 | PC325U     | 65 (50~80)   | 0.03~0.10 | 0.05~0.15  | 0.10~0.20 |
|          |                             | Acero aleado alta aleación          | 50~260  | PC325U     | 65 (50~80)   | 0.03~0.10 | 0.05~0.15  | 0.10~0.20 |

## Ejemplos de aplicación

- **Pieza de trabajo** acero al carbono (SM45C)
- **Condiciones de corte**
  - vc (m/min) = 80
  - fn (mm/min) = 0.1
  - ap (mm) = 12, con refrigerante
- **Herramientas** MSFD060-2P (PC325U)



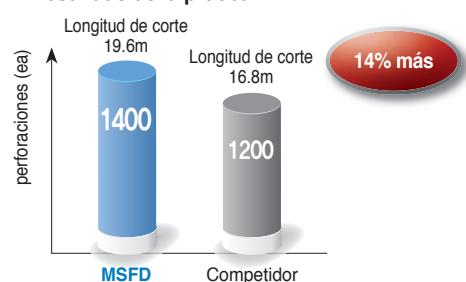
### Resultado de la prueba



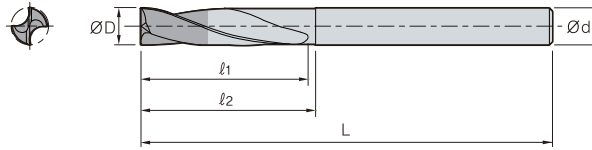
- **Pieza de trabajo** acero de aleación (SCM440)
- **Condiciones de corte**
  - vc (m/min) = 100
  - fn (mm/min) = 0.1
  - ap (mm) = 14, con refrigerante
- **Herramientas** MSFDH060-3P (PC325U)



### Resultado de la prueba



## MSFD (2P)



| Terminología                      | P       |
|-----------------------------------|---------|
| Grado                             | PC325U  |
| Tolerancia (diámetro del taladro) | H7      |
| Tolerancia (vástago Dia.)         | h6      |
| Ángulo de punta                   | 180°    |
| Ángulo de giro                    | 20°     |
| Angostamiento                     | Tipo R  |
| Refrigerante                      | Externo |

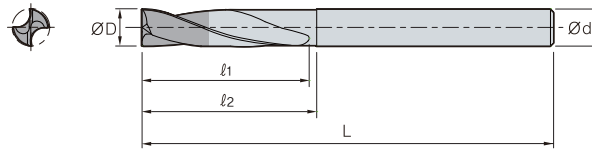
■ Acero

(mm)

| Código      | ØD  | Ød  | 2P   |      |    |
|-------------|-----|-----|------|------|----|
|             |     |     | ℓ1   | ℓ2   | L  |
| MSFD 025-2P | 2.5 | 4.0 | 10.5 | 11.5 | 50 |
| 026-2P      | 2.6 | 4.0 | 10.9 | 11.9 | 50 |
| 027-2P      | 2.7 | 4.0 | 11.3 | 12.3 | 50 |
| 028-2P      | 2.8 | 4.0 | 11.8 | 12.8 | 50 |
| 029-2P      | 2.9 | 4.0 | 12.2 | 13.2 | 50 |
| 030-2P      | 3.0 | 6.0 | 12.6 | 13.6 | 50 |
| 031-2P      | 3.1 | 6.0 | 13.0 | 14.0 | 50 |
| 032-2P      | 3.2 | 6.0 | 13.4 | 14.4 | 50 |
| 033-2P      | 3.3 | 6.0 | 13.9 | 14.9 | 50 |
| 034-2P      | 3.4 | 6.0 | 14.3 | 15.3 | 50 |
| 035-2P      | 3.5 | 6.0 | 14.7 | 15.7 | 50 |
| 036-2P      | 3.6 | 6.0 | 15.1 | 16.1 | 50 |
| 037-2P      | 3.7 | 6.0 | 15.5 | 16.5 | 50 |
| 038-2P      | 3.8 | 6.0 | 16.0 | 17.0 | 50 |
| 039-2P      | 3.9 | 6.0 | 16.4 | 17.4 | 50 |
| 040-2P      | 4.0 | 6.0 | 16.8 | 17.8 | 50 |
| 041-2P      | 4.1 | 6.0 | 17.2 | 18.2 | 60 |
| 042-2P      | 4.2 | 6.0 | 17.6 | 18.6 | 60 |
| 043-2P      | 4.3 | 6.0 | 18.1 | 19.1 | 60 |
| 044-2P      | 4.4 | 6.0 | 18.5 | 19.5 | 60 |
| 045-2P      | 4.5 | 6.0 | 18.9 | 19.9 | 60 |
| 046-2P      | 4.6 | 6.0 | 19.3 | 20.3 | 60 |
| 047-2P      | 4.7 | 6.0 | 19.7 | 20.7 | 60 |
| 048-2P      | 4.8 | 6.0 | 20.2 | 21.2 | 60 |
| 049-2P      | 4.9 | 6.0 | 20.6 | 21.6 | 60 |
| 050-2P      | 5.0 | 6.0 | 21.0 | 22.0 | 60 |
| 051-2P      | 5.1 | 6.0 | 21.4 | 22.4 | 60 |
| 052-2P      | 5.2 | 6.0 | 21.8 | 22.8 | 60 |
| 053-2P      | 5.3 | 6.0 | 22.3 | 23.3 | 60 |
| 054-2P      | 5.4 | 6.0 | 22.7 | 23.7 | 60 |
| 055-2P      | 5.5 | 6.0 | 23.1 | 24.1 | 60 |
| 056-2P      | 5.6 | 6.0 | 23.5 | 24.5 | 60 |
| 057-2P      | 5.7 | 6.0 | 23.9 | 24.9 | 60 |
| 058-2P      | 5.8 | 6.0 | 24.4 | 25.4 | 60 |
| 059-2P      | 5.9 | 6.0 | 24.8 | 25.8 | 60 |
| 060-2P      | 6.0 | 6.0 | 25.2 | 26.2 | 60 |
| 061-2P      | 6.1 | 8.0 | 25.6 | 26.6 | 70 |
| 062-2P      | 6.2 | 8.0 | 26.0 | 27.0 | 70 |
| 063-2P      | 6.3 | 8.0 | 26.5 | 27.5 | 70 |
| 064-2P      | 6.4 | 8.0 | 26.9 | 27.9 | 70 |
| 065-2P      | 6.5 | 8.0 | 27.3 | 28.3 | 70 |
| 066-2P      | 6.6 | 8.0 | 27.7 | 28.7 | 70 |
| 067-2P      | 6.7 | 8.0 | 28.1 | 29.1 | 70 |
| 068-2P      | 6.8 | 8.0 | 28.6 | 29.6 | 70 |
| 069-2P      | 6.9 | 8.0 | 29.0 | 30.0 | 70 |
| 070-2P      | 7.0 | 8.0 | 29.4 | 30.4 | 70 |



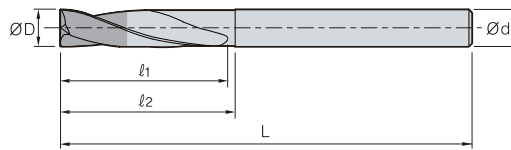
# MSFD (2P)



| Terminología                      | P       |
|-----------------------------------|---------|
| Grado                             | PC325U  |
| Tolerancia (diámetro del taladro) | H7      |
| Tolerancia (vástago Dia.)         | h6      |
| Ángulo de punta                   | 180°    |
| Ángulo de giro                    | 20°     |
| Angostamiento                     | Tipo R  |
| Refrigerante                      | Externo |
| ■ Acero                           |         |

| Código      | ØD   | Ød   | 2P   |      |    |
|-------------|------|------|------|------|----|
|             |      |      | l1   | l2   | L  |
| MSFD 071-2P | 7.1  | 8.0  | 29.8 | 30.8 | 70 |
| 072-2P      | 7.2  | 8.0  | 30.2 | 31.2 | 70 |
| 073-2P      | 7.3  | 8.0  | 30.7 | 31.7 | 70 |
| 074-2P      | 7.4  | 8.0  | 31.1 | 32.1 | 70 |
| 075-2P      | 7.5  | 8.0  | 31.5 | 32.5 | 70 |
| 076-2P      | 7.6  | 8.0  | 31.9 | 32.9 | 70 |
| 077-2P      | 7.7  | 8.0  | 32.3 | 33.3 | 70 |
| 078-2P      | 7.8  | 8.0  | 32.8 | 33.8 | 70 |
| 079-2P      | 7.9  | 8.0  | 33.2 | 34.2 | 70 |
| 080-2P      | 8.0  | 8.0  | 33.6 | 34.6 | 70 |
| 081-2P      | 8.1  | 10.0 | 34.0 | 35.0 | 80 |
| 082-2P      | 8.2  | 10.0 | 34.4 | 35.4 | 80 |
| 083-2P      | 8.3  | 10.0 | 34.9 | 35.9 | 80 |
| 084-2P      | 8.4  | 10.0 | 35.3 | 36.3 | 80 |
| 085-2P      | 8.5  | 10.0 | 35.7 | 36.7 | 80 |
| 086-2P      | 8.6  | 10.0 | 36.1 | 37.1 | 80 |
| 087-2P      | 8.7  | 10.0 | 36.5 | 37.5 | 80 |
| 088-2P      | 8.8  | 10.0 | 37.0 | 38.0 | 80 |
| 089-2P      | 8.9  | 10.0 | 37.4 | 38.4 | 80 |
| 090-2P      | 9.0  | 10.0 | 37.8 | 38.8 | 80 |
| 091-2P      | 9.1  | 10.0 | 38.2 | 39.2 | 80 |
| 092-2P      | 9.2  | 10.0 | 38.6 | 39.6 | 80 |
| 093-2P      | 9.3  | 10.0 | 39.1 | 40.1 | 80 |
| 094-2P      | 9.4  | 10.0 | 39.5 | 40.5 | 80 |
| 095-2P      | 9.5  | 10.0 | 39.9 | 40.9 | 80 |
| 096-2P      | 9.6  | 10.0 | 40.3 | 41.3 | 80 |
| 097-2P      | 9.7  | 10.0 | 40.7 | 41.7 | 80 |
| 098-2P      | 9.8  | 10.0 | 41.2 | 42.2 | 80 |
| 099-2P      | 9.9  | 10.0 | 41.6 | 42.6 | 80 |
| 100-2P      | 10.0 | 10.0 | 42.0 | 43   | 80 |
| 101-2P      | 10.1 | 12.0 | 42.4 | 43.4 | 90 |
| 102-2P      | 10.2 | 12.0 | 42.8 | 43.8 | 90 |
| 103-2P      | 10.3 | 12.0 | 43.3 | 44.3 | 90 |
| 104-2P      | 10.4 | 12.0 | 43.7 | 44.7 | 90 |
| 105-2P      | 10.5 | 12.0 | 44.1 | 45.1 | 90 |
| 106-2P      | 10.6 | 12.0 | 44.5 | 45.5 | 90 |
| 107-2P      | 10.7 | 12.0 | 44.9 | 45.9 | 90 |
| 108-2P      | 10.8 | 12.0 | 45.4 | 46.4 | 90 |
| 109-2P      | 10.9 | 12.0 | 45.8 | 46.8 | 90 |
| 110-2P      | 11.0 | 12.0 | 46.2 | 47.2 | 90 |
| 111-2P      | 11.1 | 12.0 | 46.6 | 47.6 | 90 |
| 112-2P      | 11.2 | 12.0 | 47.0 | 48.0 | 90 |
| 113-2P      | 11.3 | 12.0 | 47.5 | 48.5 | 90 |
| 114-2P      | 11.4 | 12.0 | 47.9 | 48.9 | 90 |
| 115-2P      | 11.5 | 12.0 | 48.3 | 49.3 | 90 |
| 116-2P      | 11.6 | 12.0 | 48.7 | 49.7 | 90 |
| 117-2P      | 11.7 | 12.0 | 49.1 | 50.1 | 90 |
| 118-2P      | 11.8 | 12.0 | 49.6 | 50.6 | 90 |
| 119-2P      | 11.9 | 12.0 | 50.0 | 51.0 | 90 |
| 120-2P      | 12.0 | 12.0 | 50.4 | 51.4 | 90 |

## MSFD (2P)



| Terminología                      | P       |
|-----------------------------------|---------|
| Grado                             | PC325U  |
| Tolerancia (diámetro del taladro) | H7      |
| Tolerancia (vástago Dia.)         | h6      |
| Ángulo de punta                   | 180°    |
| Ángulo de giro                    | 20°     |
| Angostamiento                     | Tipo R  |
| Refrigerante                      | Externo |

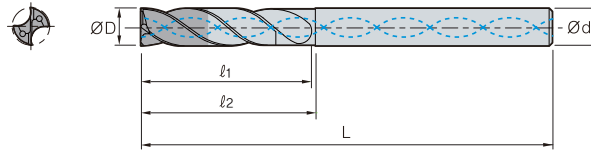
■ Acero

(mm)

| Código      | ØD   | Ød   | 2P   |      |     |
|-------------|------|------|------|------|-----|
|             |      |      | l1   | l2   | L   |
| MSFD 121-2P | 12.1 | 14.0 | 50.8 | 51.8 | 100 |
| 122-2P      | 12.2 | 14.0 | 51.2 | 52.2 | 100 |
| 123-2P      | 12.3 | 14.0 | 51.7 | 52.7 | 100 |
| 124-2P      | 12.4 | 14.0 | 52.1 | 53.1 | 100 |
| 125-2P      | 12.5 | 14.0 | 52.5 | 53.5 | 100 |
| 126-2P      | 12.6 | 14.0 | 52.9 | 53.9 | 100 |
| 127-2P      | 12.7 | 14.0 | 53.3 | 54.3 | 100 |
| 128-2P      | 12.8 | 14.0 | 53.8 | 54.8 | 100 |
| 129-2P      | 12.9 | 14.0 | 54.2 | 55.2 | 100 |
| 130-2P      | 13.0 | 14.0 | 54.6 | 55.6 | 100 |
| 131-2P      | 13.1 | 14.0 | 55.0 | 56.0 | 100 |
| 132-2P      | 13.2 | 14.0 | 55.4 | 56.4 | 100 |
| 133-2P      | 13.3 | 14.0 | 55.9 | 56.9 | 100 |
| 134-2P      | 13.4 | 14.0 | 56.3 | 57.3 | 100 |
| 135-2P      | 13.5 | 14.0 | 56.7 | 57.7 | 110 |
| 136-2P      | 13.6 | 14.0 | 57.1 | 58.1 | 110 |
| 137-2P      | 13.7 | 14.0 | 57.5 | 58.5 | 110 |
| 138-2P      | 13.8 | 14.0 | 58.0 | 59.0 | 110 |
| 139-2P      | 13.9 | 14.0 | 58.4 | 59.4 | 110 |
| 140-2P      | 14.0 | 14.0 | 58.8 | 59.8 | 110 |
| 141-2P      | 14.1 | 16.0 | 59.2 | 60.2 | 110 |
| 142-2P      | 14.2 | 16.0 | 59.6 | 60.6 | 110 |
| 143-2P      | 14.3 | 16.0 | 60.1 | 61.1 | 110 |
| 144-2P      | 14.4 | 16.0 | 60.5 | 61.5 | 110 |
| 145-2P      | 14.5 | 16.0 | 60.9 | 61.9 | 110 |
| 146-2P      | 14.6 | 16.0 | 61.3 | 62.3 | 110 |
| 147-2P      | 14.7 | 16.0 | 61.7 | 62.7 | 110 |
| 148-2P      | 14.8 | 16.0 | 62.2 | 63.2 | 110 |
| 149-2P      | 14.9 | 16.0 | 62.6 | 63.6 | 110 |
| 150-2P      | 15.0 | 16.0 | 63.0 | 64.0 | 110 |
| 151-2P      | 15.1 | 16.0 | 65.0 | 66.0 | 115 |
| 152-2P      | 15.2 | 16.0 | 65.0 | 66.0 | 115 |
| 153-2P      | 15.3 | 16.0 | 65.1 | 66.1 | 115 |
| 154-2P      | 15.4 | 16.0 | 65.1 | 66.1 | 115 |
| 155-2P      | 15.5 | 16.0 | 65.1 | 66.1 | 115 |
| 156-2P      | 15.6 | 16.0 | 67.1 | 68.1 | 115 |
| 157-2P      | 15.7 | 16.0 | 67.1 | 68.1 | 115 |
| 158-2P      | 15.8 | 16.0 | 67.2 | 68.2 | 115 |
| 159-2P      | 15.9 | 16.0 | 67.2 | 68.2 | 115 |
| 160-2P      | 16.0 | 16.0 | 67.2 | 68.2 | 115 |



# MSFDH (3P)

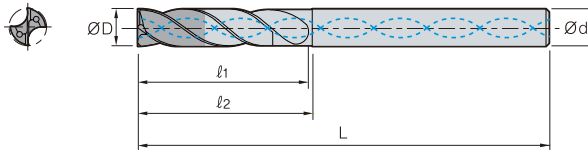


| Terminología                      | P      |
|-----------------------------------|--------|
| Grado                             | PC325U |
| Tolerancia (diámetro del taladro) | H7     |
| Tolerancia (vástago Dia.)         | h6     |
| Ángulo de punta                   | 180°   |
| Ángulo de giro                    | 30°    |
| Angostamiento                     | Tipo R |
| Refrigerante                      | Través |

■ Acero

| Código       | ØD  | Ød  | 3P |    |    |
|--------------|-----|-----|----|----|----|
|              |     |     | l1 | l2 | L  |
| MSFDH 025-3P | 2.5 | 3.0 | 17 | 18 | 58 |
| 026-3P       | 2.6 | 3.0 | 17 | 18 | 58 |
| 027-3P       | 2.7 | 3.0 | 17 | 18 | 58 |
| 028-3P       | 2.8 | 3.0 | 17 | 18 | 58 |
| 029-3P       | 2.9 | 3.0 | 17 | 18 | 58 |
| 030-3P       | 3.0 | 6.0 | 20 | 21 | 62 |
| 031-3P       | 3.1 | 6.0 | 20 | 21 | 62 |
| 032-3P       | 3.2 | 6.0 | 20 | 21 | 62 |
| 033-3P       | 3.3 | 6.0 | 20 | 21 | 62 |
| 034-3P       | 3.4 | 6.0 | 20 | 21 | 62 |
| 035-3P       | 3.5 | 6.0 | 20 | 21 | 62 |
| 036-3P       | 3.6 | 6.0 | 20 | 21 | 62 |
| 037-3P       | 3.7 | 6.0 | 20 | 21 | 62 |
| 038-3P       | 3.8 | 6.0 | 24 | 25 | 66 |
| 039-3P       | 3.9 | 6.0 | 24 | 25 | 66 |
| 040-3P       | 4.0 | 6.0 | 24 | 25 | 66 |
| 041-3P       | 4.1 | 6.0 | 24 | 25 | 66 |
| 042-3P       | 4.2 | 6.0 | 24 | 25 | 66 |
| 043-3P       | 4.3 | 6.0 | 24 | 25 | 66 |
| 044-3P       | 4.4 | 6.0 | 24 | 25 | 66 |
| 045-3P       | 4.5 | 6.0 | 24 | 25 | 66 |
| 046-3P       | 4.6 | 6.0 | 24 | 25 | 66 |
| 047-3P       | 4.7 | 6.0 | 24 | 25 | 66 |
| 048-3P       | 4.8 | 6.0 | 28 | 29 | 66 |
| 049-3P       | 4.9 | 6.0 | 28 | 29 | 66 |
| 050-3P       | 5.0 | 6.0 | 28 | 29 | 66 |
| 051-3P       | 5.1 | 6.0 | 28 | 29 | 66 |
| 052-3P       | 5.2 | 6.0 | 28 | 29 | 66 |
| 053-3P       | 5.3 | 6.0 | 28 | 29 | 66 |
| 054-3P       | 5.4 | 6.0 | 28 | 29 | 66 |
| 055-3P       | 5.5 | 6.0 | 28 | 29 | 66 |
| 056-3P       | 5.6 | 6.0 | 28 | 29 | 66 |
| 057-3P       | 5.7 | 6.0 | 28 | 29 | 66 |
| 058-3P       | 5.8 | 6.0 | 28 | 29 | 66 |
| 059-3P       | 5.9 | 6.0 | 28 | 29 | 66 |
| 060-3P       | 6.0 | 6.0 | 28 | 29 | 66 |
| 061-3P       | 6.1 | 8.0 | 34 | 35 | 79 |
| 062-3P       | 6.2 | 8.0 | 34 | 35 | 79 |
| 063-3P       | 6.3 | 8.0 | 34 | 35 | 79 |
| 064-3P       | 6.4 | 8.0 | 34 | 35 | 79 |
| 065-3P       | 6.5 | 8.0 | 34 | 35 | 79 |
| 066-3P       | 6.6 | 8.0 | 34 | 35 | 79 |
| 067-3P       | 6.7 | 8.0 | 34 | 35 | 79 |
| 068-3P       | 6.8 | 8.0 | 34 | 35 | 79 |
| 069-3P       | 6.9 | 8.0 | 34 | 35 | 79 |
| 070-3P       | 7.0 | 8.0 | 34 | 35 | 79 |

## MSFDH (3P)



| Terminología                      | P      |
|-----------------------------------|--------|
| Grado                             | PC325U |
| Tolerancia (diámetro del taladro) | H7     |
| Tolerancia (vástago Dia.)         | h6     |
| Ángulo de punta                   | 180°   |
| Ángulo de giro                    | 30°    |
| Angostamiento                     | Tipo R |
| Refrigerante                      | Través |

■ Acero

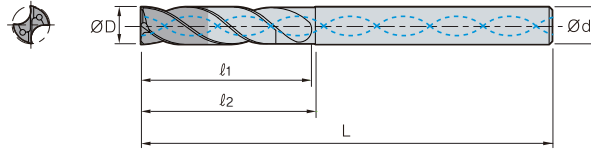
(mm)

| Código       | ØD   | Ød   | 3P |    |     |
|--------------|------|------|----|----|-----|
|              |      |      | ℓ1 | ℓ2 | L   |
| MSFDH 071-3P | 7.1  | 8.0  | 41 | 42 | 79  |
| 072-3P       | 7.2  | 8.0  | 41 | 42 | 79  |
| 073-3P       | 7.3  | 8.0  | 41 | 42 | 79  |
| 074-3P       | 7.4  | 8.0  | 41 | 42 | 79  |
| 075-3P       | 7.5  | 8.0  | 41 | 42 | 79  |
| 076-3P       | 7.6  | 8.0  | 41 | 42 | 79  |
| 077-3P       | 7.7  | 8.0  | 41 | 42 | 79  |
| 078-3P       | 7.8  | 8.0  | 41 | 42 | 79  |
| 079-3P       | 7.9  | 8.0  | 41 | 42 | 79  |
| 080-3P       | 8.0  | 8.0  | 41 | 42 | 79  |
| 081-3P       | 8.1  | 10.0 | 47 | 48 | 89  |
| 082-3P       | 8.2  | 10.0 | 47 | 48 | 89  |
| 083-3P       | 8.3  | 10.0 | 47 | 48 | 89  |
| 084-3P       | 8.4  | 10.0 | 47 | 48 | 89  |
| 085-3P       | 8.5  | 10.0 | 47 | 48 | 89  |
| 086-3P       | 8.6  | 10.0 | 47 | 48 | 89  |
| 087-3P       | 8.7  | 10.0 | 47 | 48 | 89  |
| 088-3P       | 8.8  | 10.0 | 47 | 48 | 89  |
| 089-3P       | 8.9  | 10.0 | 47 | 48 | 89  |
| 090-3P       | 9.0  | 10.0 | 47 | 48 | 89  |
| 091-3P       | 9.1  | 10.0 | 47 | 48 | 89  |
| 092-3P       | 9.2  | 10.0 | 47 | 48 | 89  |
| 093-3P       | 9.3  | 10.0 | 47 | 48 | 89  |
| 094-3P       | 9.4  | 10.0 | 47 | 48 | 89  |
| 095-3P       | 9.5  | 10.0 | 47 | 48 | 89  |
| 096-3P       | 9.6  | 10.0 | 47 | 48 | 89  |
| 097-3P       | 9.7  | 10.0 | 47 | 48 | 89  |
| 098-3P       | 9.8  | 10.0 | 47 | 48 | 89  |
| 099-3P       | 9.9  | 10.0 | 47 | 48 | 89  |
| 100-3P       | 10.0 | 10.0 | 47 | 48 | 89  |
| 101-3P       | 10.1 | 12.0 | 55 | 56 | 102 |
| 102-3P       | 10.2 | 12.0 | 55 | 56 | 102 |
| 103-3P       | 10.3 | 12.0 | 55 | 56 | 102 |
| 104-3P       | 10.4 | 12.0 | 55 | 56 | 102 |
| 105-3P       | 10.5 | 12.0 | 55 | 56 | 102 |
| 106-3P       | 10.6 | 12.0 | 55 | 56 | 102 |
| 107-3P       | 10.7 | 12.0 | 55 | 56 | 102 |
| 108-3P       | 10.8 | 12.0 | 55 | 56 | 102 |
| 109-3P       | 10.9 | 12.0 | 55 | 56 | 102 |
| 110-3P       | 11.0 | 12.0 | 55 | 56 | 102 |
| 111-3P       | 11.1 | 12.0 | 55 | 56 | 102 |
| 112-3P       | 11.2 | 12.0 | 55 | 56 | 102 |
| 113-3P       | 11.3 | 12.0 | 55 | 56 | 102 |
| 114-3P       | 11.4 | 12.0 | 55 | 56 | 102 |
| 115-3P       | 11.5 | 12.0 | 55 | 56 | 102 |
| 116-3P       | 11.6 | 12.0 | 55 | 56 | 102 |
| 117-3P       | 11.7 | 12.0 | 55 | 56 | 102 |
| 118-3P       | 11.8 | 12.0 | 55 | 56 | 102 |
| 119-3P       | 11.9 | 12.0 | 55 | 56 | 102 |
| 120-3P       | 12.0 | 12.0 | 55 | 56 | 102 |





# MSFDH (3P)



| Terminología                      | P      |
|-----------------------------------|--------|
| Grado                             | PC325U |
| Tolerancia (diámetro del taladro) | H7     |
| Tolerancia (vástago Dia.)         | h6     |
| Ángulo de punta                   | 180°   |
| Ángulo de giro                    | 30°    |
| Angostamiento                     | Tipo R |
| Refrigerante                      | Través |

■ Acero

| Código       | ØD   | Ød   | 3P |    |     |
|--------------|------|------|----|----|-----|
|              |      |      | l1 | l2 | L   |
| MSFDH 121-3P | 12.1 | 14.0 | 60 | 61 | 107 |
| 122-3P       | 12.2 | 14.0 | 60 | 61 | 107 |
| 123-3P       | 12.3 | 14.0 | 60 | 61 | 107 |
| 124-3P       | 12.4 | 14.0 | 60 | 61 | 107 |
| 125-3P       | 12.5 | 14.0 | 60 | 61 | 107 |
| 126-3P       | 12.6 | 14.0 | 60 | 61 | 107 |
| 127-3P       | 12.7 | 14.0 | 60 | 61 | 107 |
| 128-3P       | 12.8 | 14.0 | 60 | 61 | 107 |
| 129-3P       | 12.9 | 14.0 | 60 | 61 | 107 |
| 130-3P       | 13.0 | 14.0 | 60 | 61 | 107 |
| 131-3P       | 13.1 | 14.0 | 60 | 61 | 107 |
| 132-3P       | 13.2 | 14.0 | 60 | 61 | 107 |
| 133-3P       | 13.3 | 14.0 | 60 | 61 | 107 |
| 134-3P       | 13.4 | 14.0 | 60 | 61 | 107 |
| 135-3P       | 13.5 | 14.0 | 60 | 61 | 107 |
| 136-3P       | 13.6 | 14.0 | 60 | 61 | 107 |
| 137-3P       | 13.7 | 14.0 | 60 | 61 | 107 |
| 138-3P       | 13.8 | 14.0 | 60 | 61 | 107 |
| 139-3P       | 13.9 | 14.0 | 60 | 61 | 107 |
| 140-3P       | 14.0 | 14.0 | 60 | 61 | 107 |
| 141-3P       | 14.1 | 16.0 | 65 | 66 | 115 |
| 142-3P       | 14.2 | 16.0 | 65 | 66 | 115 |
| 143-3P       | 14.3 | 16.0 | 65 | 66 | 115 |
| 144-3P       | 14.4 | 16.0 | 65 | 66 | 115 |
| 145-3P       | 14.5 | 16.0 | 65 | 66 | 115 |
| 146-3P       | 14.6 | 16.0 | 65 | 66 | 115 |
| 147-3P       | 14.7 | 16.0 | 65 | 66 | 115 |
| 148-3P       | 14.8 | 16.0 | 65 | 66 | 115 |
| 149-3P       | 14.9 | 16.0 | 65 | 66 | 115 |
| 150-3P       | 15.0 | 16.0 | 65 | 66 | 115 |
| 151-3P       | 15.1 | 16.0 | 65 | 66 | 115 |
| 152-3P       | 15.2 | 16.0 | 65 | 66 | 115 |
| 153-3P       | 15.3 | 16.0 | 65 | 66 | 115 |
| 154-3P       | 15.4 | 16.0 | 65 | 66 | 115 |
| 155-3P       | 15.5 | 16.0 | 65 | 66 | 115 |
| 156-3P       | 15.6 | 16.0 | 65 | 66 | 115 |
| 157-3P       | 15.7 | 16.0 | 65 | 66 | 115 |
| 158-3P       | 15.8 | 16.0 | 65 | 66 | 115 |
| 159-3P       | 15.9 | 16.0 | 65 | 66 | 115 |
| 160-3P       | 16.0 | 16.0 | 65 | 66 | 115 |

# G Información Técnica para Mach Long Solid Drill Plus

Resultados de alta precisión al mecanizar perforaciones profundas

## MLD Plus new

### Mach Long Solid Drill Plus

#### ↻ Sistema de codificación

Tipo especial

MLD 0600N - 10 P - 100L - 10S

|   |  |   |  |   |
|---|--|---|--|---|
| <p><b>Mach Long Solid Drill Plus (MLD Plus)</b></p> | <p><b>Diámetro de la broca (ØD)</b></p> <p>0600: Ø6.00</p> | <p><b>Tipo estándar</b></p> <p>Relación de largo (L/D)<br/>10D, 15D, 20D, 25D</p> <p><b>Tipo especial</b></p> <p>Longitud de la flauta<br/>100: 100mm</p> | <p><b>Ámbito de mecanizado</b></p> <p>P: acero al carbono, acero aleado<br/>K: hierro fundido<br/>N: Aluminio, aleación de cobre</p> | <p><b>Longitud total</b></p> <p>100L: 100mm</p> <p><b>Diámetro de la toma</b></p> <p>10S: Ø10</p> |
|---|--|---|--|---|

#### ↻ Características

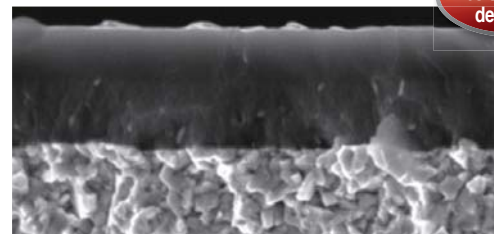
##### Forma de filo y flauta

- El filo recto proporciona una mejor rigidez
- Excelente evacuación de viruta debido a una salida de viruta más ancha y menor rugosidad de la superficie de la flauta
- Doble borde en el filo asegura la estabilidad de mecanizado



##### Nuevo grado (PC315G)

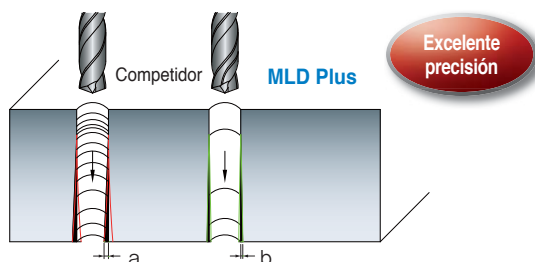
- Sustrato ultrafino y nuevo recubrimiento aplicado
- La capa de recubrimiento lubricante mejora la evacuación de viruta con menor resistencia por fricción
- Mayor vida útil de la herramienta debido a una mayor resistencia al desgaste



PC315G

##### Grado de mecanizado de precisión

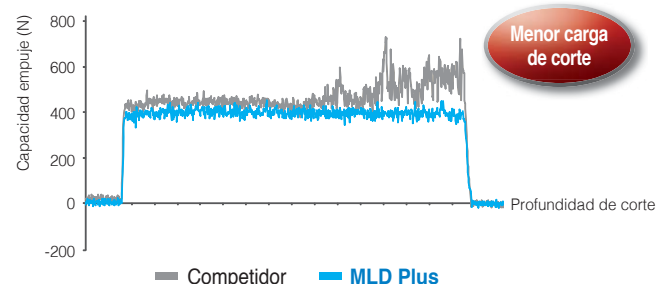
- Mejora de la precisión de mecanizado
  - Se redujeron las curvaturas en las perforaciones, se mejoró la rugosidad de la superficie interior de la perforación
  - Aumento de la uniformidad del tamaño de la perforación
- Forma de punto mejorada
- Ubicación precisa de corte asegurada



Reducción de perforaciones dobladas en comparación con los competidores (a > b)

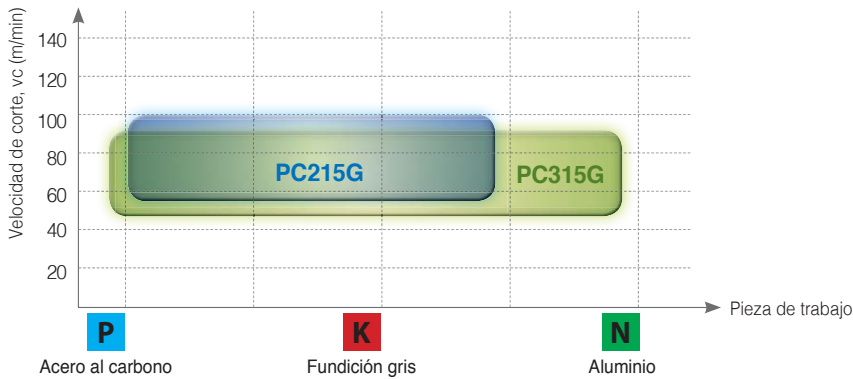
##### Carga de corte

- **Pieza de trabajo** SM45C
- **Condiciones de corte** Diámetro del taladro. (m) = Ø6.0, vc (m/min) = 70  
fn (mm/rev) = 0.12, ap (mm) = 60, con refrigerante
- **Herramientas** MLD0600N-20P



## Área de aplicación

- **PC215G** – excelente rendimiento en el mecanizado de fundición y acero aleado a alta velocidad
- **PC315G** – grado universal excelente para el mecanizado de acero al carbono, hierro fundido, etc. a una velocidad de corte media a baja

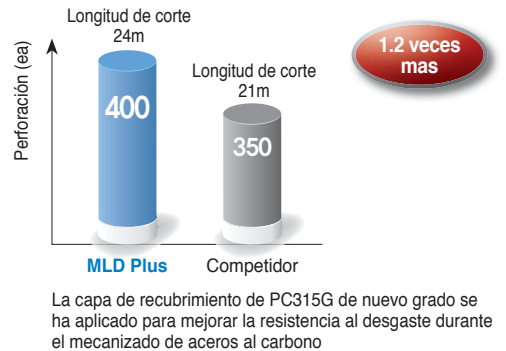


## Ejemplos de aplicación

- **Uso** parte del automóvil
- **Pieza de trabajo** SM45C
- **Condiciones de corte** vc (m/min) = 70, fn (mm/rev) = 0.12, ap (mm) = 60, refrigerante interior
- **Herramientas** MLD0400N-20P (PC315G)



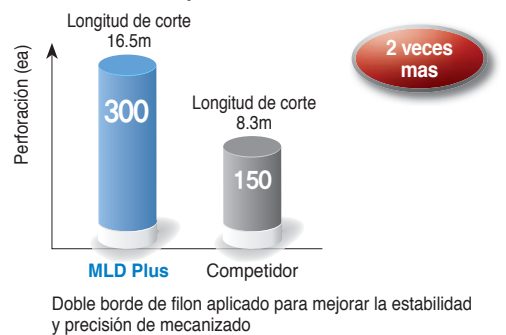
### Resultado de la prueba



- **Uso** parte del automóvil
- **Pieza de trabajo** SCM440H
- **Condiciones de corte** vc (m/min) = 70, fn (mm/rev) = 0.12, ap (mm) = 55, refrigerante interior
- **Herramientas** MLD0507N-15P (PC315G)



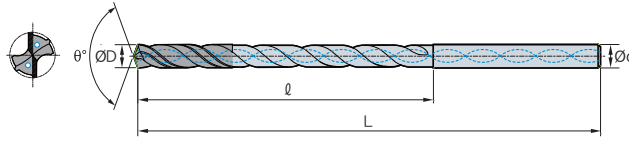
### Resultado de la prueba



## Condiciones de corte recomendadas

| Material |                             |                                     |             | Grado  | vc (m/min)    | Dimensiones (L/D) = 10D~25D                            |            |           |
|----------|-----------------------------|-------------------------------------|-------------|--------|---------------|--|------------|-----------|
| ISO      | Materiales pieza de trabajo | Dureza (HB)                         | Recomendado |        |               | Avance (mm/rev) Dependiendo del Diam. de la broca (mm) |            |           |
|          |                             |                                     |             |        | Ø3.0~Ø5.0     | Ø5.1~Ø8.0  | Ø8.1~Ø10.0 |           |
| P        | Acero al carbono            | Acero con bajo contenido de carbono | 80~120      | PC315G | 80 (60~90)    | 0.10~0.15  | 0.15~0.20  | 0.20~0.25 |
|          |                             | Acero con alto contenido de carbono | 180~280     | PC315G | 70 (60~80)    | 0.10~0.15  | 0.15~0.20  | 0.20~0.25 |
|          | Acero aleado                | Acero aleado baja aleación          | 140~260     | PC215G | 80 (60~90)    | 0.10~0.15  | 0.12~0.17  | 0.15~0.20 |
|          |                             | Acero aleado alta aleación          | 50~260      | PC215G | 70 (60~80)    | 0.08~0.15  | 0.10~0.15  | 0.15~0.20 |
| K        | Fundición                   | Fundición gris                      | 150~230     | PC215G | 80 (60~100)   | 0.10~0.20  | 0.15~0.20  | 0.15~0.20 |
|          |                             | Fundición dúctil                    | 160~260     | PC215G | 70 (60~80)    | 0.10~0.20  | 0.15~0.20  | 0.15~0.20 |
| N        | Aluminio                    | Aleación de aluminio                | 30~150      | FG2    | 120 (100~150) | 0.12~0.17  | 0.15~0.20  | 0.20~0.25 |
|          | Cobre                       | Aleación de cobre                   | 150~160     | FG2    | 120 (100~150) | 0.12~0.17  | 0.15~0.20  | 0.20~0.25 |

## MLD-□□(P/K/N)



| Terminología                      | P                | K              | N                   |
|-----------------------------------|------------------|----------------|---------------------|
| Grado                             | PC215G<br>PC315G |                | FG2                 |
| Tolerancia (diámetro del taladro) | h7               |                |                     |
| Tolerancia (vástago Dia.)         | h6               |                |                     |
| Ángulo de punto                   | 135°             |                |                     |
| Ángulo de giro                    | 30°              |                |                     |
| Angostamiento                     | Tipo X           |                |                     |
| Refrigerante                      | través           |                |                     |
|                                   | Acero            | Hierro fundido | Metales no ferrosos |

(mm)

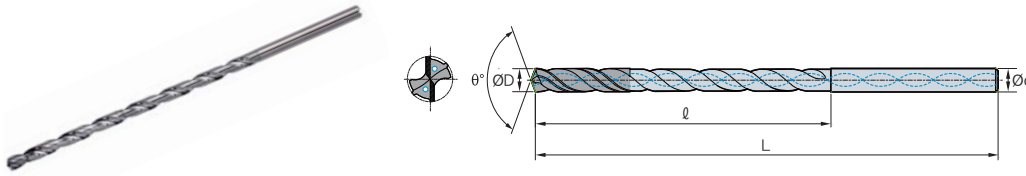
| Código            | ØD  | Ød  | 10P,K,N |     | 15P,K,N |     | 20P,K,N |     | 25P,K,N |     |
|-------------------|-----|-----|---------|-----|---------|-----|---------|-----|---------|-----|
|                   |     |     | ℓ       | L   | ℓ       | L   | ℓ       | L   | ℓ       | L   |
| MLD 0300N-□□P,K,N | 3.0 | 3.0 | 40      | 90  | 55      | 105 | 70      | 120 | -       | -   |
| 0310N-□□P,K,N     | 3.1 | 4.0 | 45      | 100 | 60      | 125 | 80      | 140 | -       | -   |
| 0320N-□□P,K,N     | 3.2 | 4.0 | 45      | 100 | 60      | 125 | 80      | 140 | -       | -   |
| 0330N-□□P,K,N     | 3.3 | 4.0 | 45      | 100 | 60      | 125 | 80      | 140 | -       | -   |
| 0340N-□□P,K,N     | 3.4 | 4.0 | 50      | 100 | 65      | 125 | 85      | 140 | -       | -   |
| 0350N-□□P,K,N     | 3.5 | 4.0 | 50      | 100 | 65      | 125 | 85      | 140 | -       | -   |
| 0360N-□□P,K,N     | 3.6 | 4.0 | 50      | 100 | 65      | 125 | 85      | 140 | -       | -   |
| 0370N-□□P,K,N     | 3.7 | 4.0 | 50      | 100 | 65      | 125 | 85      | 140 | -       | -   |
| 0380N-□□P,K,N     | 3.8 | 4.0 | 50      | 100 | 75      | 125 | 90      | 140 | -       | -   |
| 0390N-□□P,K,N     | 3.9 | 4.0 | 50      | 100 | 75      | 125 | 90      | 140 | -       | -   |
| 0400N-□□P,K,N     | 4.0 | 4.0 | 50      | 100 | 75      | 125 | 90      | 140 | 115     | 165 |
| 0410N-□□P,K,N     | 4.1 | 5.0 | 55      | 115 | 75      | 140 | 100     | 165 | 120     | 190 |
| 0420N-□□P,K,N     | 4.2 | 5.0 | 55      | 115 | 75      | 140 | 100     | 165 | 120     | 190 |
| 0430N-□□P,K,N     | 4.3 | 5.0 | 60      | 115 | 85      | 140 | 110     | 165 | 135     | 190 |
| 0440N-□□P,K,N     | 4.4 | 5.0 | 60      | 115 | 85      | 140 | 110     | 165 | 135     | 190 |
| 0450N-□□P,K,N     | 4.5 | 5.0 | 60      | 115 | 85      | 140 | 110     | 165 | 135     | 190 |
| 0460N-□□P,K,N     | 4.6 | 5.0 | 60      | 115 | 85      | 140 | 110     | 165 | 135     | 190 |
| 0470N-□□P,K,N     | 4.7 | 5.0 | 60      | 115 | 85      | 140 | 110     | 165 | 135     | 190 |
| 0480N-□□P,K,N     | 4.8 | 5.0 | 65      | 115 | 90      | 140 | 115     | 165 | 140     | 190 |
| 0490N-□□P,K,N     | 4.9 | 5.0 | 65      | 115 | 90      | 140 | 115     | 165 | 140     | 190 |



# MLD-□□(P/K/N)

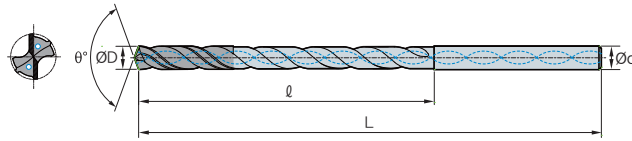
| Terminología                      | P                | K | N   |
|-----------------------------------|------------------|---|-----|
| Grado                             | PC215G<br>PC315G |   | FG2 |
| Tolerancia (diámetro del taladro) | h7               |   |     |
| Tolerancia (vástago Dia.)         | h6               |   |     |
| Ángulo de punto                   | 135°             |   |     |
| Ángulo de giro                    | 30°              |   |     |
| Angostamiento                     | Tipo X           |   |     |
| Refrigerante                      | través           |   |     |

■ Acero ■ Hierro fundido ■ Metales no ferrosos



| Código     | ØD            | Ød  | 10P,K,N |    | 15P,K,N |     | 20P,K,N |     | 25P,K,N |     |     |
|------------|---------------|-----|---------|----|---------|-----|---------|-----|---------|-----|-----|
|            |               |     | ℓ       | L  | ℓ       | L   | ℓ       | L   | ℓ       | L   |     |
|            |               |     | (mm)    |    |         |     |         |     |         |     |     |
| <b>MLD</b> | 0500N-□□P,K,N | 5.0 | 5.0     | 65 | 115     | 90  | 140     | 115 | 165     | 140 | 190 |
|            | 0510N-□□P,K,N | 5.1 | 6.0     | 70 | 128     | 95  | 160     | 120 | 190     | 150 | 220 |
|            | 0520N-□□P,K,N | 5.2 | 6.0     | 70 | 128     | 95  | 160     | 120 | 190     | 150 | 220 |
|            | 0530N-□□P,K,N | 5.3 | 6.0     | 70 | 128     | 95  | 160     | 120 | 190     | 150 | 220 |
|            | 0540N-□□P,K,N | 5.4 | 6.0     | 78 | 128     | 110 | 160     | 140 | 190     | 170 | 220 |
|            | 0550N-□□P,K,N | 5.5 | 6.0     | 78 | 128     | 110 | 160     | 140 | 190     | 170 | 220 |
|            | 0560N-□□P,K,N | 5.6 | 6.0     | 78 | 128     | 110 | 160     | 140 | 190     | 170 | 220 |
|            | 0570N-□□P,K,N | 5.7 | 6.0     | 78 | 128     | 110 | 160     | 140 | 190     | 170 | 220 |
|            | 0580N-□□P,K,N | 5.8 | 6.0     | 78 | 128     | 110 | 160     | 140 | 190     | 170 | 220 |
|            | 0590N-□□P,K,N | 5.9 | 6.0     | 78 | 128     | 110 | 160     | 140 | 190     | 170 | 220 |
|            | 0600N-□□P,K,N | 6.0 | 6.0     | 78 | 128     | 110 | 160     | 140 | 190     | 170 | 220 |
|            | 0610N-□□P,K,N | 6.1 | 7.0     | 87 | 140     | 120 | 175     | 155 | 210     | 190 | 250 |
|            | 0620N-□□P,K,N | 6.2 | 7.0     | 87 | 140     | 120 | 175     | 155 | 210     | 190 | 250 |
|            | 0630N-□□P,K,N | 6.3 | 7.0     | 87 | 140     | 120 | 175     | 155 | 210     | 190 | 250 |
|            | 0640N-□□P,K,N | 6.4 | 7.0     | 87 | 140     | 120 | 175     | 155 | 210     | 190 | 250 |
|            | 0650N-□□P,K,N | 6.5 | 7.0     | 87 | 140     | 120 | 175     | 155 | 210     | 190 | 250 |
|            | 0660N-□□P,K,N | 6.6 | 7.0     | 87 | 140     | 120 | 175     | 155 | 210     | 190 | 250 |
|            | 0670N-□□P,K,N | 6.7 | 7.0     | 87 | 140     | 120 | 175     | 155 | 210     | 190 | 250 |
|            | 0680N-□□P,K,N | 6.8 | 7.0     | 90 | 140     | 125 | 175     | 160 | 210     | 200 | 250 |
|            | 0690N-□□P,K,N | 6.9 | 7.0     | 90 | 140     | 125 | 175     | 160 | 210     | 200 | 250 |

## MLD-□□(P/K/N)



| Terminología                      | P      | K              | N                   |
|-----------------------------------|--------|----------------|---------------------|
| Grado                             | PC215G |                | FG2                 |
|                                   | PC315G |                |                     |
| Tolerancia (diámetro del taladro) | h7     |                |                     |
| Tolerancia (vástago Dia.)         | h6     |                |                     |
| Ángulo de punto                   | 135°   |                |                     |
| Ángulo de giro                    | 30°    |                |                     |
| Angostamiento                     | Tipo X |                |                     |
| Refrigerante                      | través |                |                     |
|                                   | Acero  | Hierro fundido | Metales no ferrosos |

(mm)

| Código            | ØD   | Ød   | 10P,K,N |     | 15P,K,N |     | 20P,K,N |     | 25P,K,N |     |
|-------------------|------|------|---------|-----|---------|-----|---------|-----|---------|-----|
|                   |      |      | ℓ       | L   | ℓ       | L   | ℓ       | L   | ℓ       | L   |
| MLD 0700N-□□P,K,N | 7.0  | 7.0  | 90      | 140 | 125     | 175 | 160     | 210 | 200     | 250 |
| 0710N-□□P,K,N     | 7.1  | 8.0  | 100     | 155 | 135     | 195 | 170     | 230 | -       | -   |
| 0720N-□□P,K,N     | 7.2  | 8.0  | 100     | 155 | 135     | 195 | 170     | 230 | -       | -   |
| 0730N-□□P,K,N     | 7.3  | 8.0  | 100     | 155 | 135     | 195 | 170     | 230 | -       | -   |
| 0740N-□□P,K,N     | 7.4  | 8.0  | 100     | 155 | 135     | 195 | 170     | 230 | -       | -   |
| 0750N-□□P,K,N     | 7.5  | 8.0  | 100     | 155 | 135     | 195 | 170     | 230 | -       | -   |
| 0760N-□□P,K,N     | 7.6  | 8.0  | 105     | 155 | 145     | 195 | 180     | 230 | -       | -   |
| 0770N-□□P,K,N     | 7.7  | 8.0  | 105     | 155 | 145     | 195 | 180     | 230 | -       | -   |
| 0780N-□□P,K,N     | 7.8  | 8.0  | 105     | 155 | 145     | 195 | 180     | 230 | -       | -   |
| 0790N-□□P,K,N     | 7.9  | 8.0  | 105     | 155 | 145     | 195 | 180     | 230 | -       | -   |
| 0800N-□□P,K,N     | 8.0  | 8.0  | 105     | 155 | 145     | 195 | 180     | 230 | -       | -   |
| 0810N-□□P,K,N     | 8.1  | 9.0  | 110     | 165 | 155     | 210 | 195     | 260 | -       | -   |
| 0820N-□□P,K,N     | 8.2  | 9.0  | 110     | 165 | 155     | 210 | 195     | 260 | -       | -   |
| 0830N-□□P,K,N     | 8.3  | 9.0  | 110     | 165 | 155     | 210 | 195     | 260 | -       | -   |
| 0840N-□□P,K,N     | 8.4  | 9.0  | 110     | 165 | 155     | 210 | 195     | 260 | -       | -   |
| 0850N-□□P,K,N     | 8.5  | 9.0  | 110     | 165 | 155     | 210 | 195     | 260 | -       | -   |
| 0860N-□□P,K,N     | 8.6  | 9.0  | 115     | 165 | 160     | 210 | 210     | 260 | -       | -   |
| 0870N-□□P,K,N     | 8.7  | 9.0  | 115     | 165 | 160     | 210 | 210     | 260 | -       | -   |
| 0880N-□□P,K,N     | 8.8  | 9.0  | 115     | 165 | 160     | 210 | 210     | 260 | -       | -   |
| 0890N-□□P,K,N     | 8.9  | 9.0  | 115     | 165 | 160     | 210 | 210     | 260 | -       | -   |
| 0900N-□□P,K,N     | 9.0  | 9.0  | 115     | 165 | 160     | 210 | 210     | 260 | -       | -   |
| 0910N-□□P,K,N     | 9.1  | 10.0 | 125     | 190 | 170     | 240 | -       | -   | -       | -   |
| 0920N-□□P,K,N     | 9.2  | 10.0 | 125     | 190 | 170     | 240 | -       | -   | -       | -   |
| 0930N-□□P,K,N     | 9.3  | 10.0 | 125     | 190 | 170     | 240 | -       | -   | -       | -   |
| 0940N-□□P,K,N     | 9.4  | 10.0 | 125     | 190 | 170     | 240 | -       | -   | -       | -   |
| 0950N-□□P,K,N     | 9.5  | 10.0 | 125     | 190 | 170     | 240 | -       | -   | -       | -   |
| 0960N-□□P,K,N     | 9.6  | 10.0 | 130     | 190 | 180     | 240 | -       | -   | -       | -   |
| 0970N-□□P,K,N     | 9.7  | 10.0 | 130     | 190 | 180     | 240 | -       | -   | -       | -   |
| 0980N-□□P,K,N     | 9.8  | 10.0 | 130     | 190 | 180     | 240 | -       | -   | -       | -   |
| 0990N-□□P,K,N     | 9.9  | 10.0 | 130     | 190 | 180     | 240 | -       | -   | -       | -   |
| 1000N-□□P,K,N     | 10.0 | 10.0 | 130     | 190 | 180     | 240 | -       | -   | -       | -   |



**Sistema de Codificación Brocas c/Chablán**



Tipo Solida: MSDS  
 Tipo Con Refrigeración Interna: MSDHS

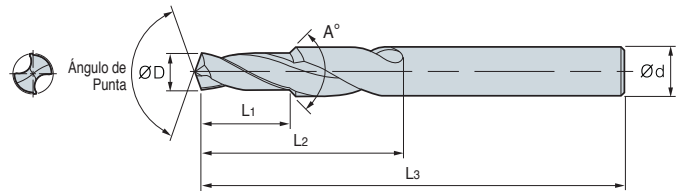
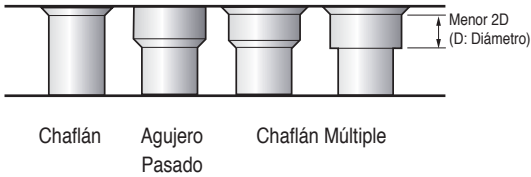
$\varnothing D$

L<sub>1</sub>

L<sub>2</sub>

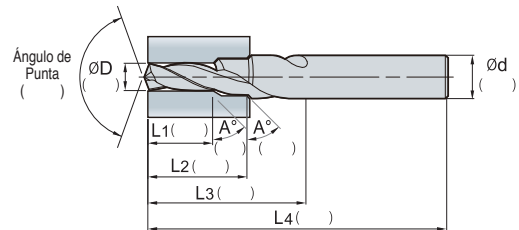
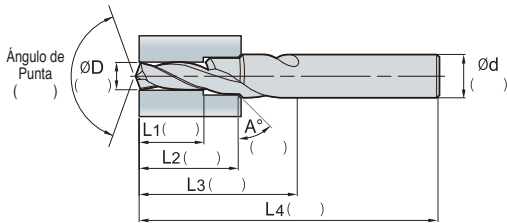
L<sub>3</sub>

( $\varnothing d$ )S



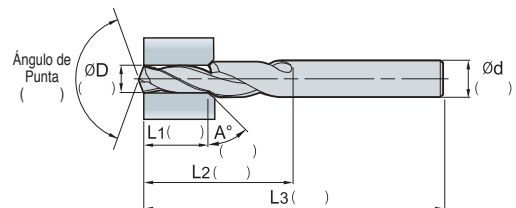
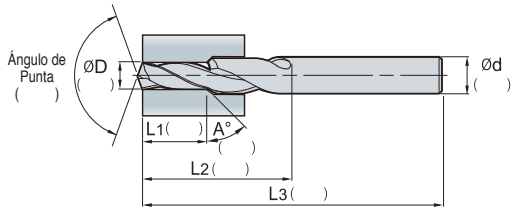
**Chablán Múltiple**  
 (Refrigerante : Interno  Externo )

**Chablán Múltiple**  
 (Refrigerante : Interno  Externo )

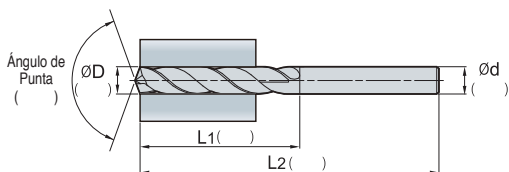


**Agujero Mango Pasado**  
 (Refrigerante : Interno  Externo )

**Chablán**  
 (Refrigerante : Interno  Externo )



**Barrenado**  
 (Refrigerante : Interno  Externo )

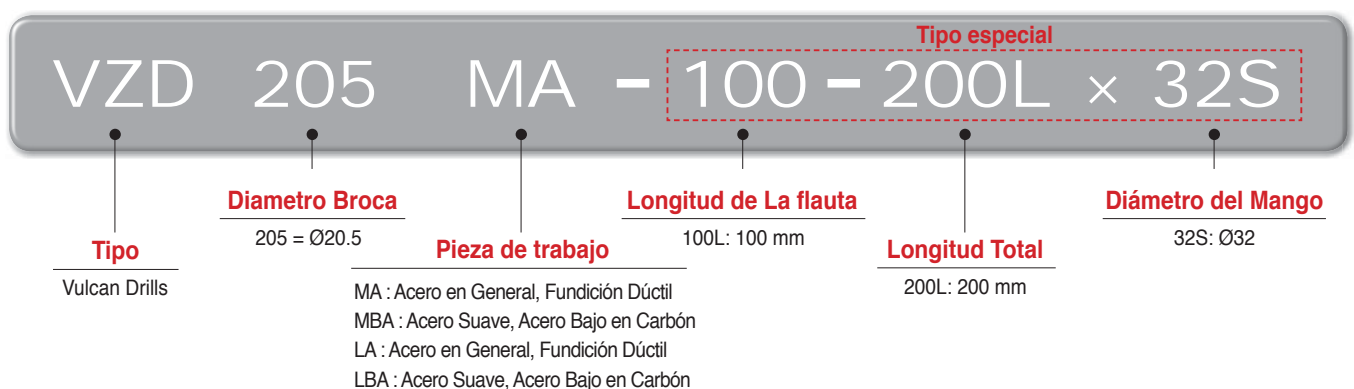


Alto avance y precisión del maquinado por su diseño especial en la punta

## Vulcan Drill

- Disponibles para alto avance y maquinados precisos por su especial diseñada punta
- Las Brocas Vulcan aseguran una larga vida bajo las altas condiciones de velocidad, debido al incremento térmico y resistencia al desgaste. También utiliza una reducida resistencia a la fricción por adoptar un recubrimiento PVD con un exclusivo substrato para ayudar a mantener estas condiciones
- Baja resistencia al corte por el mejor diseño del ángulo de despegue es posible incrementar el avance
- Suave control de virutas debido a el mejoramiento del la rompeviruta
- Rmax: 6~25s, Tolerancia de el barreno: IT8 ~ 10
- Fuerte resistencia al impacto le asegura una larga vida a las herramientas aun bajo un alto nivel de uso

### ➤ Sistema de Codificación



### ➤ Aplicación para vulcan drill

- Aceros, Aleaciones de acero, acero dulce, acero inoxidable, hierro forjado, hierro forjado dúctil, metales no ferrosos, etc

### ➤ Aviso

- **Perforaciones Inadecuadas**
  - Evite la inclinación y el desnivel al iniciar la perforación
  - Reduzca el avance 0.1~0.15mm/rev cuando perfore inclinado y en desnivel
- **Sujeción de pieza de trabajo**
  - En caso de un panel abierto que pudiera rotar por un componente horizontal, brinde primeramente estos materiales para prevenir pandeo en la parte central de la pieza de trabajo para una mejor eficiencia

### ➤ Condiciones de Corte Recomendadas

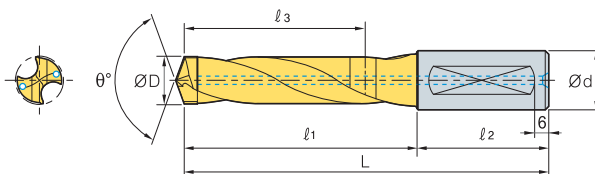
| Para       | Pieza de Trabajo                                 | Dureza      | ~Ø15        |                  | ~Ø20        |                  | ~Ø40        |                  |
|------------|--|-------------|-------------|------------------|-------------|------------------|-------------|------------------|
|            |  |             | vc (m/min)  | fn (mm/rev)      | vc (m/min)  | fn (mm/rev)      | vc (m/min)  | fn (mm/rev)      |
| MA<br>LA   | Acero Suave, Acero en General, Aleación de Acero | Menor HB250 | 40~90 (65)  | 0.15~0.30 (0.20) | 40~90 (65)  | 0.20~0.40 (0.30) | 40~90 (70)  | 0.20~0.45 (0.35) |
|            | Acero en General, Aleación de Acero              | Menor HB320 | 40~90 (60)  | 0.10~0.25 (0.20) | 40~90 (60)  | 0.15~0.35 (0.25) | 40~90 (65)  | 0.20~0.40 (0.30) |
|            | Acero para Moldes                                | HB250       | 40~70 (50)  | 0.10~0.25 (0.20) | 40~70 (50)  | 0.15~0.30 (0.25) | 40~70 (50)  | 0.20~0.35 (0.30) |
|            | Acero Inoxidable                                 | HB250       | 30~50 (45)  | 0.10~0.20 (0.15) | 30~50 (45)  | 0.15~0.25 (0.20) | 30~50 (45)  | 0.20~0.30 (0.25) |
|            | Fundición Dúctil                                 | -           | 50~100 (70) | 0.20~0.35 (0.30) | 50~100 (70) | 0.20~0.40 (0.35) | 50~100 (70) | 0.25~0.50 (0.40) |
| MBA<br>LBA | Acero Suave, Acero en General, Aleación de Acero | Menor HB250 | 40~90 (75)  | 0.20~0.40 (0.30) | 40~90 (75)  | 0.20~0.40 (0.30) | 40~90 (80)  | 0.20~0.45 (0.35) |
|            | Acero en General, Aleación de Acero              | Menor HB320 | 35~80 (55)  | 0.15~0.30 (0.25) | 35~80 (55)  | 0.15~0.30 (0.25) | 40~80 (60)  | 0.15~0.40 (0.30) |





# Vulcan Drill (VZD-MA, MBA)

|                             |                     |      |
|-----------------------------|---------------------|------|
| Tipo                        | MA                  | MBA  |
| Recubrimiento               | PC230F              |      |
| Tolerancia (Diámetro Broca) | h7                  |      |
| Tolerancia (Dam. Mango)     | h7                  |      |
| Angulo punta                | 140°                | 150° |
| Angulo de giro              | 25°                 | 20°  |
| Reduccion                   | X Tipo              |      |
| Refrigerante                | Con sistema interno |      |



|                |                | (mm)      |     |     |                |                |                |
|----------------|----------------|-----------|-----|-----|----------------|----------------|----------------|
|                | Código         | ØD        | Ød  | L   | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> |
| VZD            | 126~135MA, MBA | 12.6~13.5 | 16  | 110 | 62             | 48             | 44             |
|                | 136~145MA, MBA | 13.6~14.5 | 16  | 115 | 67             | 48             | 48             |
|                | 146~155MA, MBA | 14.6~15.5 | 20  | 125 | 75             | 50             | 55             |
|                | 156~165MA, MBA | 15.6~16.5 | 20  | 130 | 80             | 50             | 59             |
|                | 166~175MA, MBA | 16.6~17.5 | 20  | 135 | 85             | 50             | 63             |
|                | 176~185MA, MBA | 17.6~18.5 | 20  | 140 | 90             | 50             | 66             |
|                | 186~195MA, MBA | 18.6~19.5 | 25  | 155 | 99             | 56             | 74             |
|                | 196~205MA, MBA | 19.6~20.5 | 25  | 155 | 99             | 56             | 73             |
|                | 206~215MA, MBA | 20.6~21.5 | 25  | 155 | 99             | 56             | 72             |
|                | 216~225MA, MBA | 21.6~22.5 | 25  | 160 | 104            | 56             | 76             |
|                | 226~235MA, MBA | 22.6~23.5 | 25  | 160 | 104            | 56             | 74             |
|                | 236~245MA, MBA | 23.6~24.5 | 32  | 170 | 110            | 60             | 79             |
|                | 246~255MA, MBA | 24.6~25.5 | 32  | 170 | 110            | 60             | 78             |
|                | 256~265MA, MBA | 25.6~26.5 | 32  | 175 | 115            | 60             | 82             |
|                | 266~275MA, MBA | 26.6~27.5 | 32  | 175 | 115            | 60             | 80             |
|                | 276~285MA, MBA | 27.6~28.5 | 32  | 180 | 120            | 60             | 84             |
|                | 286~295MA, MBA | 28.6~29.5 | 32  | 185 | 125            | 60             | 88             |
|                | 296~305MA, MBA | 29.6~30.5 | 32  | 185 | 125            | 60             | 87             |
|                | 306~315MA, MBA | 30.6~31.5 | 40  | 205 | 135            | 70             | 95             |
|                | 316~325MA, MBA | 31.6~32.5 | 40  | 210 | 140            | 70             | 98             |
| 326~335MA, MBA | 32.6~33.5      | 40        | 215 | 145 | 70             | 101            |                |
| 336~345MA, MBA | 33.6~34.5      | 40        | 220 | 150 | 70             | 104            |                |
| 346~355MA, MBA | 34.6~35.5      | 40        | 225 | 155 | 70             | 107            |                |
| 356~365MA, MBA | 35.6~36.5      | 40        | 225 | 155 | 70             | 110            |                |
| 366~375MA, MBA | 36.6~37.5      | 40        | 230 | 160 | 70             | 113            |                |
| 376~385MA, MBA | 37.6~38.5      | 40        | 235 | 165 | 70             | 116            |                |
| 386~395MA, MBA | 38.6~39.5      | 40        | 240 | 170 | 70             | 119            |                |
| 396~405MA, MBA | 39.6~40.5      | 40        | 245 | 175 | 70             | 122            |                |

※ VZD□□□MA: Para acero, hierro forjado dúctil

MBA: Para aceros dulces, acero bajo en carbón

※ Código de orden especial: VZD□□□M□ x Largo de Flauta - largo total L

Ex.1) MA Tipo, diámetros maquinado: Ø18.6 mm, Largo de Flauta: 110 mm, largo total: 200 mm

--- VZD186LA x 110-200L

Ex.2) MA Tipo, diámetros maquinado: Ø18.63, Largo de Flauta: 110 mm, largo total: 200 mm

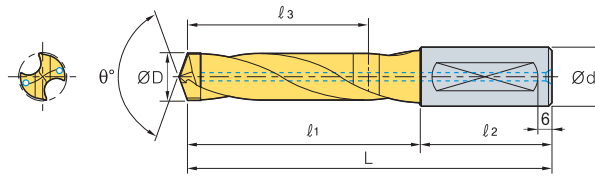
--- VZD1863LA x 110-200L

Ex.3) MA Tipo, diámetros maquinado: Ø18.6, Estándar

--- VZD186LA

# Vulcan Drill (VZD-LA, LBA)

|                             |                     |      |
|-----------------------------|---------------------|------|
| Tipo                        | LA                  | LBA  |
| Recubrimiento               | PC230F              |      |
| Tolerancia (Diámetro Broca) | h7                  |      |
| Tolerancia (Dam. Mango)     | h7                  |      |
| Angulo punta                | 140°                | 150° |
| Angulo de giro              | 25°                 | 20°  |
| Reduccion                   | X Tipo              |      |
| Refrigerante                | Con sistema interno |      |



(mm)

| Código                    | ØD        | Ød | L   | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> |
|---------------------------|-----------|----|-----|----------------|----------------|----------------|
| <b>VZD</b> 126~135LA, LBA | 12.6~13.5 | 16 | 140 | 92             | 48             | 74             |
| 136~145LA, LBA            | 13.6~14.5 | 16 | 145 | 97             | 48             | 78             |
| 146~155LA, LBA            | 14.6~15.5 | 20 | 155 | 105            | 50             | 85             |
| 156~165LA, LBA            | 15.6~16.5 | 20 | 165 | 115            | 50             | 94             |
| 166~175LA, LBA            | 16.6~17.5 | 20 | 170 | 120            | 50             | 98             |
| 176~185LA, LBA            | 17.6~18.5 | 20 | 175 | 125            | 50             | 101            |
| 186~195LA, LBA            | 18.6~19.5 | 25 | 190 | 134            | 56             | 109            |
| 196~205LA, LBA            | 19.6~20.5 | 25 | 195 | 139            | 56             | 113            |
| 206~215LA, LBA            | 20.6~21.5 | 25 | 195 | 139            | 56             | 112            |
| 216~225LA, LBA            | 21.6~22.5 | 25 | 200 | 144            | 56             | 116            |
| 226~235LA, LBA            | 22.6~23.5 | 25 | 210 | 154            | 56             | 124            |
| 236~245LA, LBA            | 23.6~24.5 | 32 | 220 | 160            | 60             | 129            |
| 246~255LA, LBA            | 24.6~25.5 | 32 | 225 | 165            | 60             | 133            |
| 256~265LA, LBA            | 25.6~26.5 | 32 | 230 | 170            | 60             | 137            |
| 266~275LA, LBA            | 26.6~27.5 | 32 | 235 | 175            | 60             | 141            |
| 276~285LA, LBA            | 27.6~28.5 | 32 | 240 | 180            | 60             | 144            |
| 286~295LA, LBA            | 28.6~29.5 | 32 | 245 | 185            | 60             | 148            |
| 296~305LA, LBA            | 29.6~30.5 | 32 | 255 | 195            | 60             | 157            |
| 306~315LA, LBA            | 30.6~31.5 | 40 | 275 | 205            | 70             | 166            |
| 316~325LA, LBA            | 31.6~32.5 | 40 | 280 | 210            | 70             | 172            |
| 326~335LA, LBA            | 32.6~33.5 | 40 | 280 | 215            | 70             | 173            |
| 336~345LA, LBA            | 33.6~34.5 | 40 | 290 | 220            | 70             | 177            |
| 346~355LA, LBA            | 34.6~35.5 | 40 | 295 | 225            | 70             | 181            |
| 356~365LA, LBA            | 35.6~36.5 | 40 | 300 | 230            | 70             | 183            |
| 366~375LA, LBA            | 36.6~37.5 | 40 | 305 | 235            | 70             | 188            |
| 376~385LA, LBA            | 37.6~38.5 | 40 | 315 | 245            | 70             | 193            |
| 386~395LA, LBA            | 38.6~39.5 | 40 | 320 | 250            | 70             | 198            |
| 396~405LA, LBA            | 39.6~40.5 | 40 | 325 | 255            | 70             | 203            |

※ VZD□□□LA: Para acero, hierro forjado dúctil

LBA: Para aceros dulces, acero bajo en carbón

※ Código de orden especial: VZD□□□M□ x Largo de Flauta - largo total L

Ex.1) LA Tipo, diámetros maquinado: Ø18.6 mm, Largo de Flauta: 110 mm, largo total: 200 mm

--- VZD186LA x 110-200L

Ex.2) LA Tipo, diámetros maquinado: Ø18.63, Largo de Flauta: 110 mm, largo total: 200 mm

--- VZD1863LA x 110-200L

Ex.3) LA Tipo, diámetros maquinado: Ø18.6, Estándar

--- VZD186LA



Broca enteriza económica

# ESD Plus **new**

## Eco Solid Drill Plus (Broca enteriza económica)

- Excelente relación calidad-precio: excelente rendimiento y eficiencia de gasto.
- Resistencia al desgaste mejorada: buena resistencia gracias al recubrimiento de nuestra nueva calidad PC325U

### ➤ Sistema de Codificación

Tipo especial

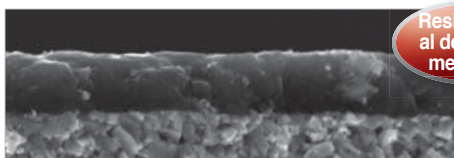
ESDP    040    -    5    P    -    100L    -    5S

|                             |                                 |                                      |  |                       |                             |
|-----------------------------|---------------------------------|--------------------------------------|--|-----------------------|-----------------------------|
| <b>Eco Solid Drill Plus</b> | <b>Diámetro perforación(ØD)</b> | <b>Tipo estándar</b>                 | <b>Área de mecanizado</b>  | <b>Longitud total</b> | <b>Diámetro del vástago</b> |
|                             | 040: Ø4.0                       | Relación de largo (L/D)<br>3D, 5D    | P: Acero al carbono,<br>Acero aleado<br>M: Acero inoxidable<br>K: Hierro fundido<br>N: Aluminio, aleación de cobre | 100L: 100 mm          | 5S: Ø5                      |
|                             |                                 | <b>Tipo especial</b>                 |  |                       |                             |
|                             |                                 | Longitud de la flauta<br>100: 100 mm |  |                       |                             |

### ➤ Características

#### Nuevo grado (PC325U)

- Recubrimiento lubricativo que mejora la resistencia al filo de aportación en velocidades medias y altas
- Mejora la resistencia al desgaste en mecanizado de acero al carbono



PC325U

Resistencia al desgaste mejorada

#### Superficie de la capa de recubrimiento

- Excelente resistencia a la aportación o soldadura de material en el filo de corte y baja carga de corte
- Reduce la fricción en los filos de corte y los canales



PC325U

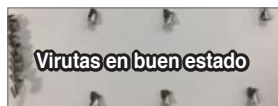
Lubricación mejorada



Competidor

#### Control de viruta

- **pieza de trabajo** SCM440
- **Condiciones de corte** vc (m/min) = 40  
fn (mm/rev) = 0.1, ap (mm) = 30, wet
- **Herramientas** ESDP060-5P



ESD Plus



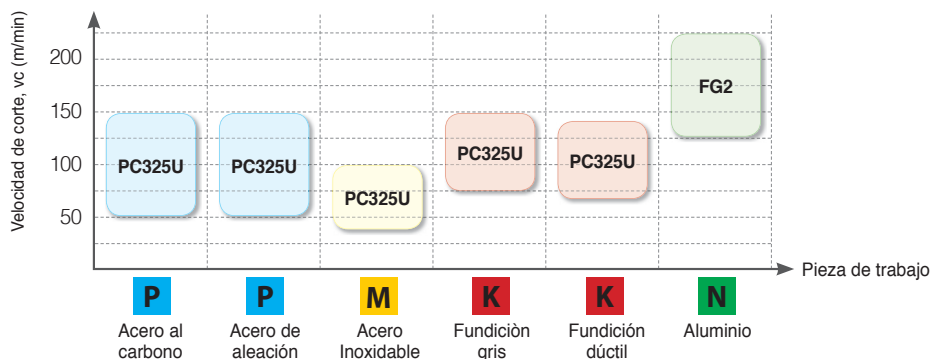
Competidor

#### Forma de los canales

- Evacuación de viruta mejorada gracias a la anchura de los canales



### ➤ Área de aplicación

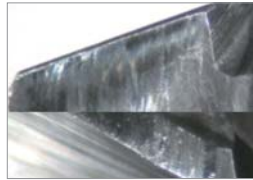


## Evaluación de desempeño

- **Pieza de trabajo** Aleación de Acero (SCM440)
- **Condiciones de corte**  $vc$  (m/min) = 95,  $fn$  (mm/rev) = 0.12  
 $ap$  (mm) = 20, con refrigeración externa
- **Herramientas** ESDP060-5P

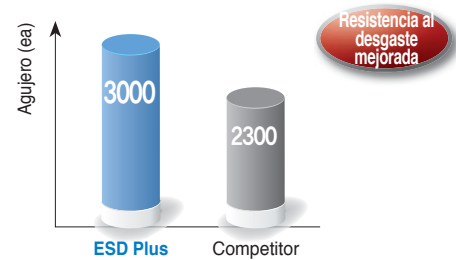


ESD Plus



Competitor

### Resultado de la prueba



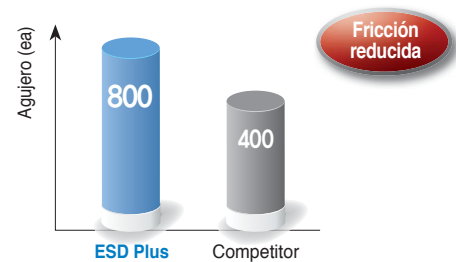
Recubrimiento de alta lubricación del grado PC325U maximiza la resistencia al desgaste

## Cadena de eslabones de arbusto

- **Pieza de trabajo** Acero al Carbon (SM45C)
- **Condiciones de corte**  $vc$  (m/min) = 50,  $fn$  (mm/rev) = 0.08  
 $ap$  (mm) = 23.5, refrigeración externa
- **Herramientas** ESDP090-5P



### Resultado de la prueba



Superficie del recubrimiento tratada especialmente, minimiza la resistencia a la fricción

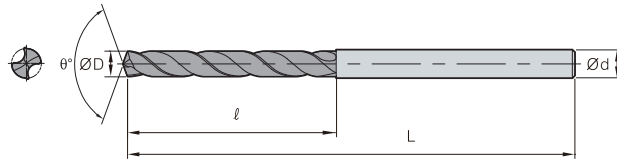
## Condiciones de Corte Recomendadas

| Material |                             |  | Grado    | vc (m/min) | Dimensiones  |           |            |             |             |           |
|----------|-----------------------------|--|----------|------------|--|-----------|------------|-------------|-------------|-----------|
| ISO      | Materiales pieza de trabajo | HB                                       |          |            | Avance (mm/rev) Dependiendo del Diam. de la broca (mm) |           |            |             |             |           |
|          |                             |  |          |            | Ø2.5~Ø4.0  | Ø4.1~Ø8.0 | Ø8.1~Ø12.0 | Ø12.1~Ø16.0 | Ø16.1~Ø20.0 |           |
| P        | Acero al Carbon             | Acero al carbono bajo contenido          | 80~120   | PC325U     | 72(64~120)   | 0.08~0.12 | 0.13~0.19  | 0.16~0.24   | 0.20~0.29   | 0.24~0.32 |
|          |                             | Acero al carbono alto contenido          | Over 250 | PC325U     | 40(32~64)  | 0.06~0.16 | 0.06~0.16  | 0.08~0.20   | 0.12~0.20   | 0.12~0.24 |
|          | Aleación de Acero           | Acero aleado de baja aleación            | 140~260  | PC325U     | 72(64~120)   | 0.08~0.12 | 0.13~0.19  | 0.16~0.24   | 0.20~0.29   | 0.24~0.32 |
|          |                             | Acero aleado de baja aleación endurecido | 200~400  | PC325U     | 48(40~80)  | 0.08~0.12 | 0.13~0.19  | 0.16~0.24   | 0.20~0.29   | 0.24~0.32 |
|          |                             | Acero aleado de alta aleación            | 50~260   | PC325U     | 40(32~64)  | 0.06~0.16 | 0.06~0.16  | 0.08~0.20   | 0.12~0.20   | 0.12~0.24 |
|          |                             | Acero aleado de alta aleación endurecido | Over 250 | PC325U     | 40(32~64)  | 0.06~0.16 | 0.06~0.16  | 0.08~0.20   | 0.12~0.20   | 0.12~0.24 |
| M        | Acero Inoxidable            | Austenítico                              | 135~275  | PC325U     | 36(20~64)  | 0.04~0.16 | 0.04~0.16  | 0.08~0.20   | 0.08~0.20   | 0.12~0.24 |
|          |                             | Ferítico y martensítico                  | 135~275  | PC325U     | 40(24~64)  | 0.04~0.16 | 0.04~0.16  | 0.08~0.20   | 0.08~0.20   | 0.12~0.24 |
| K        | Fundición                   | Gris                                     | 150~230  | PC325U     | 80(64~120)   | 0.08~0.12 | 0.13~0.19  | 0.16~0.24   | 0.20~0.29   | 0.24~0.32 |
|          |                             | Dúctil                                   | 160~260  | PC325U     | 72(56~112)   | 0.08~0.12 | 0.13~0.19  | 0.16~0.24   | 0.20~0.29   | 0.24~0.32 |
| N        | Aluminio                    | Aleaciones de aluminio                   | 30~150   | FG2        | 120(100~176)   | 0.19~0.30 | 0.30~0.42  | 0.42~0.60   | 0.49~0.68   | 0.54~0.78 |
|          | Aleación de Cobre           | Aleación de cobre                        | 150~160  | FG2        | 120(100~176)   | 0.08~0.12 | 0.13~0.19  | 0.16~0.24   | 0.20~0.29   | 0.24~0.32 |

\* Las condiciones de corte anteriores son para el caso de una profundidad de corte inferior a 5D y aplicación de sistema de refrigerante interno



# ESDP-□P



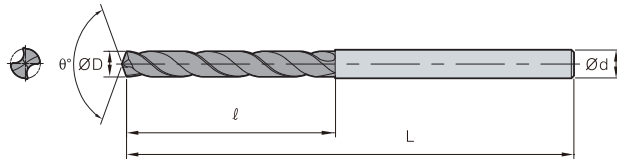
| Terminología                      | P       | M    | K   | N |
|-----------------------------------|---------|------|-----|---|
| Grado                             | PC325U  |      | FG2 |   |
| Tolerancia (diámetro del taladro) | h7      |      |     |   |
| Tolerancia (vástago Dia.)         | h6      |      |     |   |
| Ángulo de punta                   | 140°    | 135° |     |   |
| Ángulo de giro                    | 30°     |      |     |   |
| Angostamiento                     | tipo X  |      |     |   |
| Refrigerante                      | Externo |      |     |   |

■ Acero ■ Acero inoxidable ■ Hierro fundido ■ Metales no ferrosos

| Código                | ØD  | Ød | 3P |    | 5P |    | 7P |    |
|-----------------------|-----|----|----|----|----|----|----|----|
|                       |     |    | ℓ  | L  | ℓ  | L  | ℓ  | L  |
| <b>ESDP</b> 010 - □ P | 1.0 | 3  | 5  | 45 | 8  | 45 | 12 | 60 |
| 011 - □ P             | 1.1 | 3  | 6  | 45 | 9  | 45 | 12 | 60 |
| 012 - □ P             | 1.2 | 3  | 6  | 45 | 10 | 45 | 12 | 60 |
| 013 - □ P             | 1.3 | 3  | 7  | 45 | 10 | 45 | 15 | 60 |
| 014 - □ P             | 1.4 | 3  | 7  | 45 | 11 | 45 | 15 | 60 |
| 015 - □ P             | 1.5 | 3  | 7  | 45 | 11 | 45 | 15 | 60 |
| 016 - □ P             | 1.6 | 3  | 8  | 45 | 12 | 45 | 20 | 60 |
| 017 - □ P             | 1.7 | 3  | 8  | 45 | 12 | 45 | 20 | 60 |
| 018 - □ P             | 1.8 | 3  | 9  | 45 | 13 | 45 | 20 | 60 |
| 019 - □ P             | 1.9 | 3  | 9  | 45 | 14 | 45 | 20 | 60 |
| 020 - □ P             | 2.0 | 3  | 10 | 50 | 18 | 50 | 25 | 66 |
| 021 - □ P             | 2.1 | 3  | 10 | 50 | 18 | 50 | 25 | 66 |
| 022 - □ P             | 2.2 | 3  | 12 | 50 | 18 | 50 | 25 | 66 |
| 023 - □ P             | 2.3 | 3  | 12 | 50 | 18 | 50 | 25 | 66 |
| 024 - □ P             | 2.4 | 3  | 12 | 50 | 18 | 50 | 30 | 66 |
| 025 - □ P             | 2.5 | 3  | 12 | 50 | 18 | 50 | 30 | 66 |
| 026 - □ P             | 2.6 | 3  | 12 | 50 | 18 | 50 | 30 | 66 |
| 027 - □ P             | 2.7 | 3  | 15 | 50 | 18 | 50 | 30 | 66 |
| 028 - □ P             | 2.8 | 3  | 15 | 50 | 18 | 50 | 30 | 66 |
| 029 - □ P             | 2.9 | 3  | 15 | 50 | 18 | 50 | 30 | 66 |
| 030 - □ P             | 3.0 | 3  | 16 | 55 | 20 | 55 | 45 | 80 |
| 031 - □ P             | 3.1 | 4  | 16 | 55 | 20 | 55 | 45 | 80 |
| 032 - □ P             | 3.2 | 4  | 16 | 55 | 20 | 55 | 45 | 80 |
| 033 - □ P             | 3.3 | 4  | 16 | 55 | 20 | 55 | 45 | 80 |
| 034 - □ P             | 3.4 | 4  | 16 | 55 | 20 | 55 | 45 | 80 |
| 035 - □ P             | 3.5 | 4  | 16 | 55 | 20 | 55 | 45 | 80 |
| 036 - □ P             | 3.6 | 4  | 18 | 55 | 25 | 55 | 45 | 80 |
| 037 - □ P             | 3.7 | 4  | 18 | 55 | 25 | 55 | 45 | 80 |
| 038 - □ P             | 3.8 | 4  | 20 | 55 | 25 | 55 | 45 | 80 |
| 039 - □ P             | 3.9 | 4  | 20 | 55 | 25 | 55 | 45 | 80 |
| 040 - □ P             | 4.0 | 4  | 20 | 55 | 25 | 55 | 45 | 80 |
| 041 - □ P             | 4.1 | 5  | 20 | 55 | 25 | 55 | 45 | 80 |
| 042 - □ P             | 4.2 | 5  | 20 | 63 | 33 | 63 | 45 | 80 |
| 043 - □ P             | 4.3 | 5  | 23 | 63 | 33 | 63 | 45 | 80 |
| 044 - □ P             | 4.4 | 5  | 23 | 63 | 33 | 63 | 45 | 80 |
| 045 - □ P             | 4.5 | 5  | 23 | 63 | 33 | 63 | 45 | 80 |
| 046 - □ P             | 4.6 | 5  | 23 | 63 | 33 | 63 | 45 | 80 |
| 047 - □ P             | 4.7 | 5  | 23 | 63 | 33 | 63 | 45 | 80 |
| 048 - □ P             | 4.8 | 5  | 25 | 63 | 33 | 63 | 45 | 80 |
| 049 - □ P             | 4.9 | 5  | 25 | 63 | 33 | 63 | 45 | 80 |
| 050 - □ P             | 5.0 | 5  | 25 | 63 | 33 | 63 | 45 | 80 |

※ Los pedidos anticipados se pueden hacer con anticipación para los artículos que no están en stock

# ESDP-□P



| Terminología                      | P       | M    | K | N   |
|-----------------------------------|---------|------|---|-----|
| Grado                             | PC325U  |      |   | FG2 |
| Tolerancia (diámetro del taladro) | h7      |      |   |     |
| Tolerancia (vástago Dia.)         | h6      |      |   |     |
| Ángulo de punta                   | 140°    | 135° |   |     |
| Ángulo de giro                    | 30°     |      |   |     |
| Angostamiento                     | tipo X  |      |   |     |
| Refrigerante                      | Externo |      |   |     |

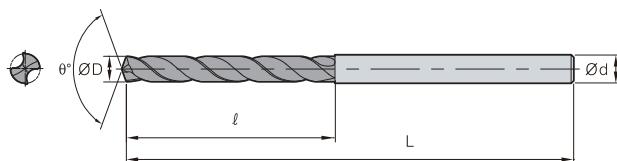
■ Acero ■ Acero inoxidable ■ Hierro fundido ■ Metales no ferrosos

(mm)

| Código                | ØD  | Ød | 3P |    | 5P |    | 7P |    |
|-----------------------|-----|----|----|----|----|----|----|----|
|                       |     |    | ℓ  | L  | ℓ  | L  | ℓ  | L  |
| <b>ESDP</b> 051 - □ P | 5.1 | 6  | 25 | 63 | 33 | 63 | 45 | 80 |
| 052 - □ P             | 5.2 | 6  | 28 | 66 | 36 | 66 | 50 | 83 |
| 053 - □ P             | 5.3 | 6  | 28 | 66 | 36 | 66 | 50 | 83 |
| 054 - □ P             | 5.4 | 6  | 28 | 66 | 36 | 66 | 50 | 83 |
| 055 - □ P             | 5.5 | 6  | 28 | 66 | 36 | 66 | 50 | 83 |
| 056 - □ P             | 5.6 | 6  | 28 | 66 | 36 | 66 | 50 | 83 |
| 057 - □ P             | 5.7 | 6  | 28 | 66 | 36 | 66 | 50 | 83 |
| 058 - □ P             | 5.8 | 6  | 28 | 66 | 36 | 66 | 50 | 83 |
| 059 - □ P             | 5.9 | 6  | 28 | 66 | 36 | 66 | 50 | 83 |
| 060 - □ P             | 6.0 | 6  | 30 | 66 | 36 | 66 | 50 | 83 |
| 061 - □ P             | 6.1 | 7  | 30 | 66 | 36 | 66 | 50 | 83 |
| 062 - □ P             | 6.2 | 7  | 32 | 75 | 42 | 75 | 53 | 85 |
| 063 - □ P             | 6.3 | 7  | 32 | 75 | 42 | 75 | 53 | 85 |
| 064 - □ P             | 6.4 | 7  | 32 | 75 | 42 | 75 | 53 | 85 |
| 065 - □ P             | 6.5 | 7  | 32 | 75 | 42 | 75 | 53 | 85 |
| 066 - □ P             | 6.6 | 7  | 32 | 75 | 42 | 75 | 53 | 85 |
| 067 - □ P             | 6.7 | 7  | 32 | 75 | 42 | 75 | 53 | 85 |
| 068 - □ P             | 6.8 | 7  | 32 | 75 | 42 | 75 | 53 | 85 |
| 069 - □ P             | 6.9 | 7  | 32 | 75 | 42 | 75 | 53 | 85 |
| 070 - □ P             | 7.0 | 7  | 32 | 75 | 42 | 75 | 53 | 85 |
| 071 - □ P             | 7.1 | 8  | 32 | 75 | 42 | 75 | 53 | 85 |
| 072 - □ P             | 7.2 | 8  | 36 | 80 | 46 | 80 | 58 | 90 |
| 073 - □ P             | 7.3 | 8  | 36 | 80 | 46 | 80 | 58 | 90 |
| 074 - □ P             | 7.4 | 8  | 36 | 80 | 46 | 80 | 58 | 90 |
| 075 - □ P             | 7.5 | 8  | 36 | 80 | 46 | 80 | 58 | 90 |
| 076 - □ P             | 7.6 | 8  | 36 | 80 | 46 | 80 | 58 | 90 |
| 077 - □ P             | 7.7 | 8  | 36 | 80 | 46 | 80 | 58 | 90 |
| 078 - □ P             | 7.8 | 8  | 36 | 80 | 46 | 80 | 58 | 90 |
| 079 - □ P             | 7.9 | 8  | 36 | 80 | 46 | 80 | 58 | 90 |
| 080 - □ P             | 8.0 | 8  | 36 | 80 | 46 | 80 | 58 | 90 |
| 081 - □ P             | 8.1 | 9  | 36 | 80 | 46 | 80 | 58 | 90 |
| 082 - □ P             | 8.2 | 9  | 38 | 85 | 50 | 85 | 64 | 98 |
| 083 - □ P             | 8.3 | 9  | 38 | 85 | 50 | 85 | 64 | 98 |
| 084 - □ P             | 8.4 | 9  | 38 | 85 | 50 | 85 | 64 | 98 |
| 085 - □ P             | 8.5 | 9  | 38 | 85 | 50 | 85 | 64 | 98 |
| 086 - □ P             | 8.6 | 9  | 40 | 85 | 50 | 85 | 64 | 98 |
| 087 - □ P             | 8.7 | 9  | 40 | 85 | 50 | 85 | 64 | 98 |
| 088 - □ P             | 8.8 | 9  | 40 | 85 | 50 | 85 | 64 | 98 |
| 089 - □ P             | 8.9 | 9  | 40 | 85 | 50 | 85 | 64 | 98 |
| 090 - □ P             | 9.0 | 9  | 40 | 85 | 50 | 85 | 64 | 98 |



# ESDP-□P



| Terminología                      | P       | M | K    | N   |
|-----------------------------------|---------|---|------|-----|
| Grado                             | PC325U  |   |      | FG2 |
| Tolerancia (diámetro del taladro) | h7      |   |      |     |
| Tolerancia (vástago Dia.)         | h6      |   |      |     |
| Ángulo de punta                   | 140°    |   | 135° |     |
| Ángulo de giro                    | 30°     |   |      |     |
| Angostamiento                     | tipo X  |   |      |     |
| Refrigerante                      | Externo |   |      |     |

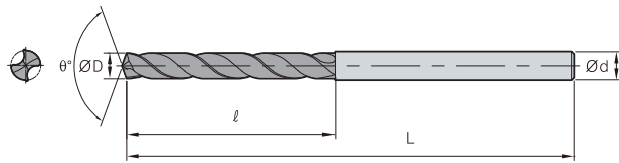
■ Acero ■ Acero inoxidable ■ Hierro fundido ■ Metales no ferrosos

(mm)

| Código                | ØD   | Ød | 3P |    | 5P |     | 7P |     |
|-----------------------|------|----|----|----|----|-----|----|-----|
|                       |      |    | ℓ  | L  | ℓ  | L   | ℓ  | L   |
| <b>ESDP</b> 091 - □ P | 9.1  | 10 | 42 | 85 | 50 | 85  | 64 | 98  |
| 092 - □ P             | 9.2  | 10 | 42 | 90 | 55 | 90  | 68 | 105 |
| 093 - □ P             | 9.3  | 10 | 42 | 90 | 55 | 90  | 68 | 105 |
| 094 - □ P             | 9.4  | 10 | 42 | 90 | 55 | 90  | 68 | 105 |
| 095 - □ P             | 9.5  | 10 | 42 | 90 | 55 | 90  | 68 | 105 |
| 096 - □ P             | 9.6  | 10 | 45 | 90 | 55 | 90  | 68 | 105 |
| 097 - □ P             | 9.7  | 10 | 45 | 90 | 55 | 90  | 68 | 105 |
| 098 - □ P             | 9.8  | 10 | 45 | 90 | 55 | 90  | 68 | 105 |
| 099 - □ P             | 9.9  | 10 | 45 | 90 | 55 | 90  | 68 | 105 |
| 100 - □ P             | 10.0 | 10 | 45 | 90 | 55 | 90  | 68 | 105 |
| 101 - □ P             | 10.1 | 11 | -  | -  | 55 | 90  | 68 | 105 |
| 102 - □ P             | 10.2 | 11 | -  | -  | 57 | 95  | 73 | 110 |
| 103 - □ P             | 10.3 | 11 | -  | -  | 57 | 95  | 73 | 110 |
| 104 - □ P             | 10.4 | 11 | -  | -  | 57 | 95  | 73 | 110 |
| 105 - □ P             | 10.5 | 11 | -  | -  | 57 | 95  | 73 | 110 |
| 106 - □ P             | 10.6 | 11 | -  | -  | 57 | 95  | 73 | 110 |
| 107 - □ P             | 10.7 | 11 | -  | -  | 57 | 95  | 73 | 110 |
| 108 - □ P             | 10.8 | 11 | -  | -  | 57 | 95  | 73 | 110 |
| 109 - □ P             | 10.9 | 11 | -  | -  | 57 | 95  | 73 | 110 |
| 110 - □ P             | 11.0 | 11 | -  | -  | 57 | 95  | 73 | 110 |
| 111 - □ P             | 11.1 | 12 | -  | -  | 57 | 95  | 73 | 110 |
| 112 - □ P             | 11.2 | 12 | -  | -  | 63 | 102 | 80 | 120 |
| 113 - □ P             | 11.3 | 12 | -  | -  | 63 | 102 | 80 | 120 |
| 114 - □ P             | 11.4 | 12 | -  | -  | 63 | 102 | 80 | 120 |
| 115 - □ P             | 11.5 | 12 | -  | -  | 63 | 102 | 80 | 120 |
| 116 - □ P             | 11.6 | 12 | -  | -  | 63 | 102 | 80 | 120 |
| 117 - □ P             | 11.7 | 12 | -  | -  | 63 | 102 | 80 | 120 |
| 118 - □ P             | 11.8 | 12 | -  | -  | 63 | 102 | 80 | 120 |
| 119 - □ P             | 11.9 | 12 | -  | -  | 63 | 102 | 80 | 120 |
| 120 - □ P             | 12.0 | 12 | -  | -  | 63 | 102 | 80 | 120 |
| 121 - □ P             | 12.1 | 13 | -  | -  | 63 | 102 | 80 | 120 |
| 122 - □ P             | 12.2 | 13 | -  | -  | 63 | 102 | 90 | 137 |
| 123 - □ P             | 12.3 | 13 | -  | -  | 63 | 102 | 90 | 137 |
| 124 - □ P             | 12.4 | 13 | -  | -  | 63 | 102 | 90 | 137 |
| 125 - □ P             | 12.5 | 13 | -  | -  | 63 | 102 | 90 | 137 |
| 126 - □ P             | 12.6 | 13 | -  | -  | 63 | 102 | 90 | 137 |
| 127 - □ P             | 12.7 | 13 | -  | -  | 63 | 102 | 90 | 137 |
| 128 - □ P             | 12.8 | 13 | -  | -  | 63 | 102 | 90 | 137 |
| 129 - □ P             | 12.9 | 13 | -  | -  | 63 | 102 | 90 | 137 |
| 130 - □ P             | 13.0 | 13 | -  | -  | 63 | 102 | 90 | 137 |



# ESDP-□P



| Terminología                      | P       | M    | K | N   |
|-----------------------------------|---------|------|---|-----|
| Grado                             | PC325U  |      |   | FG2 |
| Tolerancia (diámetro del taladro) | h7      |      |   |     |
| Tolerancia (vástago Dia.)         | h6      |      |   |     |
| Ángulo de punta                   | 140°    | 135° |   |     |
| Ángulo de giro                    | 30°     |      |   |     |
| Angostamiento                     | tipo X  |      |   |     |
| Refrigerante                      | Externo |      |   |     |

P: Acero M: Acero inoxidable K: Hierro fundido N: Metales no ferrosos

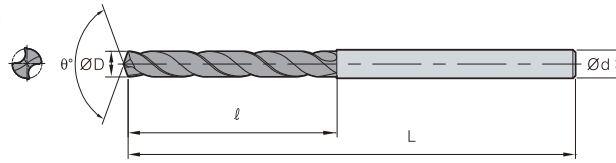
(mm)

| Código         | ØD   | Ød | 5P |     | 7P  |     |
|----------------|------|----|----|-----|-----|-----|
|                |      |    | ℓ  | L   | ℓ   | L   |
| ESDP 131 - □ P | 13.1 | 14 | 63 | 102 | 90  | 137 |
| 132 - □ P      | 13.2 | 14 | 65 | 107 | 96  | 147 |
| 133 - □ P      | 13.3 | 14 | 65 | 107 | 96  | 147 |
| 134 - □ P      | 13.4 | 14 | 65 | 107 | 96  | 147 |
| 135 - □ P      | 13.5 | 14 | 65 | 107 | 96  | 147 |
| 136 - □ P      | 13.6 | 14 | 65 | 107 | 96  | 147 |
| 137 - □ P      | 13.7 | 14 | 65 | 107 | 96  | 147 |
| 138 - □ P      | 13.8 | 14 | 65 | 107 | 96  | 147 |
| 139 - □ P      | 13.9 | 14 | 65 | 107 | 96  | 147 |
| 140 - □ P      | 14.0 | 14 | 65 | 107 | 96  | 147 |
| 141 - □ P      | 14.1 | 15 | 65 | 107 | 96  | 147 |
| 142 - □ P      | 14.2 | 15 | 68 | 115 | 100 | 153 |
| 143 - □ P      | 14.3 | 15 | 68 | 115 | 100 | 153 |
| 144 - □ P      | 14.4 | 15 | 68 | 115 | 100 | 153 |
| 145 - □ P      | 14.5 | 15 | 68 | 115 | 100 | 153 |
| 146 - □ P      | 14.6 | 15 | 68 | 115 | 100 | 153 |
| 147 - □ P      | 14.7 | 15 | 68 | 115 | 100 | 153 |
| 148 - □ P      | 14.8 | 15 | 68 | 115 | 100 | 153 |
| 149 - □ P      | 14.9 | 15 | 68 | 115 | 100 | 153 |
| 150 - □ P      | 15.0 | 15 | 68 | 115 | 100 | 153 |
| 151 - □ P      | 15.1 | 16 | 68 | 115 | 100 | 153 |
| 152 - □ P      | 15.2 | 16 | 70 | 120 | 112 | 160 |
| 153 - □ P      | 15.3 | 16 | 70 | 120 | 112 | 160 |
| 154 - □ P      | 15.4 | 16 | 70 | 120 | 112 | 160 |
| 155 - □ P      | 15.5 | 16 | 70 | 120 | 112 | 160 |
| 156 - □ P      | 15.6 | 16 | 70 | 120 | 112 | 160 |
| 157 - □ P      | 15.7 | 16 | 70 | 120 | 112 | 160 |
| 158 - □ P      | 15.8 | 16 | 70 | 120 | 112 | 160 |
| 159 - □ P      | 15.9 | 16 | 70 | 120 | 112 | 160 |
| 160 - □ P      | 16.0 | 16 | 70 | 120 | 112 | 160 |
| 161 - □ P      | 16.1 | 17 | 70 | 120 | 112 | 160 |
| 162 - □ P      | 16.2 | 17 | 70 | 120 | 112 | 160 |
| 163 - □ P      | 16.3 | 17 | 70 | 120 | 112 | 160 |
| 164 - □ P      | 16.4 | 17 | 70 | 120 | 112 | 160 |
| 165 - □ P      | 16.5 | 17 | 72 | 125 | 112 | 160 |
| 166 - □ P      | 16.6 | 17 | 72 | 125 | 112 | 160 |
| 167 - □ P      | 16.7 | 17 | 72 | 125 | 112 | 160 |
| 168 - □ P      | 16.8 | 17 | 72 | 125 | 112 | 160 |
| 169 - □ P      | 16.9 | 17 | 72 | 125 | 112 | 160 |
| 170 - □ P      | 17.0 | 17 | 72 | 125 | 112 | 160 |





# ESDP-□P



| Terminología                      | P       | M    | K   | N |
|-----------------------------------|---------|------|-----|---|
| Grado                             | PC325U  |      | FG2 |   |
| Tolerancia (diámetro del taladro) | h7      |      |     |   |
| Tolerancia (vástago Dia.)         | h6      |      |     |   |
| Ángulo de punta                   | 140°    | 135° |     |   |
| Ángulo de giro                    | 30°     |      |     |   |
| Angostamiento                     | tipo X  |      |     |   |
| Refrigerante                      | Externo |      |     |   |

■ Acero ■ Acero inoxidable ■ Hierro fundido ■ Metales no ferrosos

(mm)

| Código                | ØD   | Ød | 5P |     | 7P  |     |
|-----------------------|------|----|----|-----|-----|-----|
|                       |      |    | ℓ  | L   | ℓ   | L   |
| <b>ESDP</b> 171 - □ P | 17.1 | 18 | 72 | 125 | 112 | 160 |
| 172 - □ P             | 17.2 | 18 | 72 | 125 | 112 | 160 |
| 173 - □ P             | 17.3 | 18 | 72 | 125 | 112 | 160 |
| 174 - □ P             | 17.4 | 18 | 72 | 125 | 112 | 160 |
| 175 - □ P             | 17.5 | 18 | 75 | 130 | 112 | 160 |
| 176 - □ P             | 17.6 | 18 | 75 | 130 | 112 | 160 |
| 177 - □ P             | 17.7 | 18 | 75 | 130 | 112 | 160 |
| 178 - □ P             | 17.8 | 18 | 75 | 130 | 112 | 160 |
| 179 - □ P             | 17.9 | 18 | 75 | 130 | 112 | 160 |
| 180 - □ P             | 18.0 | 18 | 75 | 130 | 112 | 160 |
| 181 - □ P             | 18.1 | 19 | 75 | 130 | 112 | 160 |
| 182 - □ P             | 18.2 | 19 | 75 | 130 | 112 | 160 |
| 183 - □ P             | 18.3 | 19 | 75 | 130 | 112 | 160 |
| 184 - □ P             | 18.4 | 19 | 75 | 130 | 112 | 160 |
| 185 - □ P             | 18.5 | 19 | 78 | 130 | 112 | 160 |
| 186 - □ P             | 18.6 | 19 | 78 | 130 | 112 | 160 |
| 187 - □ P             | 18.7 | 19 | 78 | 130 | 112 | 160 |
| 188 - □ P             | 18.8 | 19 | 78 | 130 | 112 | 160 |
| 189 - □ P             | 18.9 | 19 | 78 | 130 | 112 | 160 |
| 190 - □ P             | 19.0 | 19 | 78 | 130 | 112 | 160 |
| 191 - □ P             | 19.1 | 20 | 78 | 130 | 112 | 160 |
| 192 - □ P             | 19.2 | 20 | 78 | 130 | 112 | 160 |
| 193 - □ P             | 19.3 | 20 | 78 | 130 | 112 | 160 |
| 194 - □ P             | 19.4 | 20 | 78 | 130 | 112 | 160 |
| 195 - □ P             | 19.5 | 20 | 82 | 135 | 112 | 160 |
| 196 - □ P             | 19.6 | 20 | 82 | 135 | 112 | 160 |
| 197 - □ P             | 19.7 | 20 | 82 | 135 | 112 | 160 |
| 198 - □ P             | 19.8 | 20 | 82 | 135 | 112 | 160 |
| 199 - □ P             | 19.9 | 20 | 82 | 135 | 112 | 160 |
| 200 - □ P             | 20.0 | 20 | 82 | 135 | 112 | 160 |

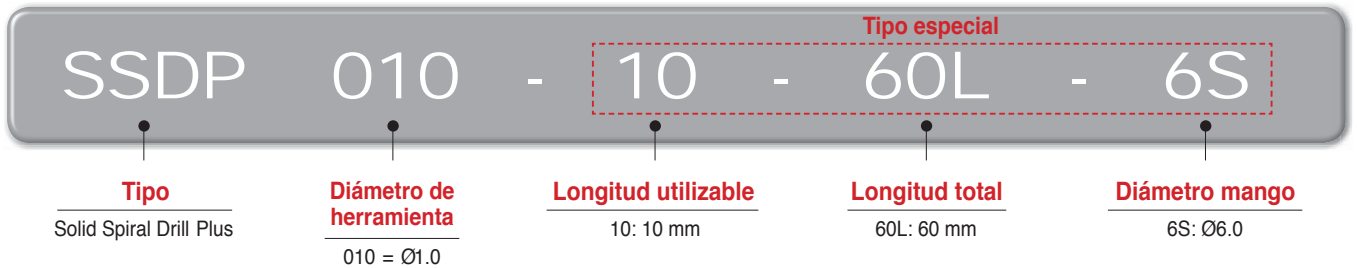
# G Información Técnica para Carbide Drill (SSDP)

Broca sólida de alto rendimiento

## SSD Plus **new**

- Control de viruta mejorado gracias al nuevo diseño de los canales
- Se logra un mecanizado de mayor calidad a partir de un mejor acabado superficial
- Mayor productividad gracias a una vida útil estable de la herramienta
- Variedad de materiales de trabajo a mecanizar, incluyendo acero suave y materiales no ferrosos

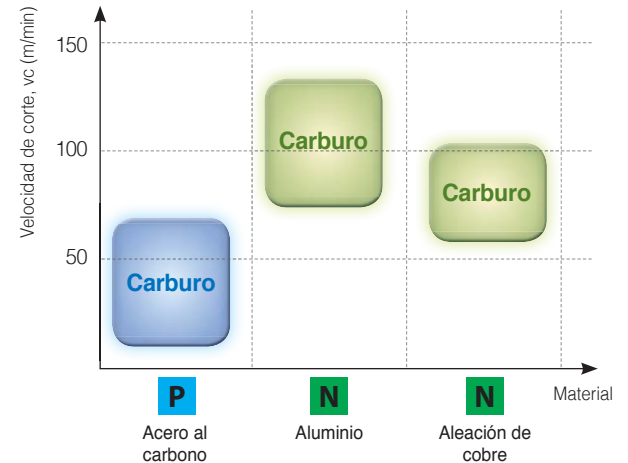
### ➤ Sistema de codificación



### ➤ Características

| Tipo            | Forma | Área de aplicación |
|-----------------|-------|--------------------|
| SSD Plus (SSDP) |       | P, N               |
| existing SSD    |       | N                  |

### ➤ Área de aplicación

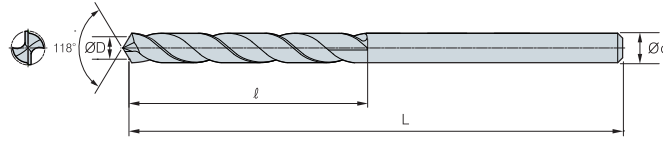


### ➤ Condiciones de corte recomendadas

| Material |                             |                                     | Grado   | Velocidad de corte vc (m/min) | Avance (mm/rev) según diámetro de la herramienta (mm) |           |            |             |
|----------|-----------------------------|-------------------------------------|---------|-------------------------------|---|-----------|------------|-------------|
| ISO      | Materiales pieza de trabajo | Dureza                              |         |                               | Ø2.5~Ø4.0   | Ø4.1~Ø8.0 | Ø8.1~Ø12.0 | Ø12.1~Ø15.0 |
| P        | Acero al carbono            | Acero con bajo contenido de carbono | Carburo | 35 (20~65)                    | 0.02~0.06   | 0.04~0.08 | 0.06~0.12  | 0.10~0.16   |
| N        | Aluminio                    | Aleación de aluminio                |         | 100 (94~120)                  | 0.03~0.06   | 0.05~0.08 | 0.08~0.12  | 0.12~0.18   |
|          | Cobre                       | Aleación de cobre                   |         | 80 (65~95)                    | 0.03~0.06   | 0.05~0.08 | 0.08~0.12  | 0.12~0.18   |



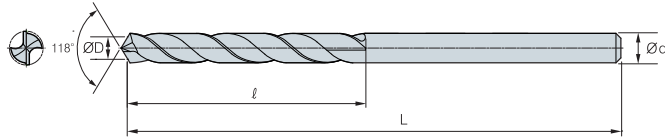
# SSDP



|                             |                  |
|-----------------------------|------------------|
| Recubrimiento               | x                |
| Tolerancia (Diámetro Broca) | h7               |
| Tolerancia (Dam. Mango)     | h7               |
| Angulo punta                | 118°             |
| Angulo de giro              | 30°              |
| Reduccion                   | X Tipo           |
| Refrigerante                | Sistema exterior |

|             |            |         |    |            | (mm)        |            |         |    |    |
|-------------|------------|---------|----|------------|-------------|------------|---------|----|----|
|             | Código     | ØD = Ød | ℓ  | L          |             | Código     | ØD = Ød | ℓ  | L  |
| <b>SSDP</b> | <b>010</b> | 1.0     | 10 | 32         | <b>SSDP</b> | <b>048</b> | 4.8     | 38 | 65 |
|             | <b>011</b> | 1.1     | 10 | 32         |             | <b>049</b> | 4.9     | 38 | 65 |
|             | <b>012</b> | 1.2     | 10 | 32         |             | <b>050</b> | 5.0     | 38 | 65 |
|             | <b>013</b> | 1.3     | 10 | 32         |             | <b>051</b> | 5.1     | 38 | 65 |
|             | <b>014</b> | 1.4     | 10 | 32         |             | <b>052</b> | 5.2     | 38 | 65 |
|             | <b>015</b> | 1.5     | 13 | 35         |             | <b>053</b> | 5.3     | 38 | 65 |
|             | <b>016</b> | 1.6     | 13 | 35         |             | <b>054</b> | 5.4     | 38 | 65 |
|             | <b>017</b> | 1.7     | 13 | 35         |             | <b>055</b> | 5.5     | 38 | 65 |
|             | <b>018</b> | 1.8     | 13 | 35         |             | <b>056</b> | 5.6     | 40 | 75 |
|             | <b>019</b> | 1.9     | 13 | 35         |             | <b>057</b> | 5.7     | 40 | 75 |
|             | <b>020</b> | 2.0     | 18 | 40         |             | <b>058</b> | 5.8     | 40 | 75 |
|             | <b>021</b> | 2.1     | 18 | 40         |             | <b>059</b> | 5.9     | 40 | 75 |
|             | <b>022</b> | 2.2     | 18 | 40         |             | <b>060</b> | 6.0     | 40 | 75 |
|             | <b>023</b> | 2.3     | 18 | 40         |             | <b>061</b> | 6.1     | 40 | 75 |
|             | <b>024</b> | 2.4     | 18 | 40         |             | <b>062</b> | 6.2     | 40 | 75 |
|             | <b>025</b> | 2.5     | 22 | 45         |             | <b>063</b> | 6.3     | 40 | 75 |
|             | <b>026</b> | 2.6     | 22 | 45         |             | <b>064</b> | 6.4     | 40 | 75 |
|             | <b>027</b> | 2.7     | 22 | 45         |             | <b>065</b> | 6.5     | 40 | 75 |
|             | <b>028</b> | 2.8     | 22 | 45         |             | <b>066</b> | 6.6     | 46 | 80 |
|             | <b>029</b> | 2.9     | 22 | 45         |             | <b>067</b> | 6.7     | 46 | 80 |
| <b>030</b>  | 3.0        | 25      | 50 | <b>068</b> | 6.8         | 46         | 80      |    |    |
| <b>031</b>  | 3.1        | 25      | 50 | <b>069</b> | 6.9         | 46         | 80      |    |    |
| <b>032</b>  | 3.2        | 25      | 50 | <b>070</b> | 7.0         | 46         | 80      |    |    |
| <b>033</b>  | 3.3        | 28      | 50 | <b>071</b> | 7.1         | 46         | 80      |    |    |
| <b>034</b>  | 3.4        | 28      | 50 | <b>072</b> | 7.2         | 46         | 80      |    |    |
| <b>035</b>  | 3.5        | 28      | 50 | <b>073</b> | 7.3         | 46         | 80      |    |    |
| <b>036</b>  | 3.6        | 30      | 55 | <b>074</b> | 7.4         | 46         | 80      |    |    |
| <b>037</b>  | 3.7        | 30      | 55 | <b>075</b> | 7.5         | 46         | 80      |    |    |
| <b>038</b>  | 3.8        | 30      | 55 | <b>076</b> | 7.6         | 50         | 85      |    |    |
| <b>039</b>  | 3.9        | 30      | 55 | <b>077</b> | 7.7         | 50         | 85      |    |    |
| <b>040</b>  | 4.0        | 30      | 55 | <b>078</b> | 7.8         | 50         | 85      |    |    |
| <b>041</b>  | 4.1        | 34      | 60 | <b>079</b> | 7.9         | 50         | 85      |    |    |
| <b>042</b>  | 4.2        | 34      | 60 | <b>080</b> | 8.0         | 50         | 85      |    |    |
| <b>043</b>  | 4.3        | 34      | 60 | <b>081</b> | 8.1         | 50         | 85      |    |    |
| <b>044</b>  | 4.4        | 34      | 60 | <b>082</b> | 8.2         | 50         | 85      |    |    |
| <b>045</b>  | 4.5        | 34      | 60 | <b>083</b> | 8.3         | 50         | 85      |    |    |
| <b>046</b>  | 4.6        | 38      | 65 | <b>084</b> | 8.4         | 50         | 85      |    |    |
| <b>047</b>  | 4.7        | 38      | 65 | <b>085</b> | 8.5         | 50         | 85      |    |    |

## SSDP



|                             |                  |
|-----------------------------|------------------|
| Recubrimiento               | x                |
| Tolerancia (Diámetro Broca) | h7               |
| Tolerancia (Dam. Mango)     | h6               |
| Angulo punta                | 118°             |
| Angulo de giro              | 30°              |
| Reduccion                   | X Tipo           |
| Refrigerante                | Sistema exterior |

(mm)

| Código          | ØD = Ød | ℓ  | L   |
|-----------------|---------|----|-----|
| <b>SSDP 086</b> | 8.6     | 50 | 95  |
| <b>087</b>      | 8.7     | 50 | 95  |
| <b>088</b>      | 8.8     | 50 | 95  |
| <b>089</b>      | 8.9     | 50 | 95  |
| <b>090</b>      | 9.0     | 50 | 95  |
| <b>091</b>      | 9.1     | 50 | 95  |
| <b>092</b>      | 9.2     | 50 | 95  |
| <b>093</b>      | 9.3     | 50 | 95  |
| <b>094</b>      | 9.4     | 50 | 95  |
| <b>095</b>      | 9.5     | 50 | 95  |
| <b>096</b>      | 9.6     | 50 | 100 |

| Código          | ØD = Ød | ℓ  | L   |
|-----------------|---------|----|-----|
| <b>SSDP 097</b> | 9.7     | 50 | 100 |
| <b>098</b>      | 9.8     | 50 | 100 |
| <b>099</b>      | 9.9     | 50 | 100 |
| <b>100</b>      | 10.0    | 50 | 100 |
| <b>105</b>      | 10.5    | 60 | 115 |
| <b>110</b>      | 11.0    | 60 | 115 |
| <b>115</b>      | 11.5    | 65 | 120 |
| <b>120</b>      | 12.0    | 65 | 120 |
| <b>125</b>      | 12.5    | 65 | 125 |
| <b>130</b>      | 13.0    | 65 | 125 |
| <b>150</b>      | 15.0    | 70 | 130 |

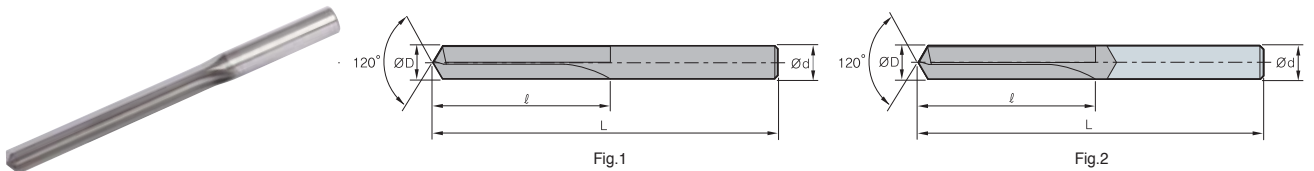


# Burnishing Drill

## Condiciones de Corte Recomendadas

| Pieza de Trabajo                        | Velocidad de corte vc (m/min) | Avance (mm/rev) Dependiendo del Diam. de la broca (mm) |           |           |           |           |
|---|-------------------------------|--|-----------|-----------|-----------|-----------|
|   |                               | Ø2.0~Ø3.0  | Ø3.5~Ø5.0 | Ø5.5~Ø8.0 | Ø8.5~Ø12  | Ø12.5~Ø18 |
| Aleación de Aluminio, Aleación de Cobre | 30~60                         | 0.02~0.05  | 0.03~0.10 | 0.04~0.15 | 0.05~0.20 | 0.05~0.30 |
| Aleación de Aluminio en piezas fundidas | 50~80                         | 0.02~0.05  | 0.03~0.10 | 0.04~0.15 | 0.05~0.20 | 0.05~0.30 |
| Fundición(GC) Fundición Dúctil          | 25~60                         | 0.01~0.04  | 0.02~0.08 | 0.05~0.12 | 0.05~0.20 | 0.05~0.30 |
| Hierro (GCD)                            | 20~50                         | 0.01~0.03  | 0.02~0.05 | 0.03~0.08 | 0.04~0.12 | 0.05~0.15 |

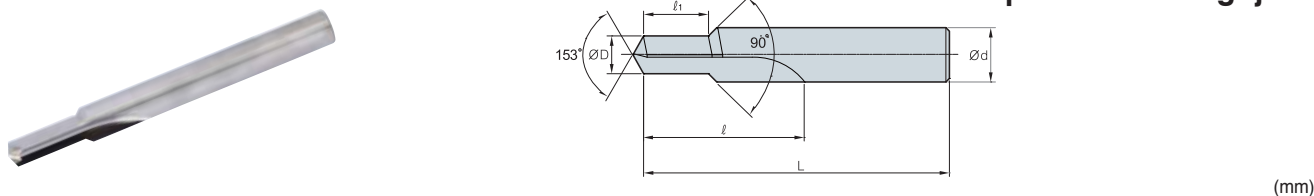
## Burnishing Drill-BDS



| Código | ØD   | Ød   | ℓ    | L   | Fig. |   |
|--------|------|------|------|-----|------|---|
| BDS    | 040S | 4.0  | 4.0  | 35  | 80   | 1 |
|        | 050S | 5.0  | 5.0  | 40  | 85   | 1 |
|        | 060S | 6.0  | 6.0  | 50  | 95   | 1 |
|        | 070S | 7.0  | 7.0  | 55  | 100  | 1 |
|        | 080S | 8.0  | 8.0  | 65  | 110  | 1 |
|        | 090S | 9.0  | 9.0  | 70  | 120  | 1 |
|        | 100S | 10.0 | 10.0 | 80  | 130  | 1 |
|        | 110S | 11.0 | 11.0 | 90  | 140  | 1 |
|        | 120B | 12.0 | 12.0 | 95  | 150  | 2 |
|        | 130B | 13.0 | 16.0 | 105 | 160  | 2 |
|        | 140B | 14.0 | 16.0 | 110 | 170  | 2 |
|        | 150B | 15.0 | 16.0 | 120 | 185  | 2 |
|        | 160B | 16.0 | 16.0 | 125 | 190  | 2 |

## Step Burnishing Drill-BDT

Para machos; para aprovechar el agujero



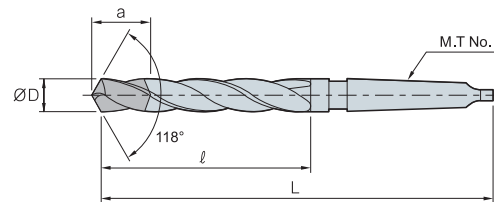
| Código | ØD         | Ød   | ℓ    | ℓ1 | L     | Macho de roscar |           |
|--------|------------|------|------|----|-------|-----------------|-----------|
| BDT    | M05080-ℓ 1 | 4.2  | 6.0  | 35 | 9~15  | 90              | M5XP0.8   |
|        | M06100-ℓ 1 | 5.0  | 7.0  | 40 | 11~18 | 95              | M6XP1.0   |
|        | M08125-ℓ 1 | 6.8  | 10.0 | 50 | 15~24 | 105             | M8XP1.25  |
|        | M10125-ℓ 1 | 8.8  | 12.0 | 55 | 17~30 | 110             | M10XP1.25 |
|        | M10150-ℓ 1 | 8.5  | 12.0 | 55 | 17~30 | 110             | M10XP1.5  |
|        | M12125-ℓ 1 | 10.8 | 14.0 | 60 | 19~36 | 120             | M12XP1.25 |
|        | M12150-ℓ 1 | 10.5 | 14.0 | 60 | 19~36 | 120             | M12XP1.5  |
|        | M12175-ℓ 1 | 10.3 | 14.0 | 60 | 19~36 | 120             | M12XP1.75 |

# Top Solid Drill

## Condición de Corte Recomendada

| Diámetro  | Condición de corte | Fundición Dúctil | Fundición Gris   | Acero Suave      |
|-----------|--------------------|------------------|------------------|------------------|
| Ø8~Ø10    | vc (m/min)         | 30 (20~35)       | 40 (20~60)       | 100 (50~150)     |
|           | fn (mm/rev)        | 0.30 (0.20~0.40) | 0.30 (0.20~0.40) | 0.15 (0.10~0.20) |
| Ø10.1~Ø15 | vc (m/min)         | 50 (30~70)       | 60 (30~80)       | 130 (70~200)     |
|           | fn (mm/rev)        | 0.35 (0.30~0.40) | 0.35 (0.30~0.40) | 0.15 (0.10~0.20) |
| Ø15.1~Ø25 | vc (m/min)         | 60 (50~60)       | 75 (50~100)      | 150 (100~250)    |
|           | fn (mm/rev)        | 0.35 (0.30~0.45) | 0.40 (0.30~0.50) | 0.15 (0.10~0.20) |

## Top Solid Drill-TSDM



| Código              | ØD        | L   | ℓ   | a  | M.T No |
|---------------------|-----------|-----|-----|----|--------|
| <b>TSDM</b> 080~085 | 8.0~8.5   | 168 | 85  | 25 | 1      |
| 086~090             | 8.6~9.0   | 172 | 88  | 25 | 1      |
| 091~095             | 9.1~9.5   | 175 | 92  | 26 | 1      |
| 096~100             | 9.6~10.0  | 178 | 95  | 26 | 1      |
| 101~105             | 10.1~10.5 | 182 | 98  | 26 | 1      |
| 106~110             | 10.6~11.0 | 185 | 102 | 26 | 1      |
| 111~115             | 11.1~11.5 | 188 | 105 | 26 | 1      |
| 116~120             | 11.6~12.0 | 192 | 108 | 26 | 1      |
| 121~125             | 12.1~12.5 | 195 | 112 | 26 | 1      |
| 126~130             | 12.6~13.0 | 198 | 115 | 26 | 2      |
| 131~135             | 13.1~13.5 | 202 | 118 | 27 | 2      |
| 136~140             | 13.6~14.0 | 205 | 122 | 27 | 2      |
| 141~145             | 14.1~14.5 | 222 | 122 | 27 | 2      |
| 146~150             | 14.6~15.0 | 225 | 125 | 27 | 2      |
| 151~155             | 15.1~15.5 | 228 | 125 | 27 | 2      |
| 156~160             | 15.6~16.0 | 230 | 130 | 27 | 2      |
| 161~165             | 16.1~16.5 | 232 | 132 | 27 | 2      |
| 166~170             | 16.6~17.0 | 234 | 135 | 27 | 2      |
| 171~180             | 17.1~18.0 | 240 | 140 | 27 | 2      |
| 181~190             | 18.1~19.0 | 245 | 145 | 27 | 2      |
| 191~200             | 19.1~20.0 | 250 | 150 | 30 | 2      |
| 201~210             | 20.1~21.0 | 255 | 155 | 30 | 2      |
| 211~220             | 21.1~22.0 | 260 | 160 | 30 | 2      |
| 221~230             | 22.1~23.0 | 265 | 165 | 30 | 2      |
| 231~250             | 23.1~25.0 | 285 | 165 | 34 | 3      |

※ Código para encargo: TSDM125



Alta precisión en el maquinado de agujeros en aleación de aluminio

# PCD Drill

- Alta precisión en el maquinado de agujeros en aleación de aluminio
- Tolerancia de perforación: IT7~8class
- Recomendada para gran precisión y maquinado

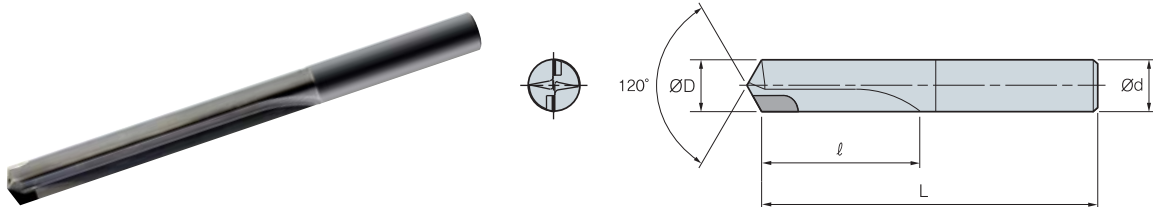
## ➤ Sistema de Codificación



## ➤ Condiciones de Corte Recomendadas

| Pieza de Trabajo     | vc (m/min) | fn (mm/rev)            |
|----------------------|------------|------------------------|
| Aleación de Aluminio | 50~250     | 0.05~0.20<br>0.10~0.40 |

## PDD



| Código |      | ØD   | Ød   | ℓ  | L   |
|--------|------|------|------|----|-----|
| PDD    | 0500 | 5.0  | 5.0  | 30 | 80  |
|        | 0550 | 5.5  | 5.5  | 30 | 80  |
|        | 0600 | 6.0  | 6.0  | 30 | 80  |
|        | 0650 | 6.5  | 6.5  | 40 | 95  |
|        | 0700 | 7.0  | 7.0  | 40 | 95  |
|        | 0750 | 7.5  | 7.5  | 45 | 100 |
|        | 0800 | 8.0  | 8.0  | 45 | 100 |
|        | 0850 | 8.5  | 8.5  | 50 | 110 |
|        | 0900 | 9.0  | 9.0  | 50 | 110 |
|        | 0950 | 9.5  | 9.5  | 55 | 115 |
|        | 1000 | 10.0 | 10.0 | 55 | 115 |
|        | 1050 | 10.5 | 10.5 | 60 | 120 |
|        | 1100 | 11.0 | 11.0 | 60 | 120 |
|        | 1150 | 11.5 | 11.5 | 65 | 125 |
|        | 1200 | 12.0 | 12.0 | 65 | 125 |

Cantidad estable, debido al único filo de corte, Reafilado disponible

## Gun Drill

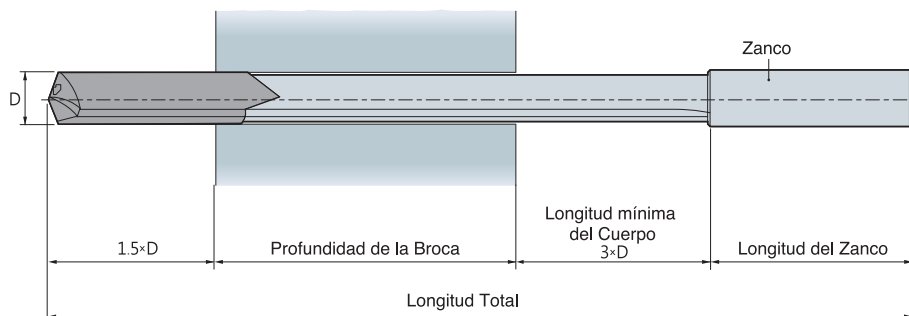
- Alta eficiencia en maquinados de agujeros profundos
- Alta precisión (Tolerancia en el Agujero: iT9, Superficie de Acabado: Ra0.1~3.0s)
- Cantidad estable, debido al único filo de corte, Reafilado disponible
- Taladro usado puede reciclarse como parte de cambio de carburo
- Dependiendo de la petición, las brocas pueden cambiar de geometría del filo de corte y especificación de la unidad
- Para pedios especiales, favor de checar el largo de la broca

### ↻ Sistema de Codificación

|                         |   |                                       |  |                         |
|-------------------------|---|---------------------------------------|--|-------------------------|
| KGD                     | S   | 12.05                                 | - 1500                                 | / D30                   |
| <b>KORLOY Gun Drill</b> | <b>Tipo Flauta</b><br>S: Sencillo<br>T: Doble | <b>Diámetro de la Broca</b><br>Ø12.05 | <b>Longitud de la Broca</b><br>1500 mm | <b>Mango No.</b><br>D30 |

### ↻ Características

|                                  | Labio Simple                | Labio Doble   |
|----------------------------------|-----------------------------|---|
| Forma                            |                             |   |
| <b>Diámetro de la Broca</b>      | Ø2.0~Ø33.0                  | Ø8.0~Ø24.0  |
| <b>Profundidad del Barrenado</b> | ≥ 2,000 mm                  | ≥ 1,000 mm  |
| <b>Tolerancia</b>                | IT9                         | IT10  |
| <b>Superficie de Acabado</b>     | Ra 0.1~3.0 µm               | Ra 1.0~4.0 µm   |
| <b>Aplicación</b>                | Para Todo tipo de Maquinado | <ul style="list-style-type: none"> <li>• Piezas de trabajo con una buena evacuación de la viruta</li> <li>• Maquinado de a mayor avance que los tipos de un solo labio</li> </ul> |

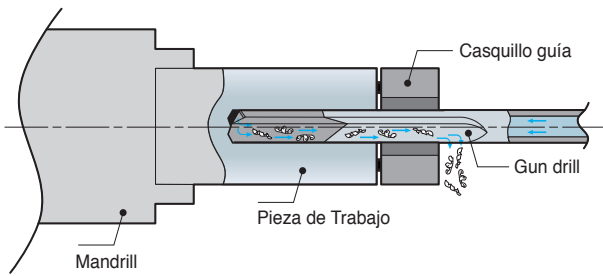


- Consulte el sistema de codificación y el dibujo de arriba con el pedido
- Consulte la página 112 para el tamaño del Mango
- Longitud total de la broca: puede ser escogida según pedido





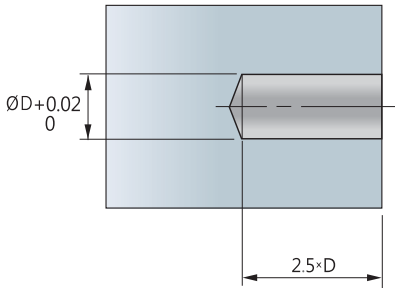
**Aplicación de Gun Drill en maquinado Exclusivo**



• El casquillo guía es necesario para centrar la gun drill

**Aplicación de Gun Drill en Centro de Maquinados**

**1 Maquinado de un agujero piloto**

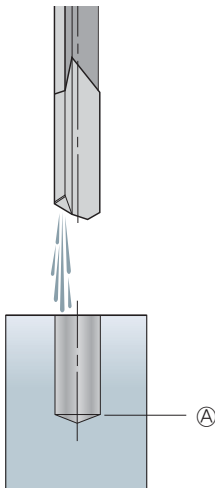


1. Un agujero piloto es necesario en el maquinado en un centro de maquinado en vez de un casquillo de guía
2. El diámetro del agujero piloto debe ser 0,01 ~ 0,02 (H7) más grande más grande que un diámetro de la Gun Drill y la profundidad de perforación debe ser de aproximadamente 2,5 x D
3. El uso de Mach Drill (MSD) para el maquinado de un agujero piloto



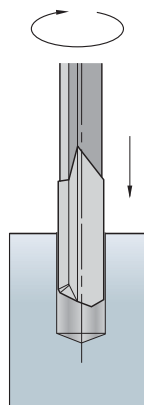
MSD

**2 Moviendo la Gun drill al agujero piloto**



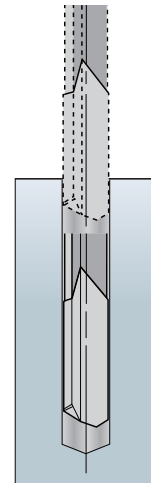
1. La Gun Drill no debe perforar antes de entrar en el agujero piloto
2. El refrigerante es necesario para la perforación

**3 Inicio del Barrenado**



1. Rote el eje
2. Máquina con perforación de eje vertical

**4 Después del Barrenado**



1. Regrese el taladro
2. Detener la perforación y el suministro de refrigerante
3. Retire la Gun drill

## Condición de corte Recomendada

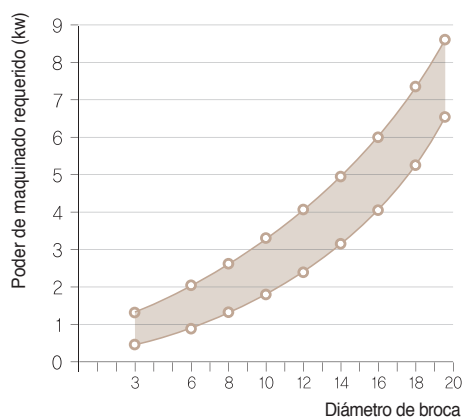
| Pieza de Trabajo                     | Dureza (HB) | Velocidad de Corte vc (m/min) | Rango de avance fn (mm/rev) |             |             |             |             |             |
|--------------------------------------|-------------|-------------------------------|-----------------------------|-------------|-------------|-------------|-------------|-------------|
|                                      |             |                               | ~Ø4                         | ~Ø6         | ~Ø10        | ~Ø14        | ~Ø24        | Ø25~        |
| Acero al Carbón<br>Aleación de Acero | ~150        | 100~150                       | 0.005~0.015                 | 0.010~0.025 | 0.015~0.035 | 0.020~0.050 | 0.030~0.070 | 0.040~0.080 |
|                                      | 150~250     | 80~120                        | 0.005~0.010                 | 0.010~0.020 | 0.015~0.030 | 0.020~0.040 | 0.030~0.060 | 0.030~0.060 |
|                                      | 250~350     | 50~100                        | 0.005~0.010                 | 0.005~0.010 | 0.010~0.020 | 0.015~0.030 | 0.020~0.040 | 0.020~0.040 |
|                                      | 350~        | ~30                           | -                           | 0.005~0.010 | 0.005~0.010 | 0.010~0.020 | 0.020~0.035 | 0.020~0.035 |
| Acero Inoxidable                     | ~250        | 50~80                         | 0.005~0.015                 | 0.010~0.020 | 0.010~0.020 | 0.010~0.030 | 0.020~0.035 | 0.020~0.040 |
|                                      | 250~350     | 40~50                         | -                           | 0.005~0.015 | 0.010~0.015 | 0.010~0.020 | 0.010~0.020 | 0.010~0.020 |
| Fundición                            | ~220        | 80~100                        | 0.010~0.0120                | 0.020~0.040 | 0.030~0.050 | 0.040~0.080 | 0.080~0.120 | 0.100~0.150 |
|                                      | 220~        | 40~80                         | 0.005~0.010                 | 0.005~0.015 | 0.010~0.020 | 0.015~0.030 | 0.020~0.050 | 0.025~0.070 |
| Aleación de Aluminio                 | -           | 180~250                       | 0.010~0.020                 | 0.020~0.040 | 0.030~0.060 | 0.040~0.080 | 0.100~0.180 | 0.150~0.200 |
| Aleación Ligera                      | -           | 120~200                       | 0.005~0.010                 | 0.010~0.020 | 0.020~0.025 | 0.020~0.030 | 0.030~0.040 | 0.040~0.060 |

## Información Técnica

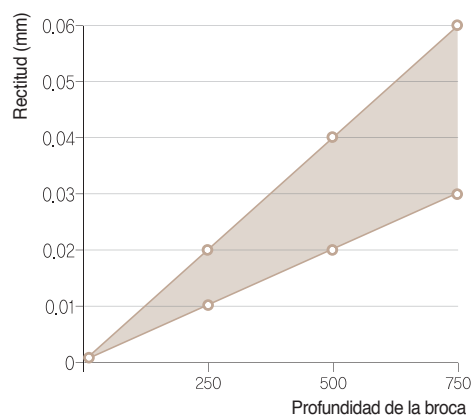
Los siguientes factores determinan la rectitud del agujero

- Diámetro de la broca y profundidad de la perforación
- Condición de corte y tipo de aplicación
- Tipo de pieza de trabajo y máquina
- Guía de Taladro

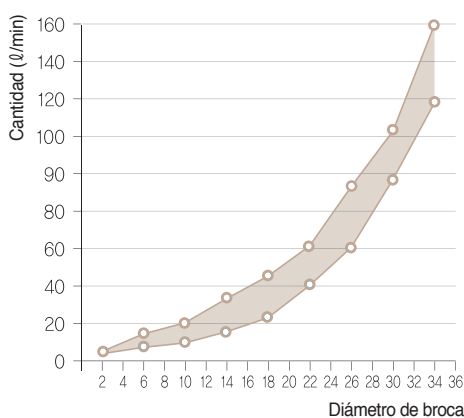
**Poder de maquinado requerido**



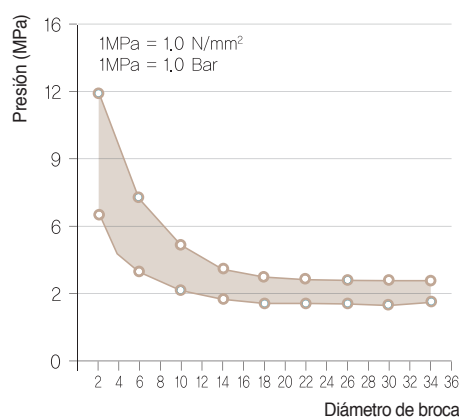
**Rectitud**



**Cantidad de Refrigerante**



**Presión del refrigerante**

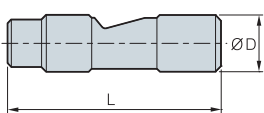
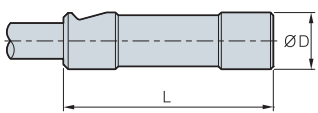
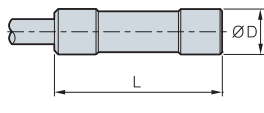
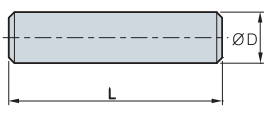
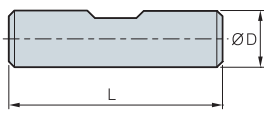

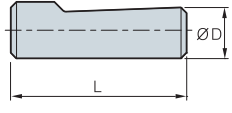
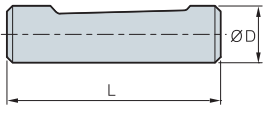


El gráfico anterior muestra la información general y es variable en función de tipo de herramientas, piezas, condiciones de corte, etc

- **Presión y la cantidad de líquido refrigerante** - La alta presión del refrigerante garantiza una excelente evacuación de viruta y el enfriamiento del filo de corte
- **Use un filtro para eliminar impurezas** - El diámetro de un filtro debe ser inferior a 20  $\mu\text{m}$ . Las impurezas pueden hacer que un mal flujo de refrigerante, desgaste de una herramienta, y carga excesiva en la bomba de refrigerante
- **La temperatura del refrigerante** - Temperatura adecuada del líquido: 20°C~22°C/No utilice refrigerante superior a 50°C



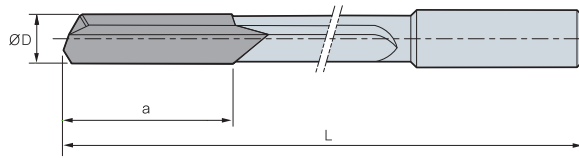
**Tipos de Mangos**

| Tipo                               | Forma   | No. | ØDxL       |       | Tipo de Carburo |        |
|------------------------------------|---|-----|------------|-------|-----------------|--------|
|                                    |   |     | ØDxL       | Rosca | Punta           | Solido |
| Superficie central de Sujeción 15° |    | D01 | 10x40      |       | ●               | ●      |
|                                    |   | D02 | 16x45      |       | ●               |        |
|                                    |   | D03 | 19.05x69.8 |       | ●               |        |
|                                    |   | D04 | 25x70      |       | ●               |        |
|                                    |   | D05 | 25.4x69.8  |       | ●               |        |
| Superficie Frontal de Sujeción 15° |    | D06 | 16x50      |       | ●               |        |
| Sujeción Central Cónica            |    | D07 | 12.7x38.1  |       | ●               | ●      |
|                                    |   | D08 | 16x70      |       |                 |        |
|                                    |   | D09 | 19.05x69.8 |       | ●               |        |
|                                    |   | D10 | 20x70      |       |                 |        |
| Cilíndrica DIN1835A DIN6535HA      |  | D11 | 4x28       |       | ●               | ●      |
|                                    |   | D12 | 6x36       |       | ●               | ●      |
|                                    |   | D13 | 10x40      |       | ●               | ●      |
|                                    |   | D14 | 16x48      |       | ●               | ●      |
|                                    |   | D15 | 20x50      |       | ●               |        |
|                                    |   | D16 | 25x56      |       | ●               |        |
| Weldon DIN1835B                    |  | D17 | 10x40      |       | ●               | ●      |
|                                    |   | D18 | 12x45      |       | ●               | ●      |
|                                    |   | D19 | 16x48      |       | ●               | ●      |
|                                    |   | D20 | 20x50      |       | ●               | ●      |
| Weldon DIN6535HB                   |  | D21 | 25x56      |       | ●               |        |
|                                    |   | D22 | 32x60      |       | ●               |        |
|                                    |   | D23 | 40x70      |       |                 |        |
| Muesca Tipo Silbato DIN1835E       |  | D24 | 10x40      |       | ●               | ●      |
|                                    |   | D25 | 12x45      |       | ●               | ●      |
|                                    |   | D26 | 16x48      |       | ●               | ●      |
|                                    |   | D27 | 20x50      |       | ●               | ●      |
|                                    |   | D28 | 25x56      |       | ●               |        |
|                                    |   | D29 | 32x60      |       | ●               |        |
| Muesca Tipo Silbato DIN6535HE      |  | D30 | 10x40      |       | ●               | ●      |
|                                    |   | D31 | 12x45      |       | ●               | ●      |
|                                    |   | D32 | 16x48      |       | ●               | ●      |
|                                    |   | D33 | 20x50      |       | ●               | ●      |

\* Pedido especial disponible, Llene la información sobre las dimensiones y forma con el pedido

## Gun Drill-KGDS

De Labio Simple



| Código description |                  |
|--------------------|------------------|
| 0.00               | Diámetro         |
| □□□□               | Longitud         |
| D□□                | Código del Mango |

(mm)

| Código               | ØD          | a  |
|----------------------|-------------|----|
| KGDS 0.00-□□□□ / D□□ | 2.00~2.49   | 18 |
| 0.00-□□□□ / D□□      | 2.50~2.99   | 18 |
| 0.00-□□□□ / D□□      | 3.00~3.49   | 19 |
| 0.00-□□□□ / D□□      | 3.50~3.99   | 19 |
| 0.00-□□□□ / D□□      | 4.00~4.49   | 23 |
| 0.00-□□□□ / D□□      | 4.50~4.99   | 23 |
| 0.00-□□□□ / D□□      | 5.00~5.49   | 24 |
| 0.00-□□□□ / D□□      | 5.50~5.99   | 26 |
| 0.00-□□□□ / D□□      | 6.00~6.49   | 27 |
| 0.00-□□□□ / D□□      | 6.50~6.99   | 28 |
| 0.00-□□□□ / D□□      | 7.00~7.49   | 29 |
| 0.00-□□□□ / D□□      | 7.50~7.99   | 30 |
| 0.00-□□□□ / D□□      | 8.00~8.49   | 31 |
| 0.00-□□□□ / D□□      | 8.50~8.99   | 31 |
| 0.00-□□□□ / D□□      | 9.00~8.49   | 31 |
| 0.00-□□□□ / D□□      | 9.50~9.99   | 31 |
| 0.00-□□□□ / D□□      | 10.00~10.49 | 31 |
| 0.00-□□□□ / D□□      | 10.50~10.99 | 32 |
| 0.00-□□□□ / D□□      | 11.00~11.49 | 35 |
| 0.00-□□□□ / D□□      | 11.50~11.99 | 35 |
| 0.00-□□□□ / D□□      | 12.00~12.49 | 38 |
| 0.00-□□□□ / D□□      | 12.50~12.99 | 38 |
| 0.00-□□□□ / D□□      | 13.00~13.99 | 38 |
| 0.00-□□□□ / D□□      | 14.00~14.99 | 38 |
| 0.00-□□□□ / D□□      | 15.00~15.99 | 39 |
| 0.00-□□□□ / D□□      | 16.00~16.99 | 39 |
| 0.00-□□□□ / D□□      | 17.00~17.99 | 40 |
| 0.00-□□□□ / D□□      | 18.00~18.99 | 41 |
| 0.00-□□□□ / D□□      | 19.00~19.99 | 41 |
| 0.00-□□□□ / D□□      | 20.00~20.99 | 44 |
| 0.00-□□□□ / D□□      | 21.00~21.99 | 46 |
| 0.00-□□□□ / D□□      | 22.00~22.99 | 49 |
| 0.00-□□□□ / D□□      | 23.00~23.99 | 51 |
| 0.00-□□□□ / D□□      | 24.00~24.99 | 52 |
| 0.00-□□□□ / D□□      | 25.00~25.99 | 54 |
| 0.00-□□□□ / D□□      | 26.00~26.99 | 54 |
| 0.00-□□□□ / D□□      | 27.00~27.99 | 54 |
| 0.00-□□□□ / D□□      | 28.00~28.99 | 54 |
| 0.00-□□□□ / D□□      | 29.00~29.99 | 56 |
| 0.00-□□□□ / D□□      | 30.00~30.99 | 59 |
| 0.00-□□□□ / D□□      | 31.00~31.99 | 61 |
| 0.00-□□□□ / D□□      | 32.00~32.99 | 61 |

※ Al hacer el pedido, por favor marque la longitud total y el número del Mango (o dibujo)

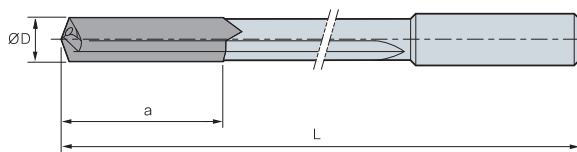
### Longitudes Totales Disponibles

| Código | Diámetro de la Broca | Longitud Total |        |         |         |         |
|--------|----------------------|----------------|--------|---------|---------|---------|
|        |                      | 250 mm         | 500 mm | 1000 mm | 1500 mm | 2000 mm |
| KGDS   | 2.00~2.99            | ○              | ○      |         |         |         |
|        | 3.00~3.49            | ○              | ○      | ○       |         |         |
|        | 3.50~32.99           | ○              | ○      | ○       | ○       | ○       |



# Gun Drill-KGDT

De doble labio



| Código description |                  |
|--------------------|------------------|
| 0.00               | Diámetro         |
| □□□□               | Longitud         |
| D□□                | Código del Mango |

| Código          | ØD          | a  |
|-----------------|-------------|----|
| 0.00-□□□□ / D□□ | 8.00~8.49   | 38 |
| 0.00-□□□□ / D□□ | 8.50~8.99   | 38 |
| 0.00-□□□□ / D□□ | 9.00~8.49   | 40 |
| 0.00-□□□□ / D□□ | 9.50~9.99   | 40 |
| 0.00-□□□□ / D□□ | 10.00~10.49 | 40 |
| 0.00-□□□□ / D□□ | 10.50~10.99 | 40 |
| 0.00-□□□□ / D□□ | 11.00~11.49 | 45 |
| 0.00-□□□□ / D□□ | 11.50~11.99 | 45 |
| 0.00-□□□□ / D□□ | 12.00~12.49 | 45 |
| 0.00-□□□□ / D□□ | 12.50~12.99 | 48 |
| 0.00-□□□□ / D□□ | 13.00~13.99 | 48 |
| 0.00-□□□□ / D□□ | 14.00~14.99 | 48 |
| 0.00-□□□□ / D□□ | 15.00~15.99 | 48 |
| 0.00-□□□□ / D□□ | 16.00~16.99 | 50 |
| 0.00-□□□□ / D□□ | 17.00~17.99 | 50 |
| 0.00-□□□□ / D□□ | 18.00~18.99 | 50 |
| 0.00-□□□□ / D□□ | 19.00~19.99 | 50 |
| 0.00-□□□□ / D□□ | 20.00~20.99 | 55 |
| 0.00-□□□□ / D□□ | 21.00~21.99 | 55 |
| 0.00-□□□□ / D□□ | 22.00~22.99 | 55 |
| 0.00-□□□□ / D□□ | 23.00~23.99 | 60 |

※ Al hacer el pedido, por favor marque la longitud total y el número del Mango (o dibujo)

## Longitudes Totales Disponibles

| Código | Diámetro de la Broca | Longitud Total |        |         |         |         |
|--------|----------------------|----------------|--------|---------|---------|---------|
|        |                      | 250 mm         | 500 mm | 1000 mm | 1500 mm | 2000 mm |
| KGDT   | 8.00~24.00           | ○              | ○      | ○       |         |         |

Para producción masiva y de alto rendimiento

## Indexable Reamer

- Conveniente para la producción masiva y de alto rendimiento
- Uso de PCD o inserto revestimiento para un maquinado de alta velocidad
- Excelente alta precisión y hoyos Maquinado ajustable
- Usando el sistema de sujeción de precisión (hidráulica, rotación, etc.)
- Uso de refrigerante interno para evacuar las virutas
- Utilizando soporte adecuado e inserción
- Para ajuste de los insertos, use el ajustador (KIRSD-210)

### ➤ Sistema de Codificación

#### Herramienta

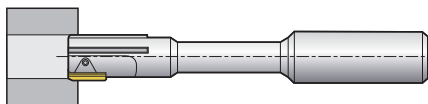
|                           |  |                            |                           |                 |  |
|---------------------------|--|----------------------------|---------------------------|-----------------|--|
| IR T 12.000 - 16 135 - 16 |  |                            |                           |                 |  |
| <b>Tipo</b>               | <b>Aplicación</b>  | <b>Diámetro de la Rima</b> | <b>Diámetro del Mango</b> | <b>Longitud</b> | <b>Tamaño del Inserto</b>                                    |
| Indexable Reamer          | T: Maquinado a lo largo de la pieza<br>B: Maquinado de Agujero Ciego | 12.000: Ø12.0              | 16: Ø16                   | 135: 135        | 15: 15.0x3.0<br>16: 16.0x3.5<br>17: 17.0x4.5<br>22: 22.0x6.5 |

#### Inserto

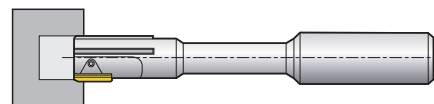
|                   |  |  |  |
|-------------------|--|--|--|
| RI 16 - B 06      |  |  |  |
| <b>Tipo</b>       | <b>Tamaño del Inserto</b>                                    | <b>Tipo de Inserto</b>   | <b>Ángulo C/B</b>  |
| Inserto para Rima | 15: 15.0x3.0<br>16: 16.0x3.5<br>17: 17.0x4.5<br>22: 22.0x6.5 | A : Excelente acabado Superficial,<br>Baja condición de corte<br>B : Acabado general en la superficie,<br>Alta condición de corte<br>C : Aluminio, Aleación de Latón<br>D : Agujero ciego, Bajo Avance | 00: 0°, Fundición<br>06: 6°, Acero en general<br>12: 12°, Inoxidable, Aluminio |

### ➤ Aplicación

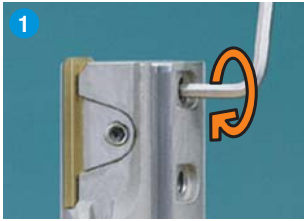
Maquinado a lo largo de la pieza (tipo IRT)



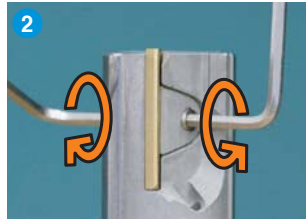
Maquinado de Agujero Ciego (tipo IRB)



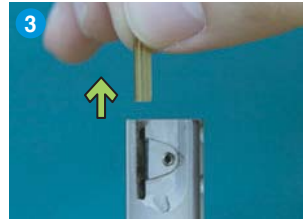
## ➤ Como instalar el inserto



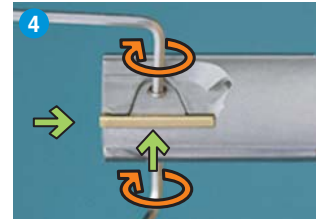
1. Atornille el tornillo en contra de cuña hacia la derecha con la exclusiva llave



2. Atornille el tornillo de fijación  
 ① Parte superior: hacia la izquierda  
 ② parte inferior: a la derecha



3. Remueva el inserto y limpie la cavidad



4. Coloque la pieza hasta el tope de borde y sujetar la pieza  
 ① Parte superior: hacia la derecha  
 ② parte inferior: la izquierda

## ➤ Accesorio Exclusivo

- Código: KIRSD-210
- Diámetro máximo de la rima:  $\varnothing 60 \times 210$  mm
- El aparato también está disponible para configurar rimas especiales y herramienta de mono
- Rimas especiales (fuera del rango de ajuste máximo) están disponibles para cotización



## ➤ Cómo configurar un inserto con el accesorio



• Ajuste el medidor hasta 0



• Girar la rima para que el inserto toque el medidor



• Ajuste el cono hacia atrás y ajuste la altura del inserto con el tornillo de cuña  
 ① Parte superior de inserto: 0,015 ~ 0,020mm  
 ② Parte inferior lateral del inserto: 0,005 ~ 0,010mm  
 ③ conicidad: 0,010 ~ 0,015mm

## ➤ Conicidad

- Asegura baja carga de corte y un excelente acabado superficial con la evacuación de la viruta
- Conicidad incorrecta podría causar inestabilidad en el maquinado y desgaste en el inserto
- El tamaño de la conicidad del inserto debe ser menor a 0,010 ~ 0,015 mm que la parte superior del inserto

## ➤ Ajuste del inserto con micrómetro



• Torno con dos centros o en un banco de centro están también disponibles

**Aviso:** La configuración con un micrómetro, no se recomienda debido al despostillamiento del filo de corte

## Condiciones de Corte Recomendadas

| Pieza de Trabajo                                     | Tipo de placa    |              | Avance (mm/rev)<br>Dependiendo del Diam. de la broca (mm) | Velocidad de Corte vc (m/min) |                   |         |
|--|------------------|--------------|---|-------------------------------|-------------------|---------|
|  | Ángulo de Ataque | Tipo de guía |   | Recubierto                    | Sin Recubrimiento | Cermet  |
| Acero al carbón<br>Acero General                     | 6                | A            | 0.1~0.4   | 60~80                         | 40~60             | 110~160 |
|  |                  | B            | 0.1~0.3   | 80~120                        | 60~80             |         |
|  |                  | D            | 0.05~0.2  |                               |                   |         |
| Acero Suave<br>Aleación de Acero                     | 6                | A            | 0.1~0.4   | 40~60                         | 20~40             | 110~160 |
|  |                  | B            | 0.1~0.3   | 80~120                        | 60~80             |         |
|  |                  | D            | 0.05~0.2  |                               |                   |         |
| Aleación alta<br>en Acero<br>Herramienta<br>de Acero | 6                | A            | 0.1~0.4   | 20~60                         | 20~40             | 20~60   |
|  |                  | B            | 0.1~0.3   | 40~80                         | 40~60             | 40~80   |
|  |                  | D            | 0.05~0.2  |                               |                   |         |
| Acero Inoxidable                                     | 12               | A            | 0.1~0.3   | 40~60                         | 20~40             | 40~60   |
|  |                  | B            | 0.1~0.2   | 60~80                         | 40~60             | 60~80   |
|  |                  | D            | 0.05~0.2  |                               |                   |         |
| Fundición  | 0.6              | A            | 0.1~0.3   | 60~100                        | 40~60             |         |
|  |                  | B            | 0.1~0.25  | 80~120                        | 60~80             |         |
|  |                  | D            | 0.05~0.2  |                               |                   |         |
| Aleaciones de<br>Aluminio                            | 12               | B            | 0.1~0.3   |                               | 160~200           |         |
|  |                  | C            | 0.15~0.3  |                               | 150~250           |         |
|  |                  | D            | 0.05~0.2  |                               | 110~200           |         |
| Aleaciones de<br>Cobre                               | 0                | B            | 0.1~0.2   |                               | 80~100            |         |
|  |                  | D            | 0.05~0.2  |                               |                   |         |
| Aleaciones de<br>Metales<br>No-Ferrosos              | 0                | B            | 0.1~0.3   |                               | 10~70             |         |

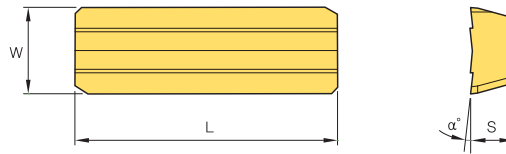
## Partes

| Tamaño de la Rima | Brida | Cuña   | Tornillo de la Brida | ornillo de la cuña<br>(NYLOK) | Llave de la Brida | Llave de la Cuña |
|-------------------|-------|--------|----------------------|-------------------------------|-------------------|------------------|
| 10.0~11.9         | CV 15 | AW2430 | DHA0308              | HSO306                        | HW15L             | HW15L            |
| 12.0~17.9         | CV 16 | AW2435 |                      |                               |                   |                  |
| 18.0~27.9         | CV 17 | AW3240 | DHA0409              | HS0406                        | HW20L             | HW20L            |
| 28.0~31.9         | CV 22 | AW3260 |                      |                               |                   |                  |





# Indexable Reamer Placa



| Código | Grado         |                |              | Dimensiones |     |     | Tipo | Ángulo de Ataque (α°) |     |
|--------|---------------|----------------|--------------|-------------|-----|-----|------|-----------------------|-----|
|        | K10 (Sin Rec) | BPK110 (TiAlN) | BPK210 (TiN) | L           | W   | S   |      |                       |     |
| RI     | 15-A06        |                | ○            | 15          | 3.0 | 1.5 | A    | 6°                    |     |
|        | 15-A12        | ○              |              | 15          | 3.0 | 1.5 | A    | 12°                   |     |
|        | 15-B06        |                | ○            | 15          | 3.0 | 1.5 | B    | 6°                    |     |
|        | 15-B12        |                | ○            | 15          | 3.0 | 1.5 | B    | 12°                   |     |
|        | 16-A06        |                |              | ○           | 16  | 3.5 | 1.5  | A                     | 6°  |
|        | 16-A12        | ○              |              |             | 16  | 3.5 | 1.5  | A                     | 12° |
|        | 16-B06        |                | ○            | ○           | 16  | 3.5 | 1.5  | B                     | 6°  |
|        | 16-B12        |                | ○            |             | 16  | 3.5 | 1.5  | B                     | 12° |
|        | 17-A06        |                |              | ○           | 17  | 4.5 | 2.0  | A                     | 6°  |
|        | 17-A12        | ○              |              |             | 17  | 4.5 | 2.0  | A                     | 12° |
|        | 17-B06        |                | ○            | ○           | 17  | 4.5 | 2.0  | B                     | 6°  |
|        | 17-B12        |                | ○            |             | 17  | 4.5 | 2.0  | B                     | 12° |
|        | 22-A06        |                |              | ○           | 22  | 6.5 | 3.0  | A                     | 6°  |
|        | 22-A12        | ○              |              |             | 22  | 6.5 | 3.0  | A                     | 12° |
|        | 22-B06        |                | ○            | ○           | 22  | 6.5 | 3.0  | B                     | 6°  |
|        | 22-B12        |                | ○            |             | 22  | 6.5 | 3.0  | B                     | 12° |

※ Este grado es r3ecomendado para el tipo de inserto

## ➤ Ángulo de la Rompeviruta

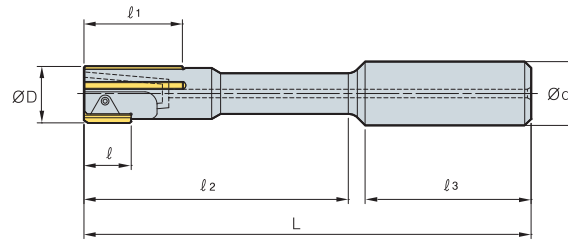
| Forma      | 00                          | 06                        | 12  |
|------------|-----------------------------|---------------------------|---|
|            |                             |                           |   |
| Aplicación | Para maquinado en Fundición | Para Maquinado en general | Para maquinado en Acero Inoxidable y Aluminio |

## ➤ Inclinaciones del inserto

| Tipo | Forma | Condición de Trabajo                                  | Tipo | Forma | Condición de Trabajo                           |
|------|-------|---|------|-------|--|
| A    |       | Excelente para superficies, baja condición de corte   | C    |       | Para maquinado en Aluminio y aleación de Cobre |
| B    |       | Para Aplicaciones en General, Alta condición de Corte | D    |       | Para maquinado de Agujeros Ciegos, bajo avance |

# Indexable Reamer-IRT

Con línea interna para el refrigerante



(mm)

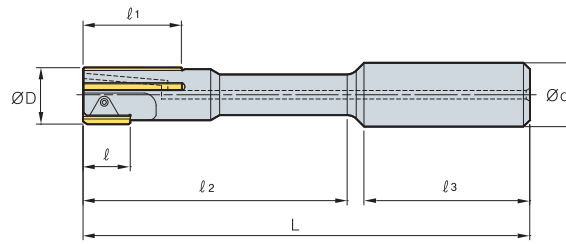
|                        | Código                 | ØD | l  | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | L   | Ød    | Placa |
|------------------------|------------------------|----|----|----------------|----------------|----------------|-----|-------|-------|
| <b>IRT</b>             | <b>10.000-16125-15</b> | 10 | 15 | 30             | 75             | 45             | 125 | 16    | RI 15 |
|                        | <b>11.000-16125-15</b> | 11 | 15 | 30             | 75             | 45             | 125 | 16    | RI 15 |
|                        | <b>12.000-16135-16</b> | 12 | 16 | 30             | 85             | 45             | 135 | 16    | RI 16 |
|                        | <b>13.000-16135-16</b> | 13 | 16 | 30             | 85             | 45             | 135 | 16    | RI 16 |
|                        | <b>14.000-16135-16</b> | 14 | 16 | 30             | 85             | 45             | 135 | 16    | RI 16 |
|                        | <b>15.000-16135-16</b> | 15 | 16 | 30             | 85             | 45             | 135 | 16    | RI 16 |
|                        | <b>16.000-20155-16</b> | 16 | 16 | 30             | 100            | 50             | 155 | 20    | RI 16 |
|                        | <b>17.000-20155-16</b> | 17 | 16 | 30             | 100            | 50             | 155 | 20    | RI 16 |
|                        | <b>18.000-20155-17</b> | 18 | 17 | 30             | 100            | 50             | 155 | 20    | RI 17 |
|                        | <b>19.000-20155-17</b> | 19 | 17 | 30             | 100            | 50             | 155 | 20    | RI 17 |
|                        | <b>20.000-25165-17</b> | 20 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                        | <b>21.000-25165-17</b> | 21 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                        | <b>22.000-25165-17</b> | 22 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                        | <b>23.000-25165-17</b> | 23 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                        | <b>24.000-25165-17</b> | 24 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                        | <b>25.000-25165-17</b> | 25 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                        | <b>26.000-25165-17</b> | 26 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                        | <b>27.000-25165-17</b> | 27 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                        | <b>28.000-32165-22</b> | 28 | 22 | 30             | 110            | 56             | 165 | 32    | RI 22 |
|                        | <b>29.000-32165-22</b> | 29 | 22 | 30             | 110            | 56             | 165 | 32    | RI 22 |
| <b>30.000-32165-22</b> | 30                     | 22 | 30 | 110            | 56             | 165            | 32  | RI 22 |       |
| <b>31.000-32165-22</b> | 31                     | 22 | 30 | 110            | 56             | 165            | 32  | RI 22 |       |

➔ Placas Disponibles **G113**



## Indexable Reamer-IRB

## Orificio de Relleno



(mm)

|                 | Código          | ØD | ℓ  | ℓ <sub>1</sub> | ℓ <sub>2</sub> | ℓ <sub>3</sub> | L   | Ød    | Placa |
|-----------------|-----------------|----|----|----------------|----------------|----------------|-----|-------|-------|
| <b>IRB</b>      | 10.000-16125-15 | 10 | 15 | 30             | 75             | 45             | 125 | 16    | RI 15 |
|                 | 11.000-16125-15 | 11 | 15 | 30             | 75             | 45             | 125 | 16    | RI 15 |
|                 | 12.000-16135-16 | 12 | 16 | 30             | 85             | 45             | 135 | 16    | RI 16 |
|                 | 13.000-16135-16 | 13 | 16 | 30             | 85             | 45             | 135 | 16    | RI 16 |
|                 | 14.000-16135-16 | 14 | 16 | 30             | 85             | 45             | 135 | 16    | RI 16 |
|                 | 15.000-16135-16 | 15 | 16 | 30             | 85             | 45             | 135 | 16    | RI 16 |
|                 | 16.000-20155-16 | 16 | 16 | 30             | 100            | 50             | 155 | 20    | RI 16 |
|                 | 17.000-20155-16 | 17 | 16 | 30             | 100            | 50             | 155 | 20    | RI 16 |
|                 | 18.000-20155-17 | 18 | 17 | 30             | 100            | 50             | 155 | 20    | RI 17 |
|                 | 19.000-20155-17 | 19 | 17 | 30             | 100            | 50             | 155 | 20    | RI 17 |
|                 | 20.000-25165-17 | 20 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                 | 21.000-25165-17 | 21 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                 | 22.000-25165-17 | 22 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                 | 23.000-25165-17 | 23 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                 | 24.000-25165-17 | 24 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                 | 25.000-25165-17 | 25 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                 | 26.000-25165-17 | 26 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                 | 27.000-25165-17 | 27 | 17 | 30             | 110            | 56             | 165 | 25    | RI 17 |
|                 | 28.000-32165-22 | 28 | 22 | 30             | 110            | 56             | 165 | 32    | RI 22 |
|                 | 29.000-32165-22 | 29 | 22 | 30             | 110            | 56             | 165 | 32    | RI 22 |
|                 | 30.000-32165-22 | 30 | 22 | 30             | 110            | 56             | 165 | 32    | RI 22 |
| 31.000-32165-22 | 31              | 22 | 30 | 110            | 56             | 165            | 32  | RI 22 |       |

Placas Disponibles G113

# Chucking/Machine Reamer

## ➤ Condiciones de Corte Recomendadas

| Pieza de Trabajo       | Dureza (HB)               | Condición de Corte | Diámetro  |           |           |
|------------------------|---------------------------|--------------------|-----------|-----------|-----------|
|                        |                           |                    | ~Ø9       | Ø10~25    | Ø26~60    |
| Acero                  | ~100kg/mm <sup>2</sup>    | vc (m/min)         | 8~12      | 8~12      | 8~12      |
|                        |                           | fn (mm/rev)        | 0.15~0.25 | 0.20~0.40 | 0.30~0.50 |
|                        | 100~140kg/mm <sup>2</sup> | vc (m/min)         | 5~10      | 5~10      | 5~10      |
|                        |                           | fn (mm/rev)        | 0.10~0.20 | 0.15~0.25 | 0.20~0.40 |
| Fundición              | HB~220                    | vc (m/min)         | 6~12      | 6~12      | 8~15      |
|                        |                           | fn (mm/rev)        | 0.15~0.30 | 0.30~0.50 | 0.40~0.80 |
|                        | HB 220~                   | vc (m/min)         | 5~10      | 5~10      | 8~12      |
|                        |                           | fn (mm/rev)        | 0.10~0.20 | 0.20~0.35 | 0.30~0.50 |
| Latón                  | HB 50~120                 | vc (m/min)         | 8~12      | 10~15     | 10~15     |
|                        |                           | fn (mm/rev)        | 0.10~0.15 | 0.15~0.25 | 0.25~0.40 |
| Bronce                 | HB 60~100                 | vc (m/min)         | 8~12      | 10~15     | 10~15     |
|                        |                           | fn (mm/rev)        | 0.10~0.15 | 0.15~0.25 | 0.25~0.40 |
| Aleaciones de Aluminio | HB 90~120                 | vc (m/min)         | 15~25     | 15~25     | 20~30     |
|                        |                           | fn (mm/rev)        | 0.15~0.25 | 0.25~0.40 | 0.40~0.70 |
| Resinas Sintéticas     | -                         | vc (m/min)         | 15~30     | 20~35     | 30~40     |
|                        |                           | fn (mm/rev)        | 0.15~0.25 | 0.25~0.40 | 0.40~0.50 |



# Chucking Reamer-SCRS

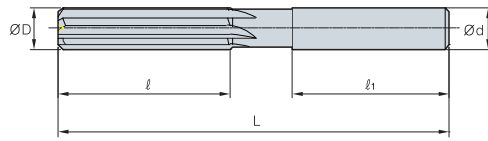


Fig.1

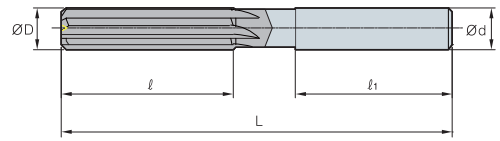


Fig.2

(mm)

| Código | Numero de Flautas | ØD | Ød   | ℓ    | ℓ <sub>1</sub> | L  | Fig. |   |
|--------|-------------------|----|------|------|----------------|----|------|---|
| SCRS   | 050S              | 4  | 5.0  | 6.0  | 20             | 40 | 100  | 1 |
|        | 060S              | 4  | 6.0  | 6.0  | 20             | 40 | 115  | 1 |
|        | 070S              | 4  | 7.0  | 8.0  | 20             | 40 | 125  | 1 |
|        | 080S              | 4  | 8.0  | 8.0  | 20             | 40 | 135  | 1 |
|        | 090S              | 4  | 9.0  | 10.0 | 20             | 45 | 140  | 1 |
|        | 100B              | 4  | 10.0 | 10.0 | 25             | 50 | 145  | 2 |
|        | 110B              | 4  | 11.0 | 12.0 | 25             | 50 | 150  | 2 |
|        | 120B              | 4  | 12.0 | 12.0 | 25             | 50 | 160  | 2 |
|        | 130B              | 4  | 13.0 | 16.0 | 25             | 50 | 165  | 2 |
|        | 140B              | 6  | 14.0 | 16.0 | 25             | 50 | 170  | 2 |
|        | 150B              | 6  | 15.0 | 16.0 | 30             | 50 | 180  | 2 |
|        | 160B              | 6  | 16.0 | 16.0 | 30             | 50 | 190  | 2 |
|        | 180B              | 6  | 18.0 | 20.0 | 30             | 55 | 210  | 2 |
|        | 200B              | 6  | 20.0 | 20.0 | 40             | 60 | 230  | 2 |

# Chucking Reamer-SCRH

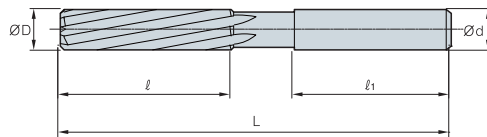


Fig.1

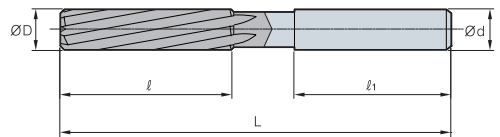
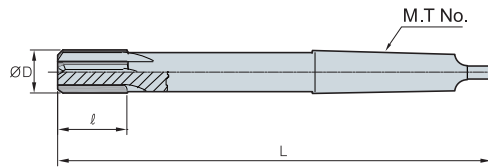


Fig.2

(mm)

| Código | Numero de Flautas | ØD | Ød   | ℓ    | ℓ <sub>1</sub> | L  | Fig. |   |
|--------|-------------------|----|------|------|----------------|----|------|---|
| SCRS   | 050S              | 4  | 5.0  | 6.0  | 20             | 40 | 100  | 1 |
|        | 060S              | 4  | 6.0  | 6.0  | 20             | 40 | 115  | 1 |
|        | 070S              | 4  | 7.0  | 8.0  | 20             | 40 | 125  | 1 |
|        | 080S              | 4  | 8.0  | 8.0  | 20             | 40 | 135  | 1 |
|        | 090S              | 4  | 9.0  | 10.0 | 20             | 45 | 140  | 1 |
|        | 100B              | 4  | 10.0 | 10.0 | 25             | 50 | 145  | 2 |
|        | 110B              | 4  | 11.0 | 12.0 | 25             | 50 | 150  | 2 |
|        | 120B              | 4  | 12.0 | 12.0 | 25             | 50 | 160  | 2 |
|        | 130B              | 4  | 13.0 | 16.0 | 25             | 50 | 165  | 2 |
|        | 140B              | 6  | 14.0 | 16.0 | 25             | 50 | 170  | 2 |
|        | 150B              | 6  | 15.0 | 16.0 | 30             | 50 | 180  | 2 |
|        | 160B              | 6  | 16.0 | 16.0 | 30             | 50 | 190  | 2 |
|        | 180B              | 6  | 18.0 | 20.0 | 30             | 55 | 210  | 2 |
|        | 200B              | 6  | 20.0 | 20.0 | 40             | 60 | 230  | 2 |

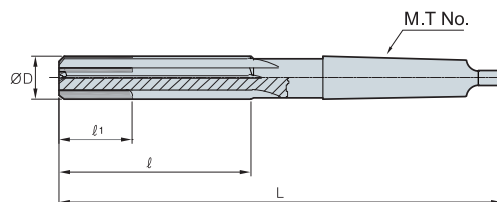
## Chucking Reamer-TCRS



(mm)

|      | Código | Numero de Flautas | ØD   | ℓ  | L   | M.T No. |
|------|--------|-------------------|------|----|-----|---------|
| TCRS | 070    | 4                 | 7.0  | 20 | 150 | 1       |
|      | 080    | 4                 | 8.0  | 20 | 150 | 1       |
|      | 090    | 4                 | 9.0  | 20 | 160 | 1       |
|      | 100    | 4                 | 10.0 | 25 | 160 | 1       |
|      | 110    | 4                 | 11.0 | 25 | 170 | 1       |
|      | 120    | 4                 | 12.0 | 25 | 170 | 1       |
|      | 130    | 4                 | 13.0 | 25 | 180 | 1       |
|      | 140    | 6                 | 14.0 | 25 | 190 | 1       |
|      | 150    | 6                 | 15.0 | 30 | 200 | 2       |
|      | 160    | 6                 | 16.0 | 30 | 200 | 2       |
|      | 180    | 6                 | 18.0 | 30 | 220 | 2       |
|      | 200    | 6                 | 20.0 | 40 | 230 | 2       |
|      | 250    | 6                 | 25.0 | 40 | 260 | 3       |
|      | 280    | 8                 | 28.0 | 40 | 270 | 3       |
|      | 300    | 8                 | 30.0 | 50 | 290 | 3       |

## Chucking Reamer-TMRS



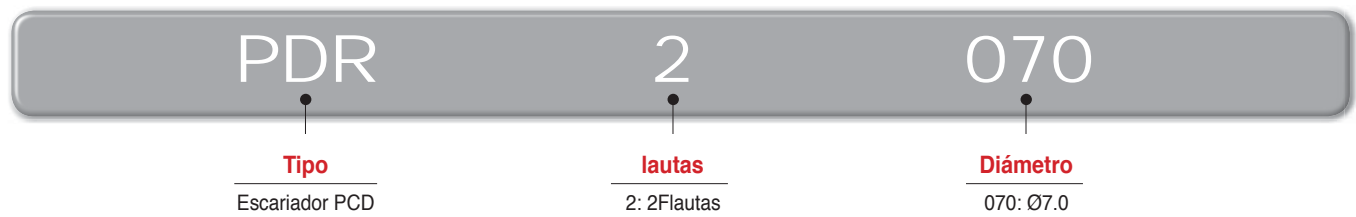
(mm)

|      | Código | Numero de Flautas | ØD   | ℓ   | ℓ1 | L   | M.T No. |
|------|--------|-------------------|------|-----|----|-----|---------|
| TMRS | 070    | 4                 | 7.0  | 60  | 60 | 150 | 1       |
|      | 080    | 4                 | 8.0  | 70  | 70 | 150 | 1       |
|      | 090    | 4                 | 9.0  | 70  | 70 | 160 | 1       |
|      | 100    | 4                 | 10.0 | 75  | 75 | 170 | 1       |
|      | 110    | 4                 | 11.0 | 75  | 75 | 170 | 1       |
|      | 120    | 4                 | 12.0 | 80  | 40 | 180 | 1       |
|      | 130    | 4                 | 13.0 | 85  | 40 | 190 | 1       |
|      | 140    | 6                 | 14.0 | 90  | 45 | 210 | 1       |
|      | 150    | 6                 | 15.0 | 90  | 45 | 215 | 2       |
|      | 160    | 6                 | 16.0 | 100 | 50 | 220 | 2       |
|      | 180    | 6                 | 18.0 | 105 | 50 | 225 | 2       |
|      | 200    | 6                 | 20.0 | 120 | 50 | 240 | 2       |
|      | 250    | 6                 | 25.0 | 130 | 50 | 270 | 3       |
|      | 280    | 8                 | 28.0 | 140 | 50 | 280 | 3       |
|      | 300    | 8                 | 30.0 | 150 | 50 | 290 | 3       |



# PCD Reamer

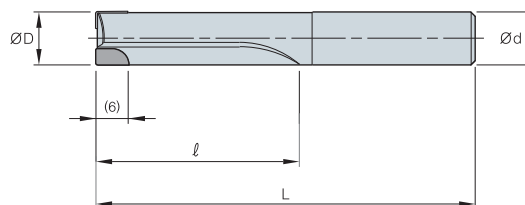
## ☛ Sistema de Codificación



## ☛ Condiciones de Corte Recomendadas

| Pieza de Trabajo     | vc (m/min) | fn (mm/rev) |
|----------------------|------------|-------------|
| Aleación de Aluminio | 50~250     | 0.05~0.20   |

## PCD Reamer-PDR

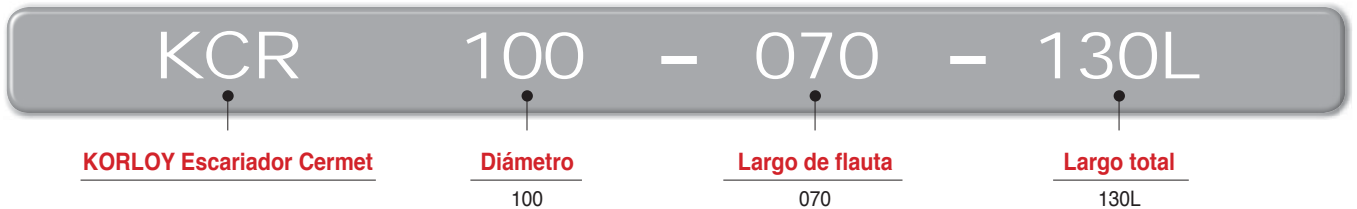


| Código |      | Numero de Flautas | ØD   | Ød   | ℓ  | L   |
|--------|------|-------------------|------|------|----|-----|
| PDR    | 2050 | 2                 | 5.0  | 6.0  | 30 | 65  |
|        | 2060 | 2                 | 6.0  | 6.0  | 40 | 75  |
|        | 2070 | 2                 | 7.0  | 8.0  | 40 | 75  |
|        | 2080 | 2                 | 8.0  | 8.0  | 40 | 75  |
|        | 2090 | 2                 | 9.0  | 10.0 | 40 | 85  |
|        | 2100 | 2                 | 10.0 | 10.0 | 40 | 85  |
|        | 2120 | 2                 | 12.0 | 12.0 | 50 | 95  |
|        | 2140 | 2                 | 14.0 | 16.0 | 50 | 95  |
|        | 2150 | 2                 | 15.0 | 16.0 | 50 | 100 |
|        | 4160 | 4                 | 16.0 | 16.0 | 50 | 100 |
|        | 4180 | 4                 | 18.0 | 20.0 | 60 | 110 |
|        | 4200 | 4                 | 20.0 | 20.0 | 60 | 110 |

## Cermet Reamer

- La rama de cermet realiza el mayor rendimiento en el mecanizado de acero de alta dureza (Menor rendimiento en el mecanizado de fundición)
- Alta maquinabilidad y resistencia al desgaste extiende la vida útil
- Alta productividad más de 30%, buen acabado en superficie, mayor vida útil que la rama de carbono

### ➤ Sistema de Codificación



### ➤ Condiciones de Corte Recomendadas

| Pieza de Trabajo                    | Dureza (HB)     | fz (mm/diente) | vc (m/min) |
|-------------------------------------|-----------------|----------------|------------|
| Acero al carbono                    | Menor 30HRC     | 0.1~0.4        | 50~80      |
| Acero de alto carbono, Acero aleado | 30~40HRC        | 0.1~0.4        | 80~120     |
|                                     | 40~50HRC        | 0.1~0.4        | 50~80      |
| Acero aleado                        | More than 50HRC | 0.05~0.2       | 30~60      |

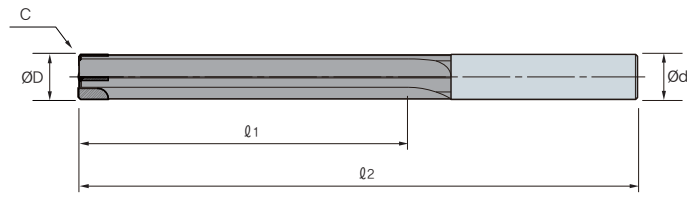
### ➤ Ejemplo de aplicación



- Condiciones de corte
- Pieza: S55CR
- Dureza: 23~30HRC
- fn(mm/rev): 0.4
- vc(m/min): 20

## Cermet Reamer-KCR

### Tipo Estándar

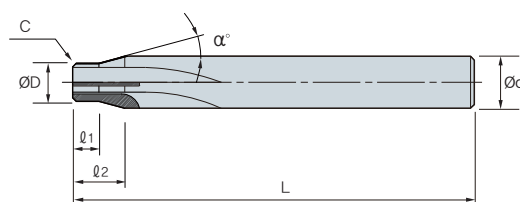


(mm)

| Código             | Numero de Flautas | ØD        | Ød | l <sub>1</sub> | L   |
|--------------------|-------------------|-----------|----|----------------|-----|
| KCR 060~079-25-70L | 2                 | 6.0~7.9   | 8  | 25             | 70  |
| 080~099-035-90L    | 2                 | 8.0~9.9   | 10 | 35             | 90  |
| 100~119-050-100L   | 4                 | 10.0~11.9 | 12 | 50             | 100 |
| 120~159-060-110L   | 4                 | 12.0~15.9 | 12 | 60             | 110 |
| 160~199-060-110L   | 4                 | 16.0~19.9 | 16 | 60             | 110 |
| 200~259-060-110L   | 4                 | 20.0~25.9 | 20 | 60             | 110 |
| 260~300-070-130L   | 4                 | 26.0~30   | 25 | 70             | 130 |

• Longitud de labio y longitud de voladizo del escariador disponibles bajo pedido

• La longitud máxima del voladizo es de 150 mm



### Tipo especial

(mm)

| Código           | Numero de Flautas | ØD       | Ød    | l <sub>1</sub> | l <sub>2</sub> | L  | α°      |
|------------------|-------------------|----------|-------|----------------|----------------|----|---------|
| KCR □□□~□□□-□□□L | 2~4               | 8.0~25.9 | 12~30 | 7~18           | 2~15           | 70 | 10°~60° |

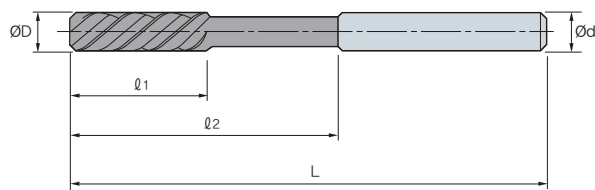




# Broach Reamer

- Óptimo para mecanizado de orificios pasantes de alta precisión con una larga vida útil de la herramienta
- Con ángulo de hélice alto (45 grados) que mejora la mecanizabilidad
- Rugosidad superficial superior y alta precisión
- Filo de corte fuerte y excelente evacuación de virutas
- Dia. Ø3.0~Ø25.0

## Broach Reamer-HBRE



(mm)

|      | Código | Numero de Flautas | ØD   | Ød   | l <sub>1</sub> | l <sub>2</sub> | L   | Tipo             |
|------|--------|-------------------|------|------|----------------|----------------|-----|------------------|
| HBRE | 030    | 3                 | 3.0  | 3.0  | 20             | 40             | 70  | Sólido           |
|      | 040    | 3                 | 4.0  | 4.0  | 25             | 40             | 70  | Sólido           |
|      | 060    | 4                 | 6.0  | 6.0  | 30             | 50             | 80  | Sólido           |
|      | 080    | 4                 | 8.0  | 8.0  | 30             | 60             | 100 | Sólido           |
|      | 100    | 4                 | 10.0 | 10.0 | 30             | 60             | 100 | Sólido           |
|      | 120    | 4                 | 12.0 | 12.0 | 40             | 70             | 120 | Sólido en arriba |
|      | 160    | 6                 | 16.0 | 16.0 | 40             | 80             | 130 | Sólido en arriba |
|      | 200    | 6                 | 20.0 | 20.0 | 50             | 90             | 150 | Sólido en arriba |
|      | 250    | 6                 | 25.0 | 25.0 | 50             | 90             | 150 | Sólido en arriba |

# H

**Herramienta Cementada**



## **Información Técnica para Herramientas Cementadas**

H02 KORLOY Grado Ultrafino: Serie F

H03 Pruebas de Corrosión y Magnetismo: Serie IN

## **Herramientas de Corte**

H04 Cemented Carbide, Cermet Blank

H05 Placa Cuadrada

H07 Barra Redonda

H07 Anillos

H08 Helices

H09 Buriles

H10 Auto Tool Bits

H11 Chuck Jaw

## **Fresado & Construcción**

H12 Cuchillas de Carburo Cementado para  
Placas con ángulo

H13 Cuchillas de Carburo Cementado para  
Placas Cruzadas

H13 Placas con ángulo

H13 Corona de Boreado

H13 Para la Construcción

## **Cortadores Cementados**

H14 Tipos de Cortadores Cementados

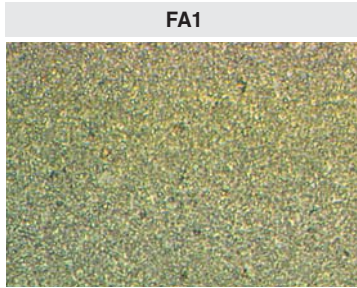
H15 Formato Orden Especial

## KORLOY Grado Ultrafino: Serie F

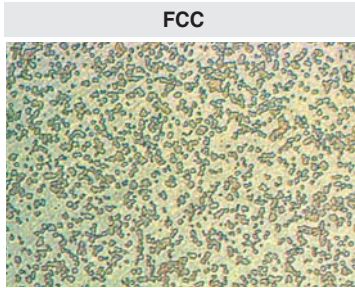
### Características

En general, cuando comparamos carburo-cementado con acero de alta velocidad, el carburo-cementado tiene mayor dureza pero es más frágil que el acero de alta velocidad. Para neutralizar la diferencia de nuestro carburo-cementado, KORLOY ha desarrollado un ultra fino carburo-cementado grado "F-Series"± (WC tamaño menor a 0.5µm). Su calidad es mejor en dureza y resistencia a deformaciones plásticas contra el carburo cementado, que tiene teniendo granos de tamaños superior. La mayor cobertura de la capa ultra fina de carburo-cementado se utiliza principalmente en aceros templados con aleaciones

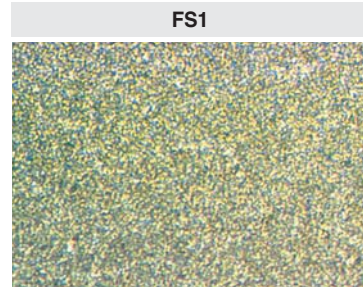
#### Micro estructura de "F-Series"



Desde que los grados se enfocaron en dureza, es posible hacerit iendmill, cortadores laterales, borcas gun, reamer etc. Tiene una Superior calidad en dureza y anti-crecimiento apropiado



Ha sido modificadode el FA1 para incrementar ela resistencia a el shock termalo, el FCC tiene propiedades propias para el acero inoxidable y materiales difíciles de maquinar con baja y alta v



Como un grado ultra fino tiene grand dureza y superior resistencia a el mismo tiempo, es la primera recomendacion en grado de KORLOY para un filo mas vivo en materiales difíciles de cortar

### Mejoramiento de corte

#### Características especiales

| Grado | Características     |              |               | ISO clasificación | Resistencia a el desgaste | resistencia |
|-------|---------------------|--------------|---------------|-------------------|---------------------------|-------------|
|       | Gravedad específica | Dureza (HvA) | TRS (kgf/mm²) |                   |                           |             |
| FS1   | 14.4                | 92.4         | 250           | Z10               | ⊙                         | ○           |
| FCC   | 12.6                | 91.5         | 250           | Z10               | ⊙                         | ○           |
| FA1   | 14.1                | 91.2         | 300           | Z20               | ○                         | ⊙           |
| FG2   | 14.3                | 92.7         | 350           | Z10               | ⊙                         | ○           |

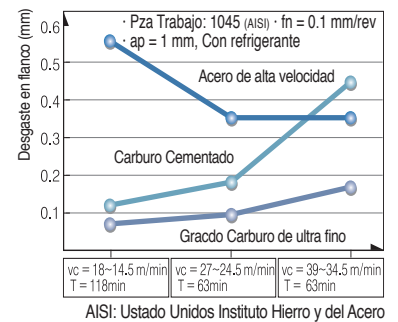
#### Resistencia a rebabeo

| Grado ultra fino | Longitud (m) | Ranurado       | Estado    |
|------------------|--------------|----------------|-----------|
| Carburo G10      | 0.96 m       | (2.5 ranurado) | Astillado |
| Carburo H01      | 1.54 m       | (4 ranurado)   | Astillado |
| Acero rápido     | 2.55 m       | (6.7 ranurado) | Astillado |

Long de corte: 0, 5, 10, 15, 20, 25  
 Veces de corte: 0, 20, 40, 60

Material: 4140 (AISI) · herra. Endmill carburo solidio I (Ø8 mm, 2canales)  
 vc = 26.5 m/min, fz = 0.0285 mm/t, vf = 60 mm/min, conrefrigeración

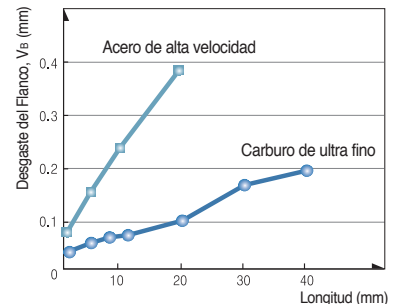
#### Resistencia a el desgaste



### Guia de seleccion de grados

|               |                                      |
|---------------|--------------------------------------|
| material      | Acero Metales no ferrosos, h forjado |
| recomendacion | FS1, FG2, FCC, FA1                   |
| herramienta   | Drill, Endmill                       |

- Material: SM55C (HRC20)
- Angulo de helice: 30°
- Herramienta: Ø10 mm, 2 labios (SSE2100)
- RPM = 1,100 min<sup>-1</sup>
- Velocidad de corte = 35 m/mim
- Profundidad de eje = 12 mm
- Avance = 0.1 mm/t
- Profundidad radial = 1 mm
- Corte hacia abajo, sin refrigerante



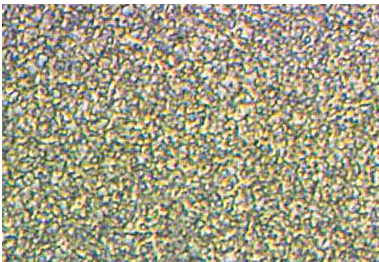
## Pruebas de Corrosión y Magnetismo: Serie IN

### Características

- Sobresaliente resistencia a la corrosión: ciento de veces mejor que el grado general de carburo. (Se realizaron las pruebas al 30%  $\text{NH}_3$ , comparándolo con KORLOY G5 y IN-Series)
- Excelente dureza y resistencia: sobre (HRA) 85 dureza, sobre (TRS) 200 resistencia
- Varios grados: 3 diferentes tipos de grados para cada específica operación, respectivamente

| Grado | Grav.especifica (g/cm <sup>3</sup> ) | Dureza (HRA) | TRS (kgf/mm <sup>2</sup> ) | Saturación magnética Gauss (Gauss · cm <sup>3</sup> /g) | Uso   |
|-------|--------------------------------------|--------------|----------------------------|---|---|
| IN10  | 14.4                                 | 91.5         | 230                        | 0   | Acero p. maquina, aleaciones anticorrosivas, aleaciones en contra de magnetismo |
| IN20  | 14.5                                 | 91.0         | 230                        | 90  | Acero p. maquina, aleaciones anticorrosivas                                     |
| IN40  | 13.5                                 | 85.5         | 230                        | 0   | Moldes para polvo magnetico. Anticorrosivo alea. Contra magnetismo              |

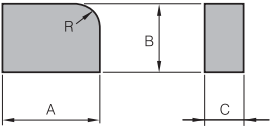
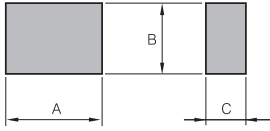
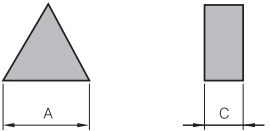
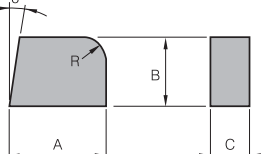
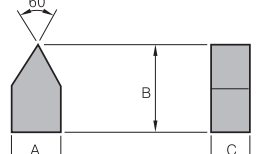
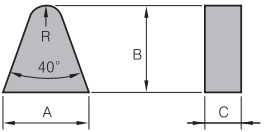
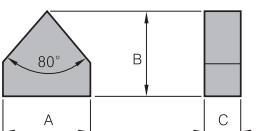
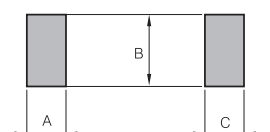
### Microestructura de la serie IN



### Usos

| Para Anti-corrosivo   | Para prueba Magnetismo  |
|---|---|
| <ul style="list-style-type: none"> <li>• Partes para plantas de alta presión corrosiva</li> <li>• Troqueles/alta temperatura</li> <li>• Partes para bombas agua salada</li> <li>• Sellos mecánicos</li> </ul> | <ul style="list-style-type: none"> <li>• Cortadoras</li> <li>• Moldes para polvo magnético</li> <li>• Partes VTR</li> </ul> |

# H Carburo Cementado, Cermet Blank

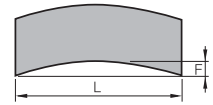
| Placas  | Codigo | A  | B  | C | R   | Sin Rec. |      |      |     |     |     | Cermet | Tipo Disponible |         |  |
|---|--------|----|----|---|-----|----------|------|------|-----|-----|-----|--------|-----------------|---------|--|
|   |        |    |    |   |     | ST10     | ST20 | GR35 | U20 | H01 | H05 | G10    |                 | CN2000  |  |
|    | 01- 0  | 10 | 6  | 3 | 4   |          |      |      |     |     |     |        |                 |         |  |
|   | 1      | 13 | 9  | 3 | 5   |          |      |      |     |     |     |        |                 |         |  |
|   | 2      | 16 | 11 | 4 | 5   |          | ●    |      |     |     |     |        |                 | 31 Tipo |  |
|   | 3      | 19 | 13 | 5 | 5   |          | ●    |      |     |     |     |        |                 | 32 Tipo |  |
|   | 4      | 22 | 15 | 6 | 8   |          |      |      |     |     |     |        |                 | 45 Tipo |  |
|   | 5      | 25 | 17 | 7 | 8   |          |      |      |     |     |     |        |                 | 46 Tipo |  |
|   | 6      | 30 | 20 | 8 | 8   |          |      |      |     |     |     |        |                 |         |  |
|    | 02- 0  | 10 | 6  | 3 | -   |          | ●    |      | ●   | ●   |     |        |                 |         |  |
|   | 1      | 13 | 9  | 3 | -   |          | ●    |      | ●   | ●   |     |        |                 |         |  |
|   | 2      | 16 | 11 | 4 | -   |          | ●    |      | ●   | ●   |     |        |                 |         |  |
|   | 3      | 19 | 13 | 5 | -   | ●        | ●    |      | ●   | ●   |     |        |                 | 41 Tipo |  |
|   | 4      | 22 | 15 | 6 | -   |          | ●    |      | ●   | ●   |     |        |                 | 42 Tipo |  |
|   | 5      | 25 | 17 | 7 | -   |          | ●    |      | ●   | ●   |     |        |                 |         |  |
|   | 6      | 30 | 20 | 8 | -   |          | ●    |      | ●   | ●   |     |        |                 |         |  |
|    | 03- 0  | 10 | -  | 3 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 1      | 12 | -  | 3 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 2      | 15 | -  | 4 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 3      | 18 | -  | 5 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 4      | 24 | -  | 6 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 5      | 24 | -  | 7 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 6      | 28 | -  | 8 | -   |          |      |      |     |     |     |        |                 |         |  |
|  | 04- 0  | 10 | 6  | 3 | 4   |          |      |      |     |     |     |        |                 |         |  |
|   | 1      | 13 | 9  | 3 | 5   |          | ●    |      |     |     |     |        |                 |         |  |
|   | 2      | 16 | 11 | 4 | 5   |          |      |      |     |     |     |        |                 |         |  |
|   | 3      | 19 | 13 | 5 | 5   |          | ●    |      |     |     |     |        |                 |         |  |
|   | 4      | 22 | 15 | 6 | 8   |          |      |      |     |     |     |        |                 |         |  |
|   | 5      | 25 | 17 | 7 | 8   |          |      |      |     |     |     |        |                 |         |  |
|   | 6      | 30 | 20 | 8 | 8   |          |      |      |     |     |     |        |                 |         |  |
|  | 05- 1  | 5  | 8  | 3 | -   |          | ●    |      | ●   |     |     |        |                 |         |  |
|   | 2      | 6  | 10 | 4 | -   |          | ●    |      | ●   |     |     |        |                 |         |  |
|   | 3      | 7  | 12 | 5 | -   |          | ●    |      | ●   |     |     |        |                 |         |  |
|   | 4      | 9  | 16 | 6 | -   |          | ●    |      |     |     |     |        |                 |         |  |
|   | 5      | 10 | 18 | 7 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 6      | 11 | 20 | 8 | -   |          |      |      |     |     |     |        |                 |         |  |
|   |        |    |    |   |     |          |      |      |     |     |     |        |                 |         |  |
|  | 06- 0  | 10 | 10 | 3 | 2   |          | ●    |      | ●   | ●   |     |        |                 |         |  |
|   | 1      | 13 | 13 | 3 | 2.5 |          | ●    | ●    | ●   | ●   |     | ●      |                 |         |  |
|   | 2      | 16 | 16 | 4 | 3   |          | ●    | ●    | ●   | ●   |     | ●      |                 |         |  |
|   | 3      | 19 | 19 | 5 | 4   |          |      | ●    | ●   | ●   |     | ●      |                 |         |  |
|   | 4      | 22 | 22 | 6 | 4   |          | ●    | ●    | ●   | ●   |     | ●      |                 |         |  |
|   | 5      | 25 | 25 | 7 | 5   |          |      | ●    | ●   | ●   |     | ●      |                 |         |  |
|   | 6      | 30 | 30 | 8 | 6   |          |      |      |     |     |     |        |                 |         |  |
|  | 07- 0  | 10 | 10 | 3 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 1      | 13 | 13 | 3 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 2      | 16 | 16 | 4 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 3      | 19 | 19 | 5 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 4      | 25 | 20 | 6 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 5      | 25 | 22 | 7 | -   |          |      |      |     |     |     |        |                 |         |  |
|   | 6      | 30 | 25 | 8 | -   |          |      |      |     |     |     |        |                 |         |  |
|  | 08- 1  | 3  | 8  | 3 | -   |          | ●    |      | ●   |     |     |        |                 |         |  |
|   | 3      | 4  | 13 | 4 | -   | ●        | ●    |      | ●   | ●   |     | ●      |                 |         |  |
|   | 4      | 5  | 15 | 5 | -   | ●        | ●    |      | ●   | ●   |     | ●      |                 |         |  |
|   | 5      | 6  | 17 | 6 | -   | ●        | ●    |      | ●   | ●   |     | ●      |                 |         |  |
|   | 6      | 8  | 20 | 8 | -   |          | ●    |      |     |     |     |        |                 |         |  |
|   |        |    |    |   |     |          |      |      |     |     |     |        |                 |         |  |
|   |        |    |    |   |     |          |      |      |     |     |     |        |                 |         |  |



## RB



■ Tolerancia al pandeo



| L        |            | F-max |
|----------|------------|-------|
| Estándar | Tolerancia |       |
| ~30      | +1.0 - 0   | 0.15  |
| 31~50    | +1.5 - 0   | 0.25  |
| 51~100   | +3.0 - 0   | 0.30  |

※ Sistema de Codificación

**RB** **15** **04** □  
 Longitud Ancho Grosor

| Codigo  | L | W  | T = □ |   |   |   |   |   |   | Calidades |
|---------|---|----|-------|---|---|---|---|---|---|-----------|
|         |   |    | 3     | 4 | 5 | 6 | 7 | 8 | 9 |           |
| RB 303□ | 3 | 3  |       |   |   |   |   |   |   |           |
| RB 304□ | 3 | 4  |       |   |   |   |   |   |   |           |
| RB 305□ | 3 | 5  |       |   |   |   |   |   |   |           |
| RB 306□ | 3 | 6  |       |   |   |   |   |   |   |           |
| RB 307□ | 3 | 7  |       |   |   |   |   |   |   |           |
| RB 308□ | 3 | 8  |       |   |   |   |   |   |   |           |
| RB 309□ | 3 | 9  |       |   |   |   |   |   |   |           |
| RB 310□ | 3 | 10 |       |   |   |   |   |   |   |           |
| RB 403□ | 4 | 3  |       |   |   |   |   |   |   |           |
| RB 404□ | 4 | 4  |       |   |   |   |   |   |   |           |
| RB 405□ | 4 | 5  |       |   |   |   |   |   |   |           |
| RB 406□ | 4 | 6  |       |   |   |   |   |   |   |           |
| RB 407□ | 4 | 7  |       |   |   |   |   |   |   |           |
| RB 408□ | 4 | 8  |       |   |   |   |   |   |   |           |
| RB 409□ | 4 | 9  |       |   |   |   |   |   |   |           |
| RB 410□ | 4 | 10 |       |   |   |   |   |   |   |           |
| RB 503□ | 5 | 3  |       |   |   |   |   |   |   |           |
| RB 504□ | 5 | 4  |       |   |   |   |   |   |   |           |
| RB 505□ | 5 | 5  |       |   |   |   |   |   |   |           |
| RB 506□ | 5 | 6  |       |   |   |   |   |   |   |           |
| RB 507□ | 5 | 7  |       |   |   |   |   |   |   |           |
| RB 508□ | 5 | 8  |       |   |   |   |   |   |   |           |
| RB 509□ | 5 | 9  |       |   |   |   |   |   |   |           |
| RB 510□ | 5 | 10 |       |   |   |   |   |   |   |           |
| RB 603□ | 6 | 3  |       |   |   |   |   |   |   |           |
| RB 604□ | 6 | 4  |       |   |   |   |   |   |   |           |
| RB 605□ | 6 | 5  |       |   |   |   |   |   |   |           |
| RB 606□ | 6 | 6  |       |   |   |   |   |   |   |           |
| RB 607□ | 6 | 7  |       |   |   |   |   |   |   |           |
| RB 608□ | 6 | 8  |       |   |   |   |   |   |   |           |
| RB 609□ | 6 | 9  |       |   |   |   |   |   |   |           |
| RB 610□ | 6 | 10 |       |   |   |   |   |   |   |           |
| RB 703□ | 7 | 3  |       |   |   |   |   |   |   |           |
| RB 704□ | 7 | 4  |       |   |   |   |   |   |   |           |
| RB 705□ | 7 | 5  |       |   |   |   |   |   |   |           |

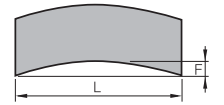
| Codigo   | L  | W  | T = □ |   |   |   |   |   |   | Calidades |
|----------|----|----|-------|---|---|---|---|---|---|-----------|
|          |    |    | 3     | 4 | 5 | 6 | 7 | 8 | 9 |           |
| RB 706□  | 7  | 6  |       |   |   |   |   |   |   |           |
| RB 707□  | 7  | 7  |       |   |   |   |   |   |   |           |
| RB 708□  | 7  | 8  |       |   |   |   |   |   |   |           |
| RB 709□  | 7  | 9  |       |   |   |   |   |   |   |           |
| RB 710□  | 7  | 10 |       |   |   |   |   |   |   |           |
| RB 803□  | 8  | 3  |       |   |   |   |   |   |   |           |
| RB 804□  | 8  | 4  |       |   |   |   |   |   |   |           |
| RB 805□  | 8  | 5  |       |   |   |   |   |   |   |           |
| RB 806□  | 8  | 6  |       |   |   |   |   |   |   |           |
| RB 807□  | 8  | 7  |       |   |   |   |   |   |   |           |
| RB 808□  | 8  | 8  |       |   |   |   |   |   |   |           |
| RB 809□  | 8  | 9  |       |   |   |   |   |   |   |           |
| RB 810□  | 8  | 10 |       |   |   |   |   |   |   |           |
| RB 903□  | 9  | 3  |       |   |   |   |   |   |   |           |
| RB 904□  | 9  | 4  |       |   |   |   |   |   |   |           |
| RB 905□  | 9  | 5  |       |   |   |   |   |   |   |           |
| RB 906□  | 9  | 6  |       |   |   |   |   |   |   |           |
| RB 907□  | 9  | 7  |       |   |   |   |   |   |   |           |
| RB 908□  | 9  | 8  |       |   |   |   |   |   |   |           |
| RB 909□  | 9  | 9  |       |   |   |   |   |   |   |           |
| RB 910□  | 9  | 10 |       |   |   |   |   |   |   |           |
| RB 1003□ | 10 | 3  |       |   |   |   |   |   |   |           |
| RB 1004□ | 10 | 4  |       |   |   |   |   |   |   |           |
| RB 1005□ | 10 | 5  |       |   |   |   |   |   |   |           |
| RB 1006□ | 10 | 6  |       |   |   |   |   |   |   |           |
| RB 1007□ | 10 | 7  |       |   |   |   |   |   |   |           |
| RB 1008□ | 10 | 8  |       |   |   |   |   |   |   |           |
| RB 1009□ | 10 | 9  |       |   |   |   |   |   |   |           |
| RB 1010□ | 10 | 10 |       |   |   |   |   |   |   |           |
| RB 1504□ | 15 | 4  |       |   |   |   |   |   |   |           |
| RB 1505□ | 15 | 5  |       |   |   |   |   |   |   |           |
| RB 2003□ | 20 | 3  |       |   |   |   |   |   |   |           |
| RB 2004□ | 20 | 4  |       |   |   |   |   |   |   |           |
| RB 2005□ | 20 | 5  |       |   |   |   |   |   |   |           |
| RB 2006□ | 20 | 6  |       |   |   |   |   |   |   |           |



## RB



■ Tolerancia al pandeo



| Estándar | L          |  | F-max |
|----------|------------|--|-------|
|          | Tolerancia |  |       |
| ~30      | +1.0 - 0   |  | 0.15  |
| 31~50    | +1.5 - 0   |  | 0.25  |
| 51~100   | +3.0 - 0   |  | 0.30  |

※ Sistema de Codificación **RB** **15** **04** □  
 Longitud Ancho Grosor

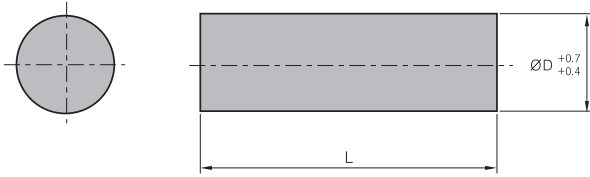
| Codigo   | L  | W  | T = □ |   |   |   |   |   |   | Calidades |    |
|----------|----|----|-------|---|---|---|---|---|---|-----------|----|
|          |    |    | 3     | 4 | 5 | 6 | 7 | 8 | 9 |           | 10 |
|          |    |    | G10   |   |   |   |   |   |   |           |    |
| RB 2007□ | 20 | 7  |       |   |   |   |   |   |   |           |    |
| RB 2008□ | 20 | 8  |       |   |   |   |   |   |   |           |    |
| RB 2009□ | 20 | 9  |       |   |   |   |   |   |   |           |    |
| RB 2010□ | 20 | 10 |       |   |   |   |   |   |   |           |    |
| RB 3003□ | 30 | 3  |       |   |   |   |   |   |   |           |    |
| RB 3004□ | 30 | 4  |       |   |   |   |   |   |   |           |    |
| RB 3005□ | 30 | 5  |       |   |   |   |   |   |   |           |    |
| RB 3006□ | 30 | 6  |       |   |   |   |   |   |   |           |    |
| RB 3007□ | 30 | 7  |       |   |   |   |   |   |   |           |    |
| RB 3008□ | 30 | 8  |       |   |   |   |   |   |   |           |    |
| RB 3009□ | 30 | 9  |       |   |   |   |   |   |   |           |    |
| RB 3010□ | 30 | 10 |       |   |   |   |   |   |   |           |    |
| RB 4003□ | 40 | 3  |       |   |   |   |   |   |   |           |    |
| RB 4004□ | 40 | 4  |       |   |   |   |   |   |   |           |    |
| RB 4005□ | 40 | 5  |       |   |   |   |   |   |   |           |    |
| RB 4006□ | 40 | 6  |       |   |   |   |   |   |   |           |    |
| RB 4007□ | 40 | 7  |       |   |   |   |   |   |   |           |    |
| RB 4008□ | 40 | 8  |       |   |   |   |   |   |   |           |    |
| RB 4009□ | 40 | 9  |       |   |   |   |   |   |   |           |    |
| RB 4010□ | 40 | 10 |       |   |   |   |   |   |   |           |    |
| RB 5003□ | 50 | 3  |       |   |   |   |   |   |   |           |    |
| RB 5004□ | 50 | 4  |       |   |   |   |   |   |   |           |    |
| RB 5005□ | 50 | 5  |       |   |   |   |   |   |   |           |    |
| RB 5006□ | 50 | 6  |       |   |   |   |   |   |   |           |    |
| RB 5007□ | 50 | 7  |       |   |   |   |   |   |   |           |    |
| RB 5008□ | 50 | 8  |       |   |   |   |   |   |   |           |    |
| RB 5009□ | 50 | 9  |       |   |   |   |   |   |   |           |    |
| RB 5010□ | 50 | 10 |       |   |   |   |   |   |   |           |    |
| RB 6003□ | 60 | 3  |       |   |   |   |   |   |   |           |    |
| RB 6004□ | 60 | 4  |       |   |   |   |   |   |   |           |    |
| RB 6005□ | 60 | 5  |       |   |   |   |   |   |   |           |    |
| RB 6006□ | 60 | 6  |       |   |   |   |   |   |   |           |    |
| RB 6007□ | 60 | 7  |       |   |   |   |   |   |   |           |    |
| RB 6008□ | 60 | 8  |       |   |   |   |   |   |   |           |    |
| RB 6009□ | 60 | 9  |       |   |   |   |   |   |   |           |    |

| Codigo    | L   | W  | T = □ |   |   |   |   |   |   | Calidades |    |
|-----------|-----|----|-------|---|---|---|---|---|---|-----------|----|
|           |     |    | 3     | 4 | 5 | 6 | 7 | 8 | 9 |           | 10 |
|           |     |    | G10   |   |   |   |   |   |   |           |    |
| RB 6010□  | 60  | 10 |       |   |   |   |   |   |   |           |    |
| RB 7003□  | 70  | 3  |       |   |   |   |   |   |   |           |    |
| RB 7004□  | 70  | 4  |       |   |   |   |   |   |   |           |    |
| RB 7005□  | 70  | 5  |       |   |   |   |   |   |   |           |    |
| RB 7006□  | 70  | 6  |       |   |   |   |   |   |   |           |    |
| RB 7007□  | 70  | 7  |       |   |   |   |   |   |   |           |    |
| RB 7008□  | 70  | 8  |       |   |   |   |   |   |   |           |    |
| RB 7009□  | 70  | 9  |       |   |   |   |   |   |   |           |    |
| RB 7010□  | 70  | 10 |       |   |   |   |   |   |   |           |    |
| RB 8003□  | 80  | 3  |       |   |   |   |   |   |   |           |    |
| RB 8004□  | 80  | 4  |       |   |   |   |   |   |   |           |    |
| RB 8005□  | 80  | 5  |       |   |   |   |   |   |   |           |    |
| RB 8006□  | 80  | 6  |       |   |   |   |   |   |   |           |    |
| RB 8007□  | 80  | 7  |       |   |   |   |   |   |   |           |    |
| RB 8008□  | 80  | 8  |       |   |   |   |   |   |   |           |    |
| RB 8009□  | 80  | 9  |       |   |   |   |   |   |   |           |    |
| RB 8010□  | 80  | 10 |       |   |   |   |   |   |   |           |    |
| RB 9003□  | 90  | 3  |       |   |   |   |   |   |   |           |    |
| RB 9004□  | 90  | 4  |       |   |   |   |   |   |   |           |    |
| RB 9005□  | 90  | 5  |       |   |   |   |   |   |   |           |    |
| RB 9006□  | 90  | 6  |       |   |   |   |   |   |   |           |    |
| RB 9007□  | 90  | 7  |       |   |   |   |   |   |   |           |    |
| RB 9008□  | 90  | 8  |       |   |   |   |   |   |   |           |    |
| RB 9009□  | 90  | 9  |       |   |   |   |   |   |   |           |    |
| RB 9010□  | 90  | 10 |       |   |   |   |   |   |   |           |    |
| RB 10003□ | 100 | 3  |       |   |   |   |   |   |   |           |    |
| RB 10004□ | 100 | 4  |       |   |   |   |   |   |   |           |    |
| RB 10005□ | 100 | 5  |       |   |   |   |   |   |   |           |    |
| RB 10006□ | 100 | 6  |       |   |   |   |   |   |   |           |    |
| RB 10007□ | 100 | 7  |       |   |   |   |   |   |   |           |    |
| RB 10008□ | 100 | 8  |       |   |   |   |   |   |   |           |    |
| RB 10009□ | 100 | 9  |       |   |   |   |   |   |   |           |    |
| RB 10010□ | 100 | 10 |       |   |   |   |   |   |   |           |    |

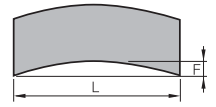




# SR Barra Redonda



■ Tolerancia al pandeo

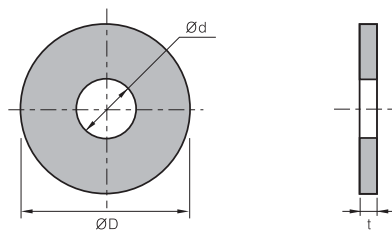


| Estándar | L          |  | F-max |
|----------|------------|--|-------|
|          | Tolerancia |  |       |
| ~30      | +1.5 - 0   |  | 0.10  |
| 31~40    | +1.5 - 0   |  | 0.15  |
| 41~50    | +1.5 - 0   |  | 0.20  |
| 51~100   | +2.5 - 0   |  | 0.25  |

※ Sistema de Codificación **SR** **03** □  
 Diametro Longitud

| Codigo | ØD  | T = □ |    |    |    |    |    |    |     | Calidades |     |  |
|--------|-----|-------|----|----|----|----|----|----|-----|-----------|-----|--|
|        |     | 30    | 40 | 50 | 60 | 70 | 80 | 90 | 100 | ST20      | G10 |  |
| SR     | 03□ | 3     |    |    |    |    |    |    |     |           |     |  |
|        | 04□ | 4     |    |    |    |    |    |    |     |           |     |  |
|        | 05□ | 5     |    |    |    |    |    |    |     |           |     |  |
|        | 06□ | 6     |    |    |    |    |    |    |     |           |     |  |
|        | 07□ | 7     |    |    |    |    |    |    |     |           |     |  |
|        | 08□ | 8     |    |    |    |    |    |    |     |           |     |  |
|        | 09□ | 9     |    |    |    |    |    |    |     |           |     |  |
|        | 10□ | 10    |    |    |    |    |    |    |     |           |     |  |
|        | 11□ | 11    |    |    |    |    |    |    |     |           |     |  |
|        | 12□ | 12    |    |    |    |    |    |    |     |           |     |  |

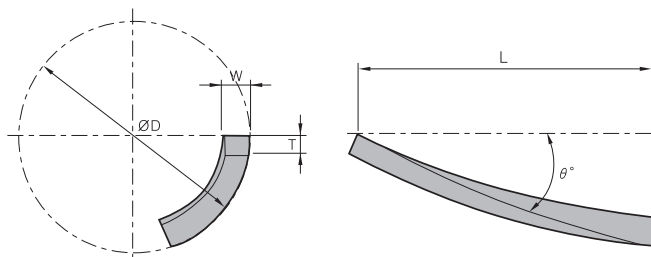
# RT Anillo



| Codigo  | ØD        | Ød        | t      |
|---------|-----------|-----------|--------|
| ØD×Ød×t | Ø7.2~Ø200 | Ø2.7~Ø150 | 0.8~10 |



## ST Helices



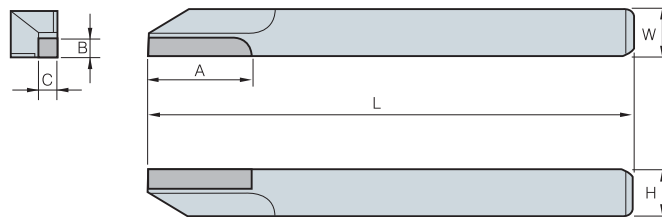
(mm)

| Codigo | Endmill Disponible (ØD) | L                   | T   | W   | θ°      |         |
|--------|-------------------------|---------------------|-----|-----|---------|---------|
| ST     | 14                      | Ø13, 14             | 30  | 2.3 | 4.0     | 23° 44' |
|        | 15                      | Ø15                 | 30  | 2.3 | 4.0     | 25° 13' |
|        | 18                      | Ø18                 | 32  | 2.3 | 4.5     | 25° 13' |
|        | 20                      | Ø20                 | 32  | 2.8 | 5.5     | 24° 09' |
|        | 24                      | Ø23, 24             | 37  | 2.8 | 5.5     | 25° 13' |
|        | 26                      | Ø26, 27             | 37  | 3.3 | 6.5     | 24° 24' |
|        | 30                      | Ø29, 30, 31         | 42  | 3.8 | 7.0     | 25° 13' |
|        | 32                      | Ø32, 33             | 47  | 3.8 | 7.0     | 26° 41' |
|        | 35                      | Ø34, 35, 36         | 52  | 3.8 | 7.0     | 24° 36' |
|        | 38                      | Ø37, 38             | 57  | 3.8 | 7.0     | 23° 51' |
|        | 40                      | Ø39, 40, 41, 42     | 62  | 4.3 | 7.5     | 24° 57' |
|        | 45                      | Ø43, 44, 45, 46, 47 | 67  | 4.3 | 7.5     | 25° 13' |
| 50     | Ø48, 49, 50             | 67                  | 4.3 | 7.5 | 24° 09' |         |



| Dirección Avance                               | Figura | Código            | A  | B  | C | (R) | W  | H  | L   | E  | F  | Buriles Disponibles |
|--|--------|-------------------|----|----|---|-----|----|----|-----|----|----|---------------------|
| <b>Tipo 33 (Derecho) / Tipo 34 (Izquierdo)</b> |        |                   |    |    |   |     |    |    |     |    |    |                     |
|  |        | <b>33, 34 - 0</b> | 10 | 6  | 3 | 0.3 | 10 | 10 | 80  | 0  |    | 04-0                |
|  |        | <b>1</b>          | 13 | 9  | 3 | 0.5 | 13 | 13 | 100 | 4  |    | 04-1                |
|  |        | <b>2</b>          | 16 | 11 | 4 | 0.5 | 16 | 16 | 120 | 4  |    | 04-2                |
|  |        | <b>3</b>          | 19 | 13 | 5 | 0.5 | 19 | 19 | 140 | 5  |    | 04-3                |
|  |        | <b>4</b>          | 22 | 15 | 6 | 1   | 25 | 25 | 160 | 5  |    | 04-4                |
|  |        | <b>5</b>          | 25 | 17 | 7 | 1   | 25 | 30 | 180 | 5  |    | 04-5                |
|  |        | <b>6</b>          | 30 | 20 | 8 | 1   | 35 | 35 | 200 | 6  |    | 04-6                |
| <b>Tipo 35</b>                                 |        |                   |    |    |   |     |    |    |     |    |    |                     |
|  |        | <b>35 - 0</b>     | 10 | 10 | 3 | 0.3 | 10 | 10 | 80  |    |    | 07-0                |
|  |        | <b>1</b>          | 13 | 13 | 3 | 0.5 | 13 | 13 | 100 |    |    | 07-1                |
|  |        | <b>2</b>          | 16 | 16 | 4 | 0.5 | 16 | 16 | 120 |    |    | 07-2                |
|  |        | <b>3</b>          | 18 | 19 | 5 | 0.5 | 19 | 19 | 140 |    |    | 07-3                |
|  |        | <b>4</b>          | 25 | 20 | 6 | 1   | 25 | 25 | 160 |    |    | 07-4                |
|  |        | <b>5</b>          | 25 | 22 | 7 | 1   | 25 | 30 | 180 |    |    | 07-5                |
|  |        | <b>6</b>          | 30 | 25 | 8 | 1   | 30 | 35 | 200 |    |    | 07-6                |
| <b>Tipo 36</b>                                 |        |                   |    |    |   |     |    |    |     |    |    |                     |
|  |        | <b>36 - 0</b>     | 10 | 10 | 3 | 2   | 10 | 10 | 80  |    |    | 06-0                |
|  |        | <b>1</b>          | 13 | 13 | 3 | 2.5 | 13 | 13 | 100 |    |    | 06-1                |
|  |        | <b>2</b>          | 16 | 16 | 4 | 3   | 16 | 16 | 120 |    |    | 06-2                |
|  |        | <b>3</b>          | 18 | 18 | 5 | 4   | 19 | 19 | 140 |    |    | 06-3                |
|  |        | <b>4</b>          | 22 | 22 | 6 | 4   | 25 | 25 | 160 |    |    | 06-4                |
|  |        | <b>5</b>          | 25 | 25 | 7 | 5   | 25 | 30 | 180 |    |    | 06-5                |
|  |        | <b>6</b>          | 30 | 30 | 8 | 6   | 30 | 35 | 200 |    |    | 06-6                |
| <b>Tipo 39 (Derecho) / Tipo 40 (Izquierdo)</b> |        |                   |    |    |   |     |    |    |     |    |    |                     |
|  |        | <b>39, 40 - 0</b> | 10 | 10 | 3 | 2   | 10 | 10 | 80  | 5  |    | 06-0                |
|  |        | <b>1</b>          | 13 | 13 | 3 | 2.5 | 13 | 13 | 100 | 7  |    | 06-1                |
|  |        | <b>2</b>          | 16 | 16 | 4 | 3   | 16 | 16 | 120 | 10 |    | 06-2                |
|  |        | <b>3</b>          | 19 | 19 | 5 | 4   | 19 | 19 | 140 | 12 |    | 06-3                |
|  |        | <b>4</b>          | 22 | 22 | 6 | 4   | 25 | 25 | 160 | 13 |    | 06-4                |
|  |        | <b>5</b>          | 25 | 25 | 7 | 5   | 25 | 30 | 180 | 15 |    | 06-5                |
|  |        | <b>6</b>          | 30 | 30 | 8 | 6   | 30 | 35 | 200 | 16 |    | 06-6                |
| <b>Tipo 43</b>                                 |        |                   |    |    |   |     |    |    |     |    |    |                     |
|  |        | <b>43 - 1</b>     | 3  | 8  | 3 |     | 10 | 16 | 100 |    | 13 | 08-1                |
|  |        | <b>2</b>          | 3  | 8  | 3 |     | 13 | 19 | 120 |    | 16 | 08-1                |
|  |        | <b>3</b>          | 4  | 13 | 4 |     | 16 | 22 | 140 |    | 20 | 08-3                |
|  |        | <b>4</b>          | 5  | 15 | 5 |     | 18 | 25 | 160 |    | 25 | 08-4                |
|  |        | <b>5</b>          | 6  | 17 | 6 |     | 22 | 32 | 180 |    | 30 | 08-5                |
|  |        | <b>6</b>          | 8  | 20 | 8 |     | 25 | 38 | 200 |    | 40 | 08-6                |
| <b>Tipo 49 (derecho) / Tipo 50 (izquierdo)</b> |        |                   |    |    |   |     |    |    |     |    |    |                     |
|  |        | <b>49, 50 - 1</b> | 5  | 8  | 3 |     | 13 | 13 | 100 |    |    | 05-1                |
|  |        | <b>2</b>          | 6  | 10 | 4 |     | 16 | 16 | 120 |    |    | 05-2                |
|  |        | <b>3</b>          | 7  | 12 | 5 |     | 19 | 19 | 140 |    |    | 05-3                |
|  |        | <b>4</b>          | 9  | 16 | 6 |     | 25 | 25 | 160 |    |    | 05-4                |

## PBX100



(mm)

| Codigo | A   | B  | C   | W   | H  | L  |     |
|--------|-----|----|-----|-----|----|----|-----|
| PBX -  | 105 | 20 | 2.0 | 2.0 | 5  | 5  | 125 |
|        | 106 | 20 | 2.5 | 2.5 | 6  | 6  | 140 |
|        | 107 | 20 | 3.0 | 3.0 | 7  | 7  | 150 |
|        | 108 | 20 | 3.0 | 3.0 | 8  | 8  | 150 |
|        | 109 | 20 | 3.5 | 3.5 | 9  | 9  | 150 |
|        | 110 | 20 | 4.0 | 4.0 | 10 | 10 | 150 |
|        | 112 | 20 | 4.0 | 4.0 | 12 | 12 | 150 |
|        | 116 | 20 | 4.0 | 4.0 | 16 | 16 | 150 |


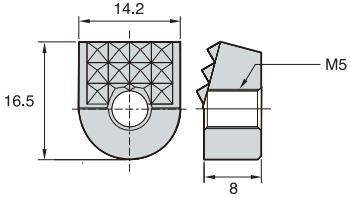





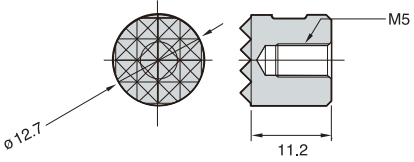


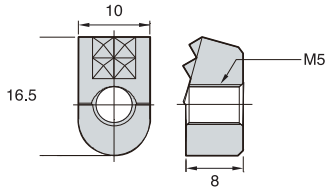



# Chuck Jaw **new**

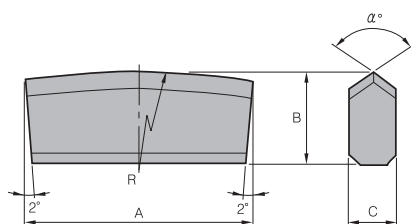
## Características

- Chuck Jaw abraza pieza de trabajo en bruto fuertemente en torneado y fresado (Incluyendo MCT)
- Puede tirar cualquier tipo de pieza de trabajo

## Información de existencias

| Código | Geometría   | Dimensiones  |
|--------|---|--|
| CJ 04  |    |   |
| CJ 12  |    |  |
| CJ 21  |    |  |
| CJ 22  |   |  |
| CJ 23  |  |  |
| CJ 31  |  |  |
| CJ 32  |  |  |
| CJ 41  |  |  |
| CJ 42  |  |  |

## Placas con ángulo Tipo 1000

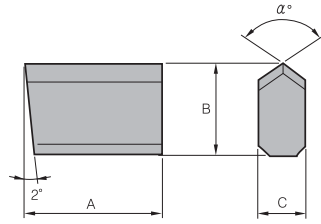


(mm)

| Codigo     | A  | B  | C  | $\alpha^\circ$ | R   |
|------------|----|----|----|----------------|-----|
| 1000 - 124 | 24 | 10 | 6  | 100            | 80  |
| 126        | 26 | 10 | 6  | 100            | 80  |
| 128        | 28 | 10 | 6  | 100            | 80  |
| 130        | 30 | 10 | 6  | 100            | 80  |
| 132        | 32 | 10 | 6  | 100            | 80  |
| 232        | 32 | 10 | 6  | 100            | 80  |
| 234        | 34 | 12 | 8  | 110            | 120 |
| 236        | 36 | 12 | 8  | 110            | 120 |
| 238        | 38 | 12 | 8  | 110            | 120 |
| 240        | 40 | 12 | 8  | 110            | 120 |
| 242        | 42 | 12 | 8  | 110            | 120 |
| 332        | 32 | 14 | 8  | 110            | 120 |
| 334        | 34 | 14 | 8  | 110            | 120 |
| 336        | 36 | 14 | 8  | 110            | 120 |
| 338        | 38 | 14 | 8  | 110            | 120 |
| 340        | 40 | 14 | 8  | 110            | 120 |
| 342        | 42 | 14 | 8  | 110            | 120 |
| 434        | 34 | 15 | 10 | 110            | 120 |
| 436        | 36 | 15 | 10 | 110            | 120 |
| 438        | 38 | 15 | 10 | 110            | 120 |
| 440        | 40 | 15 | 10 | 110            | 120 |
| 442        | 42 | 15 | 10 | 110            | 120 |
| 444        | 44 | 15 | 10 | 110            | 120 |
| 446        | 46 | 15 | 10 | 110            | 120 |
| 534        | 34 | 18 | 10 | 110            | 120 |
| 536        | 36 | 18 | 10 | 110            | 120 |
| 538        | 38 | 18 | 10 | 110            | 120 |
| 540        | 40 | 18 | 10 | 110            | 120 |
| 542        | 42 | 18 | 10 | 110            | 120 |
| 544        | 44 | 18 | 10 | 110            | 120 |
| 546        | 46 | 18 | 10 | 110            | 120 |



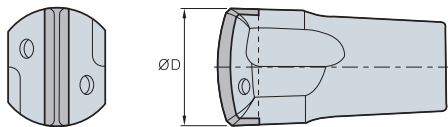
## Para placas cruzadas Tipo 2000



| Codigo |     | A  | B  | C   | $\alpha^\circ$ | R |
|--------|-----|----|----|-----|----------------|---|
| 2000 - | 110 | 10 | 10 | 6   | 100            |   |
|        | 111 | 11 | 10 | 6   | 100            |   |
|        | 112 | 12 | 10 | 6   | 100            |   |
|        | 113 | 13 | 10 | 6   | 100            |   |
|        | 114 | 14 | 10 | 6   | 100            |   |
|        | 115 | 15 | 12 | 6   | 100            |   |
|        | 210 | 10 | 12 | 6   | 100            |   |
|        | 211 | 11 | 12 | 6   | 100            |   |
|        | 212 | 12 | 12 | 6   | 100            |   |
|        | 213 | 13 | 12 | 6   | 100            |   |
|        | 214 | 14 | 12 | 6   | 100            |   |
|        | 215 | 15 | 14 | 8   | 100            |   |
|        | 312 | 12 | 14 | 8   | 100            |   |
|        | 313 | 13 | 14 | 8   | 100            |   |
|        | 314 | 14 | 14 | 8   | 100            |   |
|        | 315 | 15 | 14 | 8   | 100            |   |
|        | 316 | 16 | 14 | 8   | 100            |   |
|        | 317 | 17 | 14 | 8   | 100            |   |
| 318    | 18  | 14 | 8  | 100 |                |   |

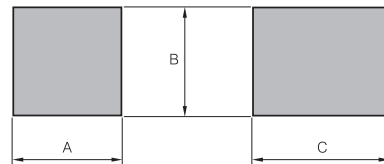
Al pedir materiales especiales, favor de indicar código, calidad y cantidad. Disponible para hecho a medida

## TB para placas de reducción



| Codigo | ØD |
|--------|----|
| TB 20  | 20 |
| 32     | 32 |
| 34     | 34 |
| 36     | 36 |
| 38     | 38 |
| 39     | 39 |
| 40     | 40 |

## BT herramienta en bruto para mandrinado



| Codigo | A | B  | C  |
|--------|---|----|----|
| BT 1   | 5 | 5  | 8  |
| 2      | 6 | 6  | 9  |
| 3      | 8 | 8  | 10 |
| 4      | 7 | 10 | 15 |

## Bits para Construcción

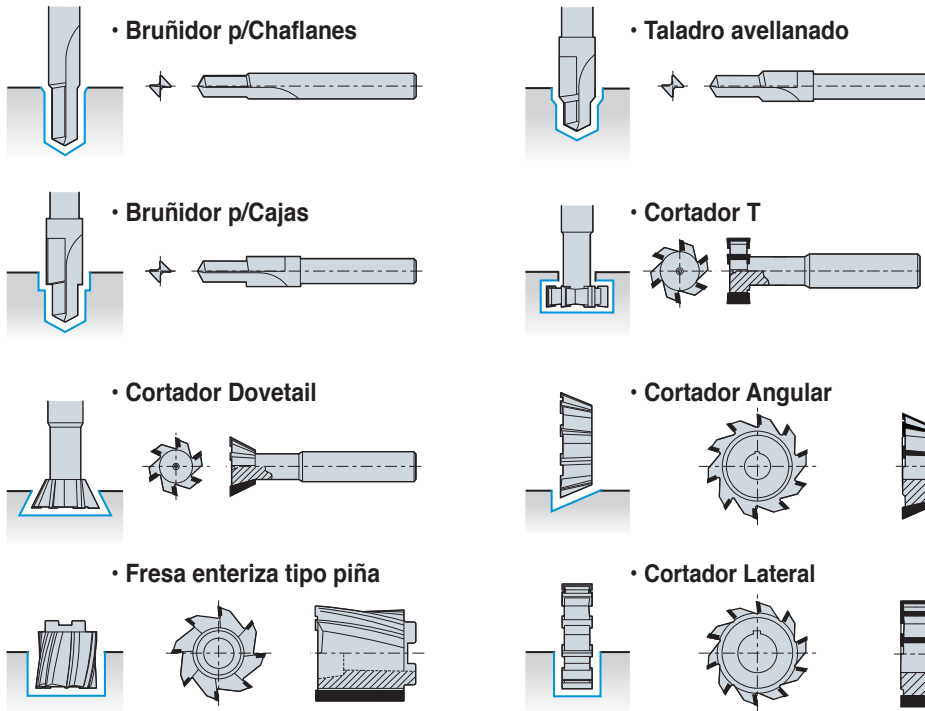
| Configuración       | Dimensiones | Configuración | Dimensiones | Configuración | Dimensiones |
|---------------------|-------------|---------------|-------------|---------------|-------------|
| Taladro para Tierra |             | Fundicion     |             | Varilla       |             |

# H Tipos de Cortadores Cementados

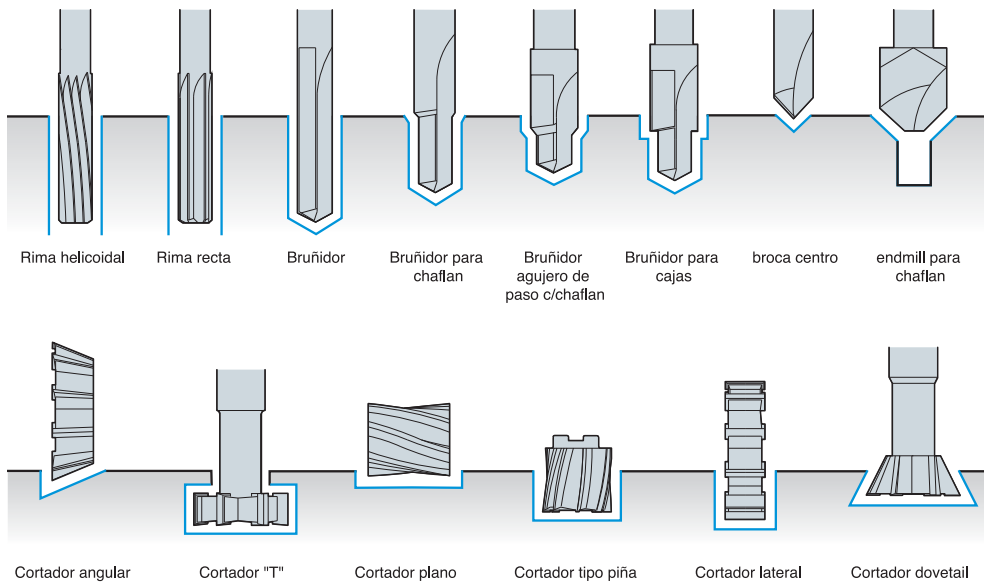
## Características

- Para varias aplicaciones
- Exactitud precisa. Fácil para orden especiales
- Conveniente para las pequeñas maquinas. Plazos de entrega cortos
- Costos razonables de la herramienta. Reutilizable después de afilar

## Proceso de Corte

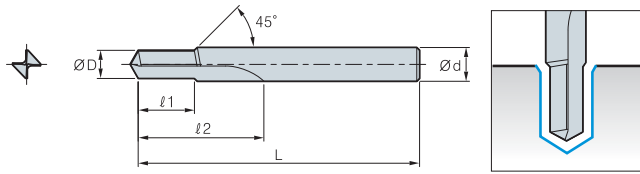


## Procesos y Tipos de Corte





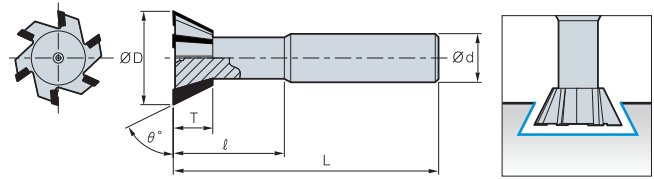
### Bruñidor para chaflan



(mm)

| Codigo | ØD | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L | Ød |
|--------|----|----------------|----------------|---|----|
| BDC    |    |                |                |   |    |

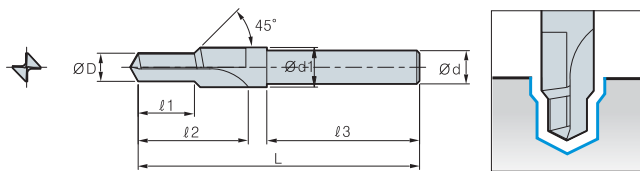
### Cortador doventail



(mm)

| Codigo | ØD | ℓ | θ° | ℓ <sub>1</sub> | L | Ød | N.º de labios |
|--------|----|---|----|----------------|---|----|---------------|
| DC     |    |   |    |                |   |    |               |

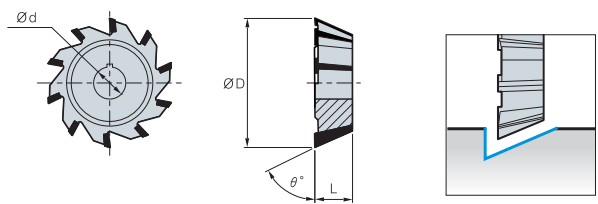
### Bruñidor agujero de paso c/chaflan



(mm)

| Codigo | ØD | Ød <sub>1</sub> | ℓ <sub>1</sub> | ℓ <sub>2</sub> | ℓ <sub>3</sub> | L | Ød |
|--------|----|-----------------|----------------|----------------|----------------|---|----|
| BDS    |    |                 |                |                |                |   |    |

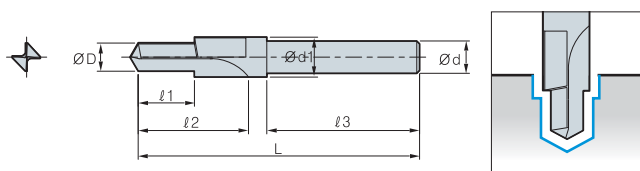
### Cortador Angular



(mm)

| Codigo | ØD | θ° | Ød | L | N.º de labios |
|--------|----|----|----|---|---------------|
| AC     |    |    |    |   |               |

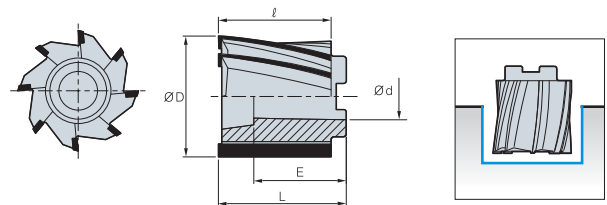
### Bruñidor para cajas



(mm)

| Codigo | ØD | Ød <sub>2</sub> | ℓ <sub>1</sub> | ℓ <sub>2</sub> | ℓ <sub>3</sub> | L | Ød |
|--------|----|-----------------|----------------|----------------|----------------|---|----|
| BDCB   |    |                 |                |                |                |   |    |

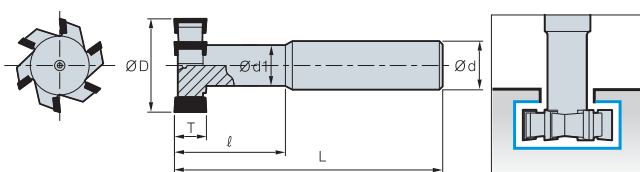
### Cortador tipo piña



(mm)

| Codigo | ØD | Ød | ℓ | E | L | N.º de labios |
|--------|----|----|---|---|---|---------------|
| SEM    |    |    |   |   |   |               |

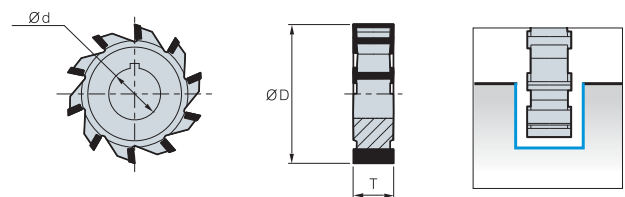
### Cortador - T



(mm)

| Codigo | ØD | Ød <sub>1</sub> | T | ℓ | L | Ød | N.º de labios |
|--------|----|-----------------|---|---|---|----|---------------|
| TC     |    |                 |   |   |   |    |               |

### Cortador Lateral



(mm)

| Codigo | ØD | Ød | T | N.º de labios |
|--------|----|----|---|---------------|
| SMC    |    |    |   |               |



# Herramientales



## Sistema de Herramientales

- I 02 Serie DBT
- I 03 Herramientas con Sistema HSK
- I 04 Sistema de Balanceo
- I 05 Índice
- I 06 Serie DHE
- I 10 Serie DSC
- I 17 Serie CPM
- I 19 Serie NPM
- I 21 DCS/DC/TC
- I 22 Serie Collet Chuck
- I 24 Serie SDC
- I 29 Serie GSK
- I 31 Serie DSK
- I 34 GERC
- I 37 Serie DST
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# Serie DBT

Para maquinados a alta velocidad

## Serie DBT

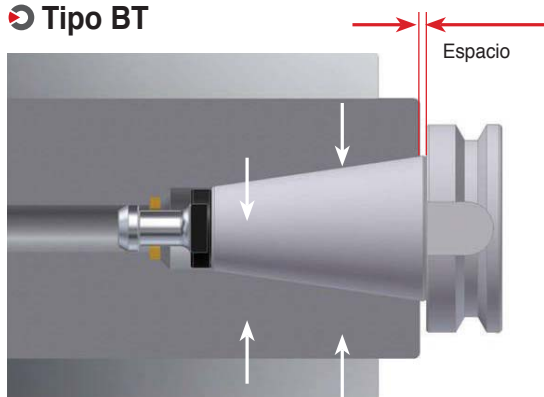
Sistema restringido de 2 caras de cara cónica y de vástago para una excelente rugosidad de la superficie y un acabado de alta calidad en cortes pesados a alta velocidad



### ➤ Sistema restringido de 2 caras: características

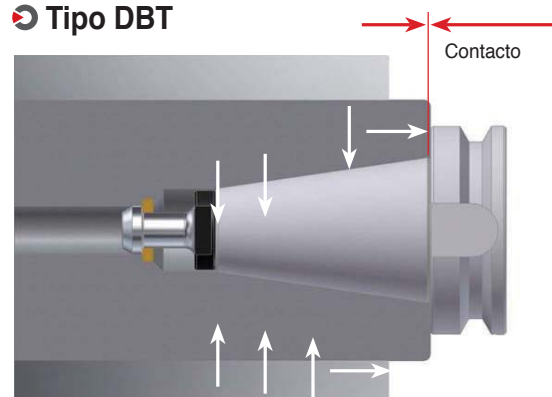
- Maquinado estable a alta velocidad
- Mejorada vida de la herramienta para máquinas de eje y herramienta de corte
- Prevención de la corrosión de porsion cono de husillo de la máquina y soporte de la herramienta por la vibración pesada del maquinado
- Garantizado para el maquinado más adecuado y de alta precisión

### ➤ Tipo BT



Brecha entre la sección transversal de un cabezal y un vástago  
-La misma condición de sujeción que en un vástago de sujeción BT

### ➤ Tipo DBT

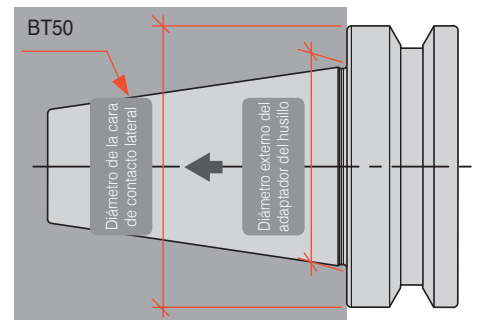


No hay brecha entre la sección transversal de un cabezal y un vástago  
- mejor rugosidad superficial/mecanismo mejorado/ menos cracterización

### ➤ Mayor estabilidad y precisión

La estabilidad y la precisión aumentan debido al contacto cercano entre la cara cónica y el diámetro externo ancho de la brida en el vástago con husillo DBT que en el vástago BT

| Porta | Cónico | Brida |
|-------|--------|-------|
| BT30  | Ø31.7  | Ø46   |
| BT40  | Ø44.4  | Ø63   |
| BT50  | Ø69.8  | Ø100  |



Diferencia entre la cara de contacto lateral y el diámetro externo

### ➤ Varios modelos

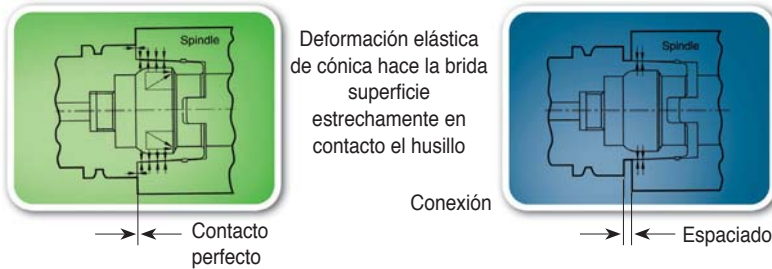
| Para machos de roscar   | Para fresado  | Para fresado con fresa insertable  | Cabeza Angular  |
|---|---|--|---|
| <br>BT-DST |  <br>BT-NPM      BT-DHE | <br>BT-FMA | <br>BT-KAG |



# Herramientas con Sistema HSK

## Ventajas de los adaptadores HSK con presión en dos fases

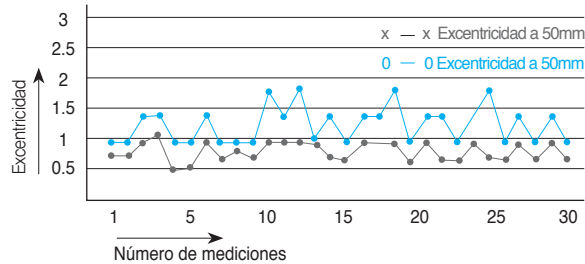
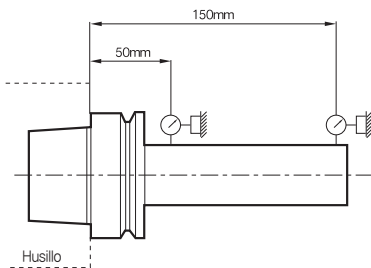
El vástago cónico 7/24 para usos múltiples se ha señalado que su rendimiento es inadecuado en términos de repetibilidad, Rigidez conjunta y mecanizado a alta velocidad. Los inconvenientes de 7/24 vástagos cónicos se habían eliminado mediante el uso de dos nuevos contactos frontales



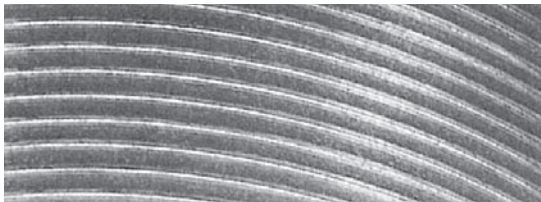
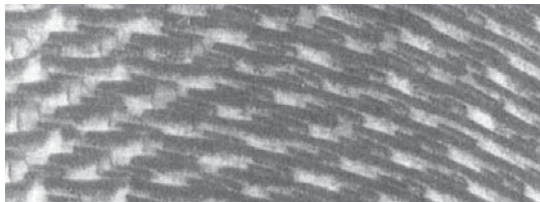
Sistema HSK - sistema de contacto perfecto en dos superficies

## Excelente precisión de repetición y agotamiento

Como el cono del soporte se deformará elásticamente siguiendo el perfil de la forma del husillo, no hay excentricidad entre husillo y el otro. Además, debido al contacto perfecto entre la superficie de la brida del soporte y la cara del husillo, se dobla La resistencia del soporte es muy alta, lo que hace que la precisión radial y axial sea muy alta.



## Alta rigidez frente a la carga de flexión

| HSK 63  | BT 40  |
|---|--|
|  |  |



## Sistema de balanceo

### ⦿ Desequilibrio

#### • Causa de desequilibrio

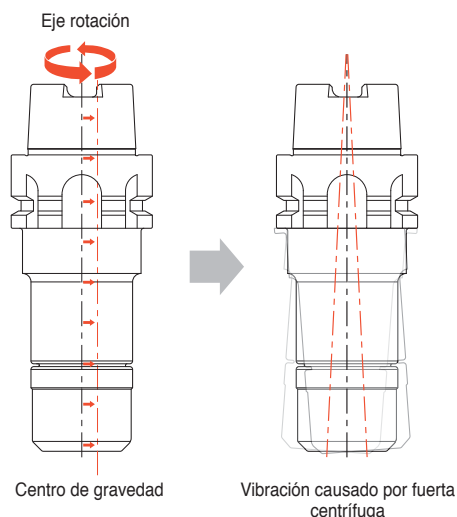
El desequilibrio se produce debido a la asimetría de las geometrías de las herramientas y desgaste del husillo

#### • Dificultades de desequilibrio

La vida útil de la herramienta es más corta, la rugosidad de la superficie inferior y el ruido son causados por Vibración durante la rotación y daños en el rodamiento del husillo.

#### • Necesidad de equilibrar

Es necesario equilibrar para evitar el desequilibrio para una mejor rugosidad de la superficie, precisión y vida útil de la herramienta

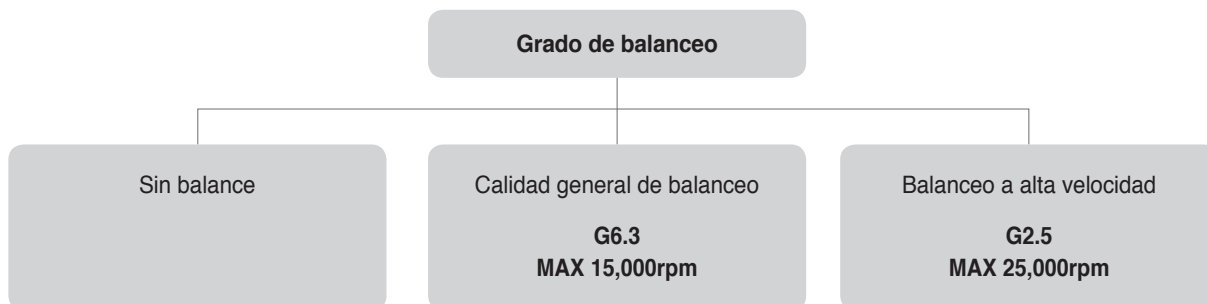


※ Un caso en el que el centro de gravedad de la herramienta. se desvía del eje de rotación

### ⦿ La precisión óptima a alta velocidad

- Sin flexión de la rotación debido a la carga balanceada, de alta precisión y rigidez se mantienen mucho tiempo.
- Balance Excelente ( $\leq G1.0$  ó  $0.5 \text{ g}\cdot\text{mm}/\text{kg}$ )
- Excelente vida de la herramienta, el acabado superficial, la dimensión de la precisión y la productividad se puede realizar a gran velocidad.

### ⦿ Grado de balanceo estándar



Distintas opciones de balanceo disponibles



|  |   |  |  |
|--|---|--|--|
| <p>Adaptador hidráulico</p> <p>DHE</p>  <p>I 7</p>  | <p>Adaptador ajustable por contracción térmica</p> <p>DSC</p>  <p>I 11</p> | <p>Adaptador Champion Milling Chuck</p> <p>CPM</p>  <p>I 18</p>              | <p>Adaptador fresado</p> <p>NPM</p>  <p>I 20</p>                            |
| <p>Portapinzas ER</p> <p>SDC</p>  <p>I 24</p>   | <p>Portapinzas ER</p> <p>SDC/S</p>  <p>I 28</p>                            | <p>Portapinzas ER para alta velocidad</p> <p>GSK</p>  <p>I 29</p>            | <p>Portapinzas ER</p> <p>DSK</p>  <p>I 32</p>                               |
| <p>Adaptador portapinzas para roscado con machos a alta velocidad</p> <p>DST</p>  <p>I 38</p> | <p>Adaptador para taladrado</p> <p>NPU</p>  <p>I 39</p>                    | <p>Adaptador portapinzas para roscado con machos</p> <p>DTN</p>  <p>I 41</p> | <p>Adaptador con mango de apriete con weldon</p> <p>SLA</p>  <p>I 44</p>    |
| <p>Adaptador para fresado</p> <p>FMA, FMC</p>  <p>I 46</p>                                   | <p>Cabeza angular</p> <p>MAH</p>  <p>I 51</p>                             | <p>Cabeza angular</p> <p>HRAG</p>  <p>I 52</p>                              | <p>Cabeza angular</p> <p>KHU</p>  <p>I 53</p>                              |
| <p>Cabeza angular</p> <p>KAG</p>  <p>I 54</p>   | <p>Cabeza angular</p> <p>KAH</p>  <p>I 55</p>                            | <p>Cabeza angular</p> <p>KAC</p>  <p>I 56</p>                              | <p>Herramienta mandrinado</p> <p>FBH/B</p>  <p>I 58</p>                   |
| <p>Herramienta mandrinado</p> <p>TBC, FBC</p>  <p>I 63</p>                                  | <p>Herramienta mandrinado</p> <p>DBC</p>  <p>I 65</p>                    | <p>Herramienta mandrinado</p> <p>KMB</p>  <p>I 66</p>                      | <p>Herramienta mandrinado</p> <p>SMB</p>  <p>I 67</p>                     |
| <p>Herramienta mandrinado</p> <p>SMH</p>  <p>I 68</p>                                       | <p>Adaptador sistema modular</p> <p>MD</p>  <p>I 70</p>                  | <p>Adaptador sistema modular, barra extensión</p> <p>EXT</p>  <p>I 72</p>  | <p>Adaptador sistema modular, barra reducción</p> <p>RDC</p>  <p>I 73</p> |
| <p>DAMPING PRO</p> <p>FMA/FMC</p>  <p>I 76</p>  |   |  |  |



## Serie DHE

El Chuck hidráulico para el mecanizado de mayor precisión debido a alta precisión y alta fuerza de abrazar

# Serie DHE

- Diferentes aplicaciones: maquinado de moldes, partes de automóviles, piezas de precisión, etc
- Con una gran durabilidad, precisión y fuerza de cierre, no se cambian por un largo tiempo
- Elevada fuerz de fijación permite un maquinado estable sin fluctuaciones en la fuerza de sujeción



### ➤ Sistema de codificación



### ➤ Características

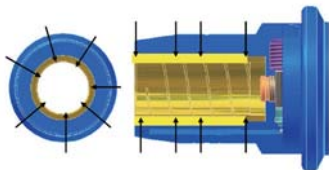
Su alta precisión alarga la vida útil de la herramienta debido a un menor desgaste y la cámara hidráulica aumenta la rugosidad superficial al disminuir las vibraciones

- Excentricidad: menos de 5  $\mu\text{m}$
- $L = 3 \times \text{ØD}$
- Mango: Tolerancia de  $\text{ØD}: h6$



### ➤ Estructura de sellado interno (Durabilidad)

- El sistema de sellado interno evita que el polvo, aceite de corte, lubricantes y virutas penetren en el portaherramientas
- Mantiene la fuerza de fijación y la precisión durante largo tiempo long time



### ➤ Su estructura de sujeción facilita la operación (Conveniente)

- Se puede cambiar fácilmente la herramienta con una llave de tuercas con mango en T
- Reduce la fatiga del trabajador
- Mejora la capacidad de la máquina



### ➤ Agarre estable

El espacio entre el soporte y la herramienta se fija por presión hidráulica



| Husillo             | Grado | Rpm máximas |
|---------------------|-------|-------------|
| BT50, SK50, HSK100A | G6.3  | 10,000      |
| BT40, SK40, HSK63A  |       | 15,000      |
| BT30, HSK50A, SK30  |       | 20,000      |
| HSK40A              | -     | 25,000      |





# BT-DHE

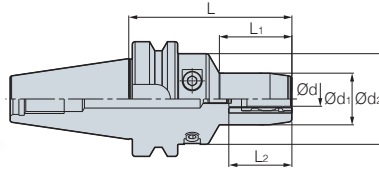


Fig. 1

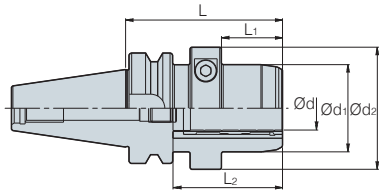


Fig. 2

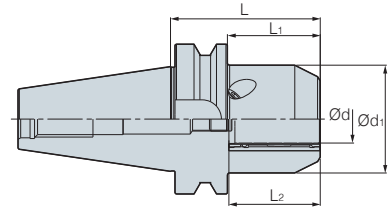
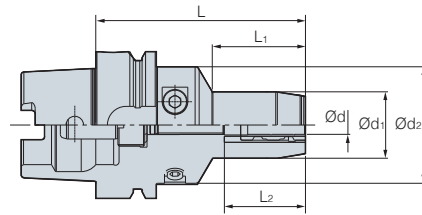


Fig. 3


| Código        | Ød          | L  | Ød <sub>1</sub> | Ød <sub>2</sub> | L <sub>1</sub> | L <sub>2</sub> | Tornillo de Ajuste | Fig. | (mm) |     |
|---------------|-------------|----|-----------------|-----------------|----------------|----------------|--------------------|------|------|-----|
| <b>BT30 -</b> | DHE 6 - 65  | 6  | 65              | 29              | 45             | 33             | 30~39.8            | M5   | 1    | 0.7 |
|               | DHE 8 - 65  | 8  | 65              | 31              | 45             | 33             | 30~39.8            | M5   | 1    | 0.7 |
|               | DHE 10 - 65 | 10 | 65              | 32              | 45             | 34             | 35~44.8            | M5   | 1    | 0.7 |
|               | DHE 12 - 65 | 12 | 65              | 35              | 45             | 34             | 41~50.8            | M5   | 1    | 0.7 |
|               | DHE 14 - 90 | 14 | 90              | 36              | 45             | 40             | 43~52.8            | M5   | 1    | 0.9 |
|               | DHE 16 - 90 | 16 | 90              | 40              | 45             | 45             | 46~55.8            | M5   | 1    | 1.0 |
|               | DHE 18 - 90 | 18 | 90              | 42              | 45             | 40             | 49~58.8            | M5   | 1    | 1.0 |
|               | DHE 20 - 90 | 20 | 90              | 44              | 45             | 45             | 49~58.8            | M5   | 1    | 1.1 |
| <b>BT40 -</b> | DHE 6 - 90  | 6  | 90              | 29              | 50             | 40             | 30~39.8            | M5   | 1    | 1.4 |
|               | 140         | 6  | 140             | 29              | 50             | 40             | 30~39.8            | M5   | 1    | 2.2 |
|               | DHE 8 - 90  | 8  | 90              | 31              | 50             | 40             | 30~39.8            | M5   | 1    | 1.4 |
|               | 140         | 8  | 140             | 31              | 50             | 40             | 30~39.8            | M5   | 1    | 2.2 |
|               | DHE 10 - 90 | 10 | 90              | 33              | 50             | 40             | 35~44.8            | M5   | 1    | 1.5 |
|               | 140         | 10 | 140             | 33              | 50             | 40             | 35~44.8            | M5   | 1    | 2.2 |
|               | DHE 12 - 90 | 12 | 90              | 35              | 50             | 40             | 41~50.8            | M10  | 1    | 1.5 |
|               | 140         | 12 | 140             | 35              | 50             | 40             | 41~50.8            | M10  | 1    | 2.3 |
|               | DHE 14 - 90 | 14 | 90              | 36              | 50             | 40             | 43~52.8            | M10  | 1    | 1.5 |
|               | 140         | 14 | 140             | 36              | 50             | 40             | 43~52.8            | M10  | 1    | 2.3 |
|               | DHE 16 - 90 | 16 | 90              | 40              | 50             | 45             | 46~55.8            | M10  | 1    | 1.5 |
|               | 140         | 16 | 140             | 40              | 50             | 45             | 46~55.8            | M10  | 1    | 2.3 |
|               | DHE 18 - 90 | 18 | 90              | 42              | 50             | 45             | 49~58.8            | M10  | 1    | 1.5 |
|               | 140         | 18 | 140             | 42              | 50             | 45             | 49~58.8            | M10  | 1    | 2.3 |
|               | DHE 20 - 90 | 20 | 90              | 44              | 50             | 47             | 49~58.8            | M10  | 1    | 1.5 |
|               | 140         | 20 | 140             | 44              | 50             | 47             | 49~58.8            | M10  | 1    | 2.3 |
| DHE 25 - 90   | 25          | 90 | 50              | 70              | 35             | 58~67.8        | M16                | 2    | 1.9  |     |
| DHE 32 - 90   | 32          | 90 | 63              | 80              | 35             | 58~67.8        | M16                | 2    | 2.0  |     |
| <b>BT50 -</b> | DHE 6 - 90  | 6  | 90              | 29              | 50             | 34             | 30~39.8            | M5   | 1    | 3.9 |
|               | 140         | 6  | 140             | 29              | 50             | 40             | 30~39.8            | M5   | 1    | 4.5 |
|               | DHE 8 - 90  | 8  | 90              | 31              | 50             | 34             | 30~39.8            | M5   | 1    | 3.9 |
|               | 140         | 8  | 140             | 31              | 50             | 40             | 30~39.8            | M5   | 1    | 4.5 |
|               | DHE 10 - 90 | 10 | 90              | 33              | 50             | 34             | 35~44.8            | M5   | 1    | 3.9 |
|               | 140         | 10 | 140             | 33              | 50             | 34             | 35~44.8            | M5   | 1    | 4.5 |
|               | DHE 12 - 90 | 12 | 90              | 35              | 50             | 34             | 41~50.8            | M10  | 1    | 4.0 |
|               | 140         | 12 | 140             | 35              | 50             | 34             | 41~50.8            | M10  | 1    | 4.6 |
|               | DHE 14 - 90 | 14 | 90              | 36              | 50             | 34             | 43~52.8            | M10  | 1    | 4.0 |
|               | 140         | 14 | 140             | 36              | 50             | 34             | 43~52.8            | M10  | 1    | 4.6 |
|               | DHE 16 - 90 | 16 | 90              | 40              | 50             | 34             | 46~55.8            | M10  | 1    | 4.1 |
|               | 140         | 16 | 140             | 40              | 50             | 34             | 46~55.8            | M10  | 1    | 4.7 |
|               | DHE 18 - 90 | 18 | 90              | 42              | 50             | 40             | 49~58.8            | M10  | 1    | 4.1 |
|               | 140         | 18 | 140             | 42              | 50             | 45             | 19~58.8            | M10  | 1    | 4.7 |
|               | DHE 20 - 90 | 20 | 90              | 44              | 50             | 34             | 49~58.8            | M10  | 1    | 4.2 |
|               | 140         | 20 | 140             | 44              | 50             | 47             | 49~58.8            | M10  | 1    | 4.7 |
| DHE 25 - 90   | 25          | 90 | 66              | -               | 52             | 58~67.8        | M16                | 3    | 4.7  |     |
| DHE 32 - 90   | 32          | 90 | 72              | -               | 52             | 58~67.8        | M16                | 3    | 4.8  |     |



# HSK-DHE

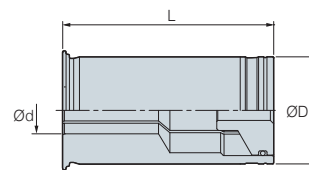


(mm)

| Código    | Ød           | L  | Ød <sub>1</sub> | Ød <sub>2</sub> | L <sub>1</sub> | L <sub>2</sub> | Tornillo de Ajuste |  |     |
|-----------|--------------|----|-----------------|-----------------|----------------|----------------|--------------------|---|-----|
| HSK63A -  | DHE 6 - 75   | 6  | 75              | 29              | 50             | 34             | 30~39.8            | M5  | 1.0 |
|           | DHE 8 - 75   | 8  | 75              | 31              | 50             | 34             | 30~39.8            | M5  | 1.0 |
|           | DHE 10 - 85  | 10 | 85              | 33              | 50             | 40             | 35~44.8            | M5  | 1.2 |
|           | DHE 12 - 90  | 12 | 90              | 35              | 50             | 40             | 41~50.8            | M5  | 1.2 |
|           | DHE 16 - 95  | 16 | 95              | 40              | 50             | 45             | 46~55.8            | M10   | 1.3 |
|           | DHE 20 - 100 | 20 | 100             | 44              | 50             | 50             | 49~58.8            | M10   | 1.4 |
|           | 150          | 20 | 150             | 44              | 50             | 50             | 49~58.8            | M10   | 2.0 |
| HSK100A - | DHE 20 - 105 | 20 | 105             | 44              | 50             | 50             | 49~58.8            | M10   | 2.8 |
|           | DHE 25 - 115 | 25 | 115             | 50              | 63             | 62             | 58~67.8            | M16   | 3.3 |
|           | DHE 32 - 115 | 32 | 115             | 63              | 75             | 62             | 58~67.8            | M16   | 3.8 |

• L<sub>2</sub> : máxima longitud de inserción (mín-máx) • Sistema de lubricación interno es opcional

# Boquilla DHC (Tipo general)

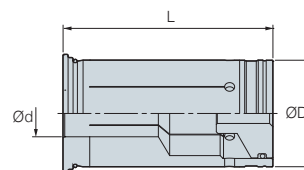


(mm)

| Código                                   | ØD | Ød                               | L  |
|--|----|----------------------------------|----|
| DHC12 - 3, 4, 5, 6, 8                    | 12 | 3, 4, 5, 6, 8                    | 47 |
| DHC20 - 3, 4, 5, 6, 8, 10, 12, 14, 16    | 20 | 3, 4, 5, 6, 8, 10, 12, 14, 16    | 52 |
| DHC32 - 6, 8, 10, 12, 14, 16, 18, 20, 25 | 32 | 6, 8, 10, 12, 14, 16, 18, 20, 25 | 63 |



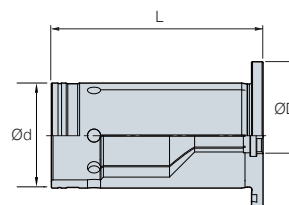
## Boquilla DHC (Para precisión)



(mm)

| Código  | ØD | Ød                               | L  |
|---|----|----------------------------------|----|
| DHC12 - 3(P), 4(P), 5(P), 6(P), 8(P)                                | 12 | 3, 4, 5, 6, 8                    | 47 |
| DHC20 - 3(P), 4(P), 5(P), 6(P), 8(P), 10(P), 12(P), 14(P), 16(P)    | 20 | 3, 4, 5, 6, 8, 10, 12, 14, 16    | 52 |
| DHC32 - 6(P), 8(P), 10(P), 12(P), 14(P), 16(P), 18(P), 20(P), 25(P) | 32 | 6, 8, 10, 12, 14, 16, 18, 20, 25 | 63 |

## Boquilla DHJ (Tipo refrigeración Jet)



(mm)

| Código                       | ØD | Ød                   | L  |
|------------------------------|----|----------------------|----|
| DHJ20 - 6, 8, 10, 12, 14, 16 | 20 | 6, 8, 10, 12, 14, 16 | 50 |

### Partes

| Piezas de Refacción                   |                                     |   |   |                           |   |
|---------------------------------------|-------------------------------------|---|---|---------------------------|---|
| Chuck                                 |                                     | Tornillo Brida  | Llave   | Chuck                     | Tornillo de Ajuste  |
| Tipo                                  |                                     |  |  | Tipo                      |  |
| BT30/SK30/HSK50                       | DHE 6, 8, 10, 12                    | DHE-M8 (C)  | DHETW-4   | DHE 6, 8, 10              | DHE-M5 (ADJ)  |
|                                       | DHE 14, 16, 18, 20                  | DHE-M10 (C)   | DHETW-5   |                           |   |
| BT40/BT50/SK40/SK50<br>HSK63A/HSK100A | DHE 6, 8, 10, 12, 14,<br>16, 18, 20 | DHE-M10 (C)   | DHETW-5   | DHE 12, 14, 16,<br>18, 20 | DHE-M10 (ADJ)   |
|                                       | DHE 25, 32                          | DHE-M12 (C)   | DHETW-6   | DHE 25, 32                | DHE-M16 (ADJ)   |



El diseño compacto de Chuck de encogimiento para ultra alta velocidad y alta precisión

## DSC

- Uso de acero especialmente tratado al calor.
- Mecanizado y sujeción de alta precisión.
- Mayor precisión y mayor vida útil de la herramienta debido a un voladizo minimizado al mecanizar ranuras profundas
- Diámetro de vástago aplicable: Ø3-Ø32



### Sistema de codificación

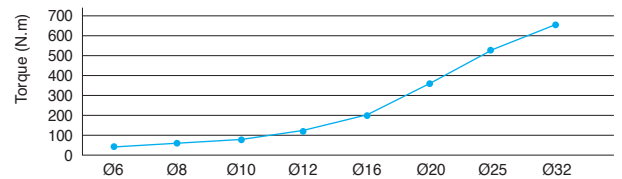
|                            |   |                                |  |                 |                                     |
|----------------------------|---|--------------------------------|--|-----------------|-------------------------------------|
| BT50 - DSC 6 - S - 165 - S |   |                                |  |                 |                                     |
| <b>Husillo</b>             | <b>Tipo de adaptador</b>  | <b>Diámetro de herramienta</b> | <b>Tipo</b>                                      | <b>Longitud</b> | <b>Especial</b>                     |
| BT, HSK, SK, ST, CS, CM    | DSC: Adaptador ajustable por contracción térmica<br>SLK: Boquilla de dos piezas |                                | S: Fino<br>M: Tamaño medio<br>Sin marca: general |                 | S: Tipo curvo<br>Sin marca: general |

### Tipo mono curvo

- DSC integral con alta precisión y balanceo
- Diseño largo pero estable



### Alta fuerza de corte



- Fuerza de amarre un 30% más fuerte
- Excentricidad ( $\leq 0.003$  mm)
- Alto poder de transmisión de la fuerza de amarre por el círculo interno

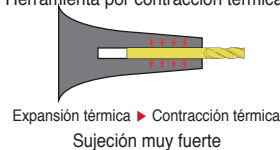
### Diseño simétrico

- Alta fuerza de amarre



#### Adaptador por encogimiento

Fijar la holgura entre el soporte y Herramienta por contracción térmica.



#### Adaptador con boquilla

Fijar la herramienta por elasticidad de pinza.



### Adaptador de una pieza

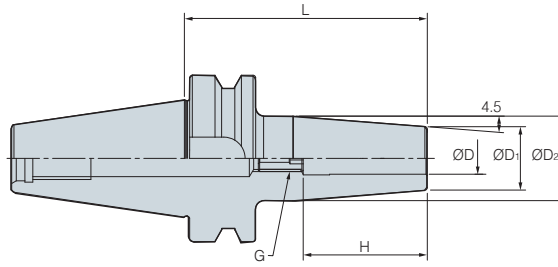
| Figura   | Precision |
|--|-----------|
|  |           |
| <p>Tipo fino 1.5t</p> <p>Tipo medio 2~4.5t</p> |           |

### Adaptador de dos piezas

| Figura   | Precision |
|--|-----------|
|  |           |
| <p>Tipo fino 1.5t</p> <p>Tipo medio 2~3.5t</p> |           |



# BT-DSC



(mm)

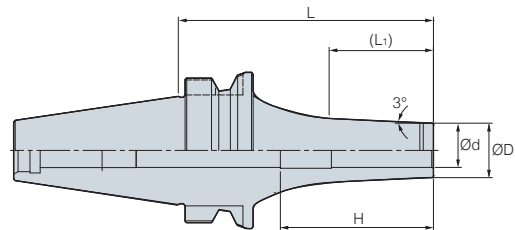
| Código     | ØD         | L   | ØD <sub>1</sub> | ØD <sub>2</sub> | H    | G   | kg  | Rpm máximas |        |
|------------|------------|-----|-----------------|-----------------|------|-----|-----|-------------|--------|
| BT30 -     | DSC3 - 60  | 3   | 60              | 11              | 18.5 | 82  | -   | 0.6         | 25,000 |
|            | DSC4 - 60  | 4   | 60              | 13              | 20.5 | 82  | -   | 0.6         | 25,000 |
| BT40 -     | DSC6 - 90  | 6   | 90              | 21              | 27   | 36  | M5  | 1.2         | 20,000 |
|            | 120        | 6   | 120             | 21              | 27   | 36  | M5  | 1.2         | 20,000 |
|            | 160        | 6   | 160             | 21              | 27   | 36  | M5  | 1.4         | 20,000 |
|            | DSC8 - 90  | 8   | 90              | 21              | 27   | 36  | M5  | 1.2         | 20,000 |
|            | 120        | 8   | 120             | 21              | 27   | 36  | M5  | 1.2         | 20,000 |
|            | 160        | 8   | 160             | 21              | 27   | 36  | M5  | 1.4         | 20,000 |
|            | DSC10 - 90 | 10  | 90              | 24              | 32   | 42  | M8  | 1.2         | 20,000 |
|            | 120        | 10  | 120             | 24              | 32   | 42  | M8  | 1.2         | 20,000 |
|            | 160        | 10  | 160             | 24              | 32   | 42  | M8  | 1.6         | 20,000 |
|            | DSC12 - 90 | 12  | 90              | 24              | 32   | 47  | M8  | 1.2         | 20,000 |
|            | 120        | 12  | 120             | 24              | 32   | 47  | M8  | 1.2         | 20,000 |
|            | 160        | 12  | 160             | 24              | 32   | 47  | M8  | 1.6         | 20,000 |
| DSC16 - 90 | 16         | 90  | 27              | 34              | 50   | M12 | 1.3 | 20,000      |        |
| 120        | 16         | 120 | 27              | 34              | 50   | M12 | 1.3 | 20,000      |        |
| 160        | 16         | 160 | 27              | 34              | 50   | M12 | 1.7 | 20,000      |        |
| DSC20 - 90 | 20         | 90  | 33              | 42              | 52   | M12 | 1.3 | 20,000      |        |
| 120        | 20         | 120 | 33              | 42              | 52   | M12 | 1.5 | 20,000      |        |
| 160        | 20         | 160 | 33              | 42              | 52   | M12 | 2.1 | 20,000      |        |

Tornillo de Ajuste I 16

• Sistema de lubricación interno es opcional

# BT-DSC/M

## Tipo de una pieza con curvatura



(mm)

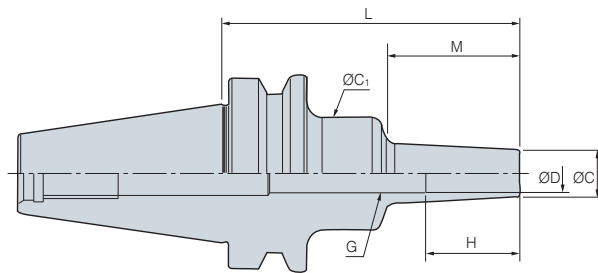
| Código | ØD           | L  | L <sub>1</sub> | ØD <sub>1</sub> | ØC <sub>1</sub> | H  | G  | kg | Rpm máximas |        |
|--------|--------------|----|----------------|-----------------|-----------------|----|----|----|-------------|--------|
| BT30 - | DSC3M - 75S  | 3  | 75             | 29.8            | 8               | 25 | 97 | -  | 0.6         | 25,000 |
|        | DSC4M - 75S  | 4  | 75             | 31.8            | 10              | 25 | 97 | -  | 0.6         | 25,000 |
|        | DSC6M - 75S  | 6  | 75             | 28.9            | 12              | 30 | 97 | -  | 0.6         | 25,000 |
|        | DSC8M - 75S  | 8  | 75             | 28.9            | 14              | 32 | 97 | -  | 0.6         | 25,000 |
|        | DSC10M - 75S | 10 | 75             | 30.66           | 16              | 32 | 45 | -  | 0.6         | 25,000 |

• No requiere tornillo de ajuste • Sistema de lubricación interno es opcional




# BT-DSC/M

## Tipo de una pieza



(mm)

| Código             | ØD                  | L   | ØD <sub>1</sub> | ØC <sub>1</sub> | M  | H  |  |     |
|--------------------|---------------------|-----|-----------------|-----------------|----|----|---|-----|
| <b>BT40 -</b>      | <b>DSC6M - 95</b>   | 6   | 95              | 10              | 26 | 42 | 18  | 1.2 |
|                    | 120                 | 6   | 120             | 10              | 26 | 67 | 18  | 1.2 |
|                    | 160                 | 6   | 160             | 10              | 36 | 97 | 18  | 1.5 |
|                    | <b>DSC8M - 95</b>   | 8   | 95              | 13              | 36 | 42 | 24  | 1.2 |
|                    | 120                 | 8   | 120             | 13              | 36 | 67 | 24  | 1.2 |
|                    | 160                 | 8   | 160             | 13              | 36 | 97 | 24  | 1.5 |
|                    | <b>DSC10M - 95</b>  | 10  | 95              | 16              | 36 | 42 | 30  | 1.2 |
|                    | 120                 | 10  | 120             | 16              | 36 | 67 | 30  | 1.2 |
|                    | 160                 | 10  | 160             | 16              | 36 | 97 | 30  | 1.5 |
|                    | <b>DSC12M - 95</b>  | 12  | 95              | 19              | 36 | 42 | 30  | 1.2 |
|                    | 120                 | 12  | 120             | 19              | 36 | 67 | 30  | 1.2 |
|                    | 160                 | 12  | 160             | 19              | 36 | 97 | 30  | 1.5 |
| <b>DSC16M - 95</b> | 16                  | 95  | 24              | 50              | 42 | 32 | 1.2   |     |
| 120                | 16                  | 120 | 24              | 50              | 67 | 32 | 1.2   |     |
| 160                | 16                  | 160 | 24              | 50              | 97 | 32 | 1.5   |     |
| <b>DSC20M - 95</b> | 20                  | 95  | 29              | 50              | 42 | 40 | 1.2   |     |
| 120                | 20                  | 120 | 29              | 50              | 67 | 40 | 1.2   |     |
| 160                | 20                  | 160 | 29              | 50              | 97 | 40 | 1.5   |     |
| <b>BT50 -</b>      | <b>DSC6M - 110</b>  | 6   | 110             | 10              | 26 | 42 | 18  | 3.5 |
|                    | 160                 | 6   | 160             | 10              | 36 | 97 | 18  | 4   |
|                    | <b>DSC8M - 110</b>  | 8   | 110             | 13              | 36 | 42 | 24  | 3.5 |
|                    | 160                 | 8   | 160             | 13              | 36 | 97 | 24  | 4   |
|                    | <b>DSC10M - 110</b> | 10  | 110             | 16              | 36 | 42 | 30  | 3.5 |
|                    | 160                 | 10  | 160             | 16              | 36 | 97 | 30  | 4   |
|                    | <b>DSC12M - 110</b> | 12  | 110             | 19              | 36 | 42 | 30  | 3.5 |
|                    | 160                 | 12  | 160             | 19              | 50 | 97 | 30  | 4   |
|                    | <b>DSC16M - 110</b> | 16  | 110             | 24              | 50 | 42 | 32  | 3.5 |
|                    | 160                 | 16  | 160             | 24              | 50 | 97 | 32  | 4   |
|                    | <b>DSC20M - 110</b> | 20  | 110             | 29              | 50 | 42 | 40  | 3.5 |
|                    | 160                 | 20  | 160             | 29              | 50 | 97 | 40  | 4   |

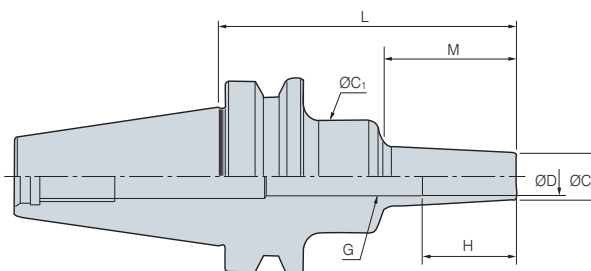
 Tornillo de Ajuste 116

• Sistema de lubricación interno es opcional



## BT-DSC/S

## Tipo de una pieza fino



(mm)

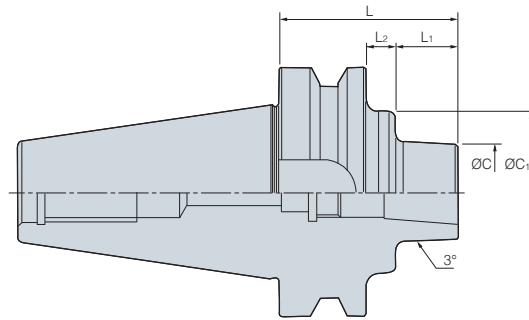
| Código         | ØD          | L           | ØD <sub>1</sub> | ØC <sub>1</sub> | M  | H  |    |    |
|----------------|-------------|-------------|-----------------|-----------------|----|----|----|----|
| BT30 - DSC6S - | 60          | 60          | 9               | 20              | 22 | 18 |    |    |
|                | 80          | 80          | 9               | 20              | 42 | 18 |    |    |
|                | 120         | 120         | 9               | 25              | 67 | 18 |    |    |
| BT40 -         | DSC6S - 95  | 6           | 95              | 9               | 26 | 42 | 18 |    |
|                | 120         | 6           | 120             | 9               | 26 | 67 | 18 |    |
|                | 160         | 6           | 160             | 9               | 36 | 97 | 18 |    |
|                | DSC8S - 95  | 8           | 95              | 11              | 36 | 42 | 24 |    |
|                | 120         | 8           | 120             | 11              | 36 | 67 | 24 |    |
|                | 160         | 8           | 160             | 11              | 36 | 97 | 24 |    |
|                | DSC10S - 95 | 10          | 95              | 13              | 36 | 42 | 30 |    |
|                | 120         | 10          | 120             | 13              | 36 | 67 | 30 |    |
|                | 160         | 10          | 160             | 13              | 36 | 97 | 30 |    |
| DSC12S -       | 95          | 12          | 95              | 15              | 36 | 42 | 30 |    |
|                | 120         | 12          | 120             | 15              | 36 | 67 | 30 |    |
|                | 160         | 12          | 160             | 15              | 36 | 97 | 30 |    |
|                | BT50 -      | DSC6S - 110 | 6               | 110             | 9  | 26 | 42 | 18 |
|                |             | 160         | 6               | 160             | 9  | 36 | 97 | 18 |
|                |             | DSC8S - 110 | 8               | 110             | 11 | 36 | 42 | 24 |
| 160            |             | 8           | 160             | 11              | 36 | 97 | 24 |    |
| DSC10S - 110   |             | 10          | 110             | 13              | 36 | 42 | 30 |    |
| 160            |             | 10          | 160             | 13              | 36 | 97 | 30 |    |
| DSC12S -       | 110         | 12          | 110             | 15              | 36 | 42 | 30 |    |
|                | 160         | 12          | 160             | 15              | 36 | 97 | 30 |    |

• No requiere tornillo de ajuste • Sistema de lubricación interno disponible



# BT-SLK

Tipo de dos piezas



(mm)

| Código            | L    | ØC  | L1 | L2  | ØC1 |    |
|-------------------|------|-----|----|-----|-----|----|
| BT30 - SLK12 - 35 | 35   | 38  | 13 | -   | -   |    |
| BT40 - SLK12 - 45 | 45   | 38  | 18 | -   | -   |    |
|                   | 45F  | 41  | 18 | -   | -   |    |
|                   | 75   | 38  | 48 | -   | -   |    |
|                   | 75F  | 41  | 48 | -   | -   |    |
|                   | 135F | 135 | 41 | 108 | -   | -  |
| BT50 - SLK12 - 75 | 75   | 38  | 25 | 12  | 65  |    |
|                   | 75F  | 41  | 25 | 12  | 65  |    |
|                   | 105F | 41  | 55 | 12  | 65  |    |
|                   | 135F | 135 | 41 | 85  | 12  | 65 |
|                   | 225  | 225 | 38 | 150 | 37  | 65 |
|                   | 315  | 315 | 38 | 150 | 127 | 90 |

Tornillo de Ajuste I16

• Sistema de lubricación interno disponible

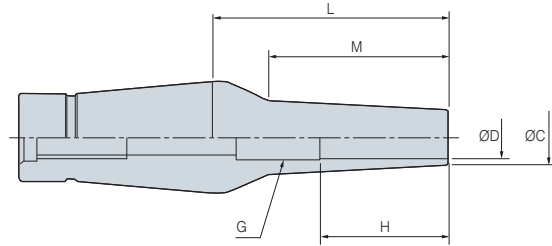
• Se requiere perno de contención para el modelo BT30-SLK12-35





# CS/CM

## Tipo de dos piezas



(mm)

| Código |      |     | ØD | ØC  | L   | M  | H  |
|--------|------|-----|----|-----|-----|----|----|
| CS12 - | 6 -  | 36  | 6  | 9   | 35  | 22 | 18 |
|        |      | 55  | 6  | 9   | 55  | 42 | 18 |
|        |      | 80  | 6  | 9   | 80  | 67 | 18 |
|        |      | 110 | 6  | 9   | 110 | 97 | 18 |
|        | 8 -  | 35  | 8  | 11  | 35  | 22 | 24 |
|        |      | 55  | 8  | 11  | 55  | 42 | 24 |
|        |      | 80  | 8  | 11  | 80  | 67 | 24 |
|        |      | 110 | 8  | 11  | 110 | 97 | 24 |
|        | 10 - | 35  | 10 | 13  | 35  | 22 | 30 |
|        |      | 55  | 10 | 13  | 55  | 42 | 30 |
|        |      | 80  | 10 | 13  | 80  | 67 | 30 |
|        |      | 110 | 10 | 13  | 110 | 97 | 30 |
| 12 -   | 35   | 12  | 15 | 35  | 22  | 30 |    |
|        | 55   | 12  | 15 | 55  | 42  | 30 |    |
|        | 80   | 12  | 15 | 80  | 67  | 30 |    |
|        | 110  | 12  | 15 | 110 | 97  | 30 |    |

• No requiere tornillo de ajuste • Sistema de lubricación interno disponible

(mm)

| Código |      |    | ØD | ØC | L  | M  | H  |
|--------|------|----|----|----|----|----|----|
| CM12 - | 6 -  | 35 | 6  | 12 | 35 | 22 | 18 |
|        |      | 55 | 6  | 12 | 55 | 42 | 18 |
|        |      | 80 | 6  | 12 | 80 | 67 | 18 |
|        | 8 -  | 35 | 8  | 14 | 35 | 22 | 24 |
|        |      | 55 | 8  | 14 | 55 | 42 | 24 |
|        |      | 80 | 8  | 14 | 80 | 67 | 24 |
|        | 10 - | 35 | 10 | 16 | 35 | 22 | 30 |
|        |      | 55 | 10 | 16 | 55 | 42 | 30 |
|        |      | 80 | 10 | 16 | 80 | 67 | 30 |
|        | 12 - | 35 | 12 | 20 | 35 | 22 | 30 |
|        |      | 55 | 12 | 20 | 55 | 42 | 30 |
|        |      | 80 | 12 | 20 | 80 | 67 | 30 |

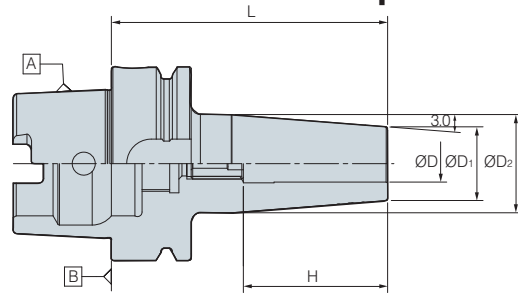
➔ Tornillo de Ajuste 116

• Sistema de lubricación interno disponible



# HSK-DSC/M

## Tipo de una pieza




(mm)

| Código   | ØD           | L  | ØD <sub>1</sub> | ØC <sub>1</sub> | M  | H  |    |
|----------|--------------|----|-----------------|-----------------|----|----|----|
| HSK63A - | DSC6M - 95   | 6  | 95              | 10              | 26 | 42 | 18 |
|          | DSC8M - 95   | 8  | 95              | 13              | 36 | 42 | 24 |
|          | DSC10M - 120 | 10 | 120             | 16              | 36 | 67 | 30 |
|          | DSC12M - 120 | 12 | 120             | 19              | 36 | 67 | 30 |
|          | DSC16M - 120 | 16 | 120             | 24              | 50 | 67 | 32 |

• No requiere tornillo de ajuste • Sistema de lubricación interno es opcional

## Partes

| Piezas de Refacción  |       |      |       |       |       |       |       |       |        |       |
|--|-------|------|-------|-------|-------|-------|-------|-------|--------|-------|
| Tipo   | DSC6  | DSC8 | DSC10 | DSC12 | DSC14 | DSC16 | DSC18 | DSC20 | DSC25  | DSC32 |
| Tornillo de Ajuste  | M520C |      | M820C |       |       |       |       |       | M1230C |       |



Champion milling chuck

# CPM

- Mejora la vida útil de la herramienta al bloquear el polvo y las fugas de lubricante Con perfecta estructura de sellado en junta tórica y tuerca.
- Disponible a través del sistema de refrigerante con juego de CTC
- RegulaEl regulador de longitud está insertado en el CPM, el usuario puede ajustar la longitud convenientemente



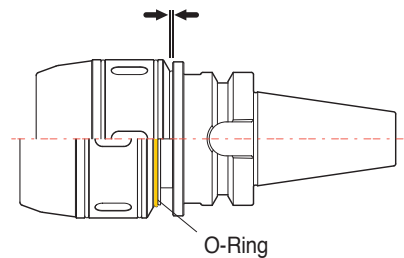
➤ Sistema de codificación



➤ Prevención de fugas de grasa y polvo.

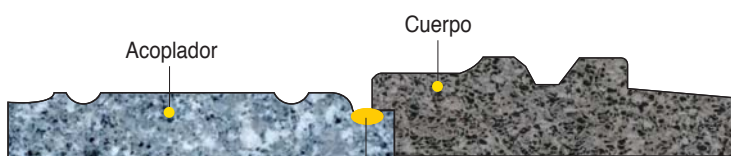
CPM tiene una junta tórica en las tuercas para absorber la vibración de corte para Operación estable y evita la entrada de escombros.

Contacto facial para maquinado estable y prueba de polvo.

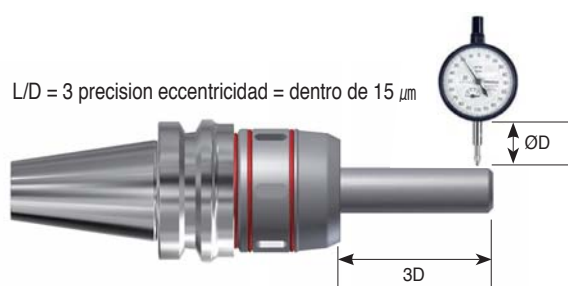
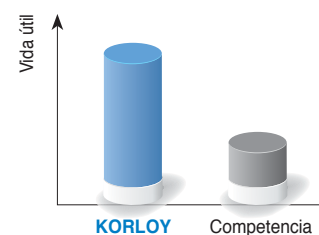


➤ Correlación de fugas de aceite y vida útil de la herramienta

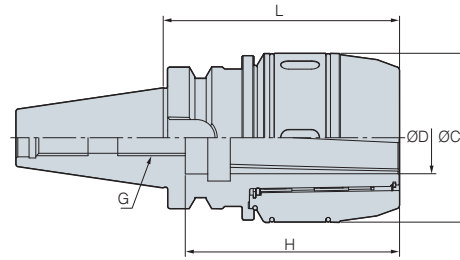
Aumento evidente de la vida útil de la herramienta después de aplicar el sistema a prueba de polvo.




O-Ring: Bloquea lubricante y el polvo → Aumento vida herramienta



# BT-CPM



(mm)

| Código                    | ØD | L   | ØC | H  | G   | Boquilla    |  |
|---------------------------|----|-----|----|----|-----|-------------|---|
| <b>BT30 -</b> CPM20 - 80  | 20 | 80  | 54 | 80 | M16 | DC20, DSC20 | 1.1   |
| <b>BT40 -</b> CPM20 - 90  | 20 | 90  | 54 | 80 | M16 | DC20, DSC20 | 2.3   |
| CPM32 - 90                | 32 | 90  | 75 | 85 | M16 | DC32, DCS32 | 2.8   |
| 105                       | 32 | 105 | 75 | 95 | M16 | DC32, DCS32 | 2.9   |
| <b>BT50 -</b> CPM32 - 105 | 32 | 105 | 75 | 95 | M24 | DC32, DCS32 | 5.0   |
| 135                       | 32 | 135 | 75 | 95 | M24 | DC32, DCS32 | 5.8   |
| 165                       | 32 | 165 | 75 | 95 | M24 | DC32, DCS32 | 6.8   |

• Conjuntos disponibles por encargo • Sistema de lubricación interno es opcional



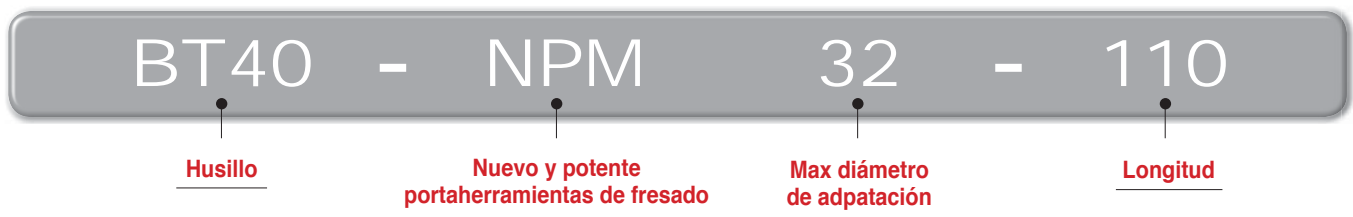
Portaherramientas de fresado para corte medio con durabilidad mejorada debido a su gran sujeción y a la prevención del polvo

# NPM

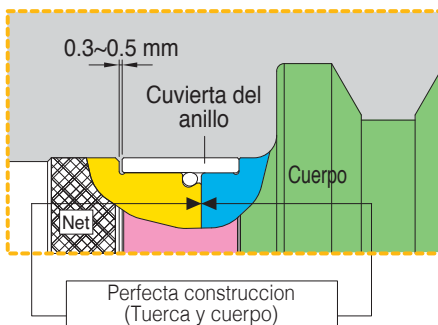
- Sujeción fuerte de más de 500kgfm (En base NPM42)
- Funcion DUST BLOCK para bloqueo de sustancias nocivas
- refrigerante Jet disponible
- Precision Alta precisión dentro de 15 a L / D = 3
- Diámetro de vástago aplicable: D6-42



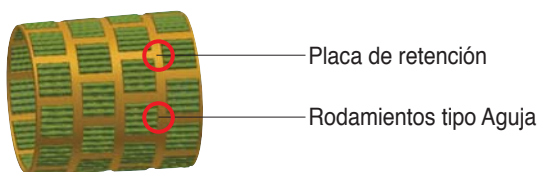
## ➤ Sistema de codificación



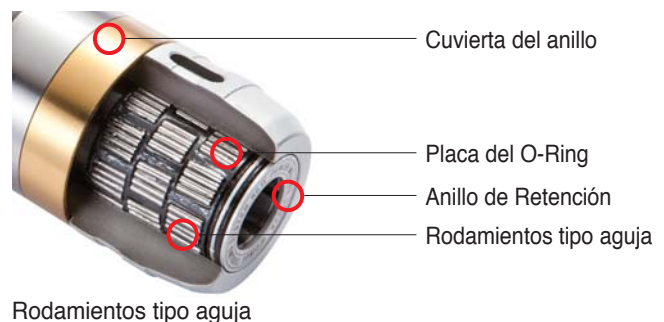
## ➤ Mejorada durabilidad, su diseño evita el ingreso de polvo, virutas, etc



- Anillo de retención en la apertura de la boquilla
- evitando que el polvo y las virutas se introduzcan en el adaptador

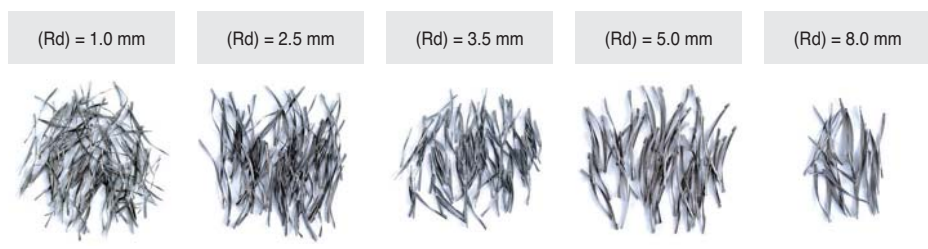


- Cojinete de acero de diseño especial para evitar roturas
- Sujeción fuerte mediante propagación de la fuerza



## ➤ Mecanizado estable desde pesado a fino

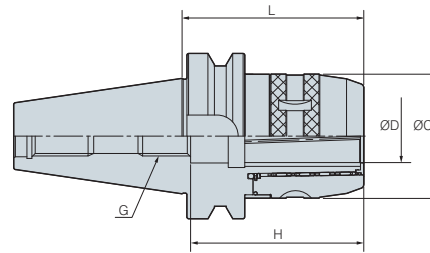
Un contacto frontal perfecto y su gran fuerza de sujeción intensifican la fuerza de corte y la absorción de vibraciones




Para mecanizado desde fresado pesado a acabado fino



# BT-NPM



(mm)

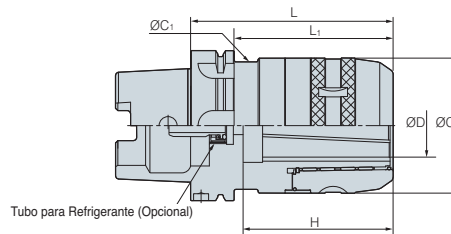
| Código                   | ØD          | L   | ØC  | H   | G   | Boquilla    |  |             |     |
|--------------------------|-------------|-----|-----|-----|-----|-------------|---|-------------|-----|
| <b>BT30 -</b> NPM20 - 85 | 20          | 85  | 54  | 85  | M16 | DC20, DSC20 | 1.1   |             |     |
| <b>BT40 -</b>            | 85          | 20  | 85  | 54  | 85  | M16         | DC20, DSC20   | 2.3         |     |
|                          | 100         | 20  | 100 | 54  | 85  | M16         | DC20, DSC20   | 2.3         |     |
|                          | NPM25 - 85  | 25  | 85  | 61  | 85  | M16         | DC25, DSC25   | 2.5         |     |
| NPM32 - 90               | 32          | 90  | 75  | 87  | M16 | DC32, DCS32 | 2.8   |             |     |
|                          | 110         | 32  | 110 | 75  | 95  | M16         | DC32, DCS32   | 2.9         |     |
|                          | 135         | 32  | 135 | 75  | 95  | M16         | DC32, DCS32   | 3.5         |     |
| <b>BT50 -</b>            | NPM20 - 95  | 20  | 95  | 54  | 85  | M24         | DC20, DSC20   | 4.3         |     |
|                          | 125         | 20  | 125 | 54  | 85  | M24         | DC20, DSC20   | 4.8         |     |
|                          | 165         | 20  | 165 | 54  | 85  | M24         | DC20, DSC20   | 5.3         |     |
|                          | NPM32 - 110 | 32  | 110 | 75  | 105 | M24         | DC32, DCS32   | 5.0         |     |
|                          |             | 135 | 32  | 135 | 75  | 105         | M24   | DC32, DCS32 | 5.8 |
|                          |             | 165 | 32  | 165 | 75  | 105         | M24   | DC32, DCS32 | 6.8 |
|                          | NPM42 - 110 | 42  | 110 | 90  | 125 | M24         | DC42, DCS42   | 5.4         |     |
|                          |             | 135 | 42  | 135 | 90  | 125         | M24   | DC42, DCS42 | 6.6 |
|                          |             | 165 | 42  | 165 | 90  | 125         | M24   | DC42, DCS42 | 8.0 |

 Piezas de refacción 121


• Sistema de lubricación interno es opcional

• En el caso de  $L \leq 90$ , se recomiendan adaptadores con más de 90 mm para corte medio con tapa corta

# HSK-NPM






(mm)

| Código           | ØD          | L  | L <sub>1</sub> | ØC | Boquilla |  |     |
|------------------|-------------|----|----------------|----|----------|---|-----|
| <b>HSK63A -</b>  | NPM20 - 100 | 20 | 95             | 54 | 75       | DC20, DSC20   | 1.1 |
|                  | NPM32 - 120 | 42 | 135            | 90 | 90       | DC42, DCS42   | 6.6 |
| <b>HSK100A -</b> | NPM32 - 130 | 42 | 165            | 90 | 90       | DC42, DCS42   | 8.0 |

 Piezas de refacción 121

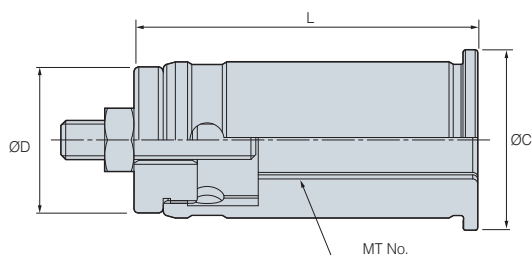
• Sistema de lubricación interno es opcional

## Partes

| División | Piezas de Refacción   |   |   |
|----------|---|---|---|
|          | Opcional  |   |   |
|          | Boquilla  | Llave   | Sistema de lubricación interno  |
| Tipo     |  |  |  |
| NPM20    | DC20, DCS20   | 57-60   | CTC20-20  |
| NPM32    | DC32, DCS32   | 75-79   | CTC32-32  |
| NPM42    | DC42, DCS42   | 92-96   | CTC42-42  |

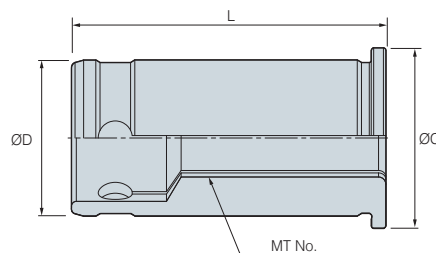


## DCS Boquilla recta



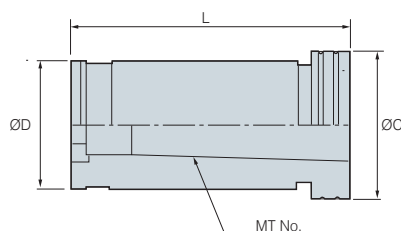
| Código                                   | ØD | Ød                               | ØC | L    | kg  |
|--|----|----------------------------------|----|------|-----|
| DCS20 - 6, 8, 10, 12, 16                 | 20 | 6, 8, 10, 12, 16                 | 26 | 55   | 0.2 |
| DCS25 - 6, 8, 10, 12, 16, 20             | 25 | 6, 8, 10, 12, 16, 20             | 29 | 66.5 | 0.3 |
| DCS32 - 6, 8, 10, 12, 14, 16, 19, 20, 25 | 32 | 6, 8, 10, 12, 14, 16, 19, 20, 25 | 38 | 70   | 0.4 |
| DCS42 - 6, 8, 10, 12, 16, 20, 25, 32     | 42 | 6, 8, 10, 12, 16, 20, 25, 32     | 48 | 75   | 0.7 |

## DC Boquilla recta



| Código                                  | ØD | Ød                               | ØC | L    | kg  |
|---|----|----------------------------------|----|------|-----|
| DC20 - 6, 8, 10, 12, 14, 16             | 20 | 6, 8, 10, 12, 14, 16             | 26 | 55   | 0.2 |
| DC25 - 6, 8, 10, 12, 16, 20             | 25 | 6, 8, 10, 12, 16, 20             | 29 | 61.5 | 0.3 |
| DC32 - 6, 8, 10, 12, 14, 16, 19, 20, 25 | 32 | 6, 8, 10, 12, 14, 16, 19, 20, 25 | 38 | 70   | 0.4 |
| DC42 - 6, 8, 10, 12, 16, 20, 25, 32     | 42 | 6, 8, 10, 12, 16, 20, 25, 32     | 48 | 75   | 0.7 |

## TC Boquilla en ángulo



| Código   | MT No. | ØD | ØC | L  |
|----------|--------|----|----|----|
| TC20 - 1 | MT1    | 20 | 26 | 60 |
| TC20 - 2 | MT2    | 20 | 26 | 72 |
| TC25 - 1 | MT1    | 25 | 32 | 60 |
| TC25 - 2 | MT2    | 25 | 32 | 72 |
| TC32 - 1 | MT1    | 32 | 38 | 60 |
| TC32 - 2 | MT2    | 32 | 38 | 72 |

| Código   | MT No. | ØD | ØC | L     |
|----------|--------|----|----|-------|
| TC32 - 3 | MT3    | 32 | 38 | 90    |
| TC42 - 1 | MT1    | 42 | 48 | 60    |
| TC42 - 2 | MT2    | 42 | 48 | 72    |
| TC42 - 3 | MT3    | 42 | 48 | 90    |
| TC42 - 4 | MT4    | 42 | 48 | 112.5 |



# Serie Collet Chuck

- Alta precisión y gran fuerza de cierre
- Conveniente para el cambio de herramienta
- Diversidad de modelos
- Diametro del Chuck  $\text{Ø}1.0\sim\text{Ø}26.0\text{mm}$



## Series Collet Chuck

| Portapinzas ER  | Portapinzas ER de alta velocidad   | Portapinzas ER de ultra alta velocidad   |
|---|--|--|
|   |    |    |
| <p><b>SDC/P</b></p> <ul style="list-style-type: none"> <li>- Diam. Max del Portapinzas ER <math>\text{Ø}26.0\text{mm}</math></li> <li>- Para taladrado, fresado con fresas enterizas y escariado</li> </ul> | <p><b>DSK</b></p> <ul style="list-style-type: none"> <li>- Diam. Max del Portapinzas ER <math>\text{Ø}20.0\text{mm}</math></li> <li>- Balanceado a G6.3</li> <li>- Revoluciones Max.: 15,000rpm</li> </ul> | <p><b>GSK</b></p> <ul style="list-style-type: none"> <li>- Diam. Max del Portapinzas ER <math>\text{Ø}25.0\text{mm}</math></li> <li>- Balanceado a G2.5</li> <li>- Revoluciones Max.: 25,000rpm</li> </ul> |

## Pinza de alta precisión

- Tipo precisión:  $5\ \mu\text{m}$  (GER-B)
- Tipo alta precisión:  $2\ \mu\text{m}$  (GER-HP)
- Tipo refrigeración interior



- Tipo precisión
- Tipo alta precisión



- Tipo refrigeración interior





Portapinzas ER

# SDC/P

- Adaptador boquilla ER, tipo estandar para maquinado general
- Diámetros aplicables: Ø1.0~Ø26.0

➤ **Boquilla de primera clase (Hecha en Suiza 🇨🇭)**



Boquillas de fácil acoplaje



Herramientas endurecidas con tratamiento especial



For SDC/P  
(Para maquinado general)




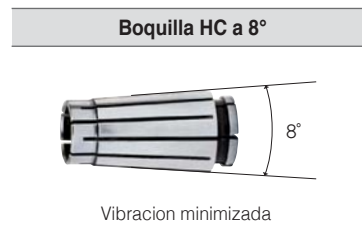
**Boquilla para alta velocidad**

# DSK

- Disponible para maquinado a max.15,000 RPM y balanceo de G6.3
- Vibración de la herramienta minimizada durante el funcionamiento utilizando una boquilla 8°
- La tuerca de alta precisión hecha en suiza mejora la estabilidad
- Diámetro de vástago aplicable: Ø1.8~Ø25



| Tipo estandar & tipo precision  | Designacion | Adaptador | Max a adaptar | Excentricidad            |
|---|-------------|-----------|---------------|--------------------------|
|  | HC6-Ød      | 10.5      | 6.0           | Estándar<br>Tipo<br>5µm  |
|   | HC10-Ød     | 15.5      | 10.0          |                          |
|   | HC13-Ød     | 20.1      | 13.0          |                          |
|   | HC16-Ød     | 24.6      | 16.0          | Precision<br>Tipo<br>3µm |
|   | HC20-Ød     | 29.1      | 20.0          |                          |
|   | HC25-Ød     | 35.6      | 25.0          |                          |



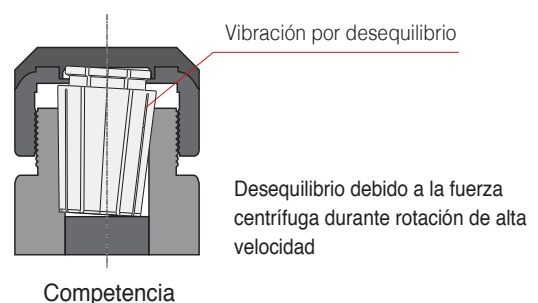
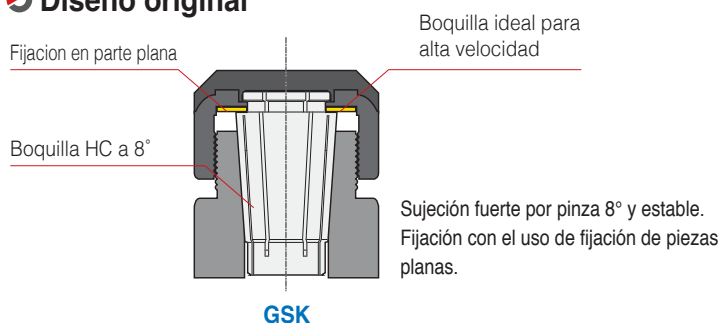
**Adaptador fino de super velocidad**

# GSK

- Disponible para maquinado a max.25,000 RPM y balanceo de G6.3
- Mayor productividad gracias al mecanizado de alta velocidad.
- Vibración minimizada de la herramienta durante el funcionamiento mediante el uso de boquilla 8°
- La tuerca de alta precisión hecha en Suiza mejora la estabilidad al presionar el collar uniformemente
- Diámetro del vástago aplicable: Ø1.8~Ø25



➤ **Diseño original**



# BT-SDC/P

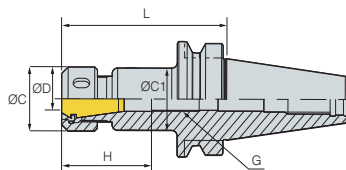


Fig. 1

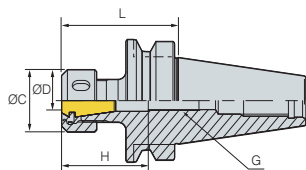


Fig. 2

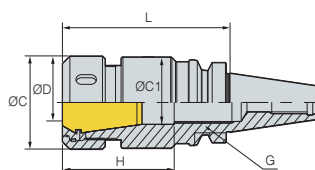


Fig. 3

(mm)

| Código        | ØD                 | L        | H   | Portapinzas ER / rango | G          | ØC  | ØC <sub>1</sub> | Fig. |   |
|---------------|--------------------|----------|-----|------------------------|------------|-----|-----------------|------|---|
| <b>BT30 -</b> | <b>SDC7P - 70</b>  | 1.0~7.0  | 70  | 33                     | GERC11/0.5 | M7  | 18              | 17   | 1 |
|               | <b>100</b>         | 1.0~7.0  | 100 | 33                     | GERC11/0.5 | M7  | 18              | 17   | 1 |
|               | <b>SDC10P - 50</b> | 1.0~10.0 | 50  | 44.5                   | GERC16/1.0 | M10 | 32              | -    | 2 |
|               | <b>70</b>          | 1.0~10.0 | 70  | 44.5                   | GERC16/1.0 | M10 | 32              | 31   | 1 |
|               | <b>100</b>         | 1.0~10.0 | 100 | 44.5                   | GERC16/1.0 | M10 | 32              | 31   | 1 |
|               | <b>SDC13P - 50</b> | 1.0~13.0 | 50  | 49                     | GERC20/1.0 | M7  | 35              | -    | 2 |
|               | <b>70</b>          | 1.0~13.0 | 70  | 49                     | GERC20/1.0 | M13 | 35              | 34   | 1 |
|               | <b>100</b>         | 1.0~13.0 | 100 | 49                     | GERC20/1.0 | M13 | 35              | 34   | 1 |
|               | <b>SDC16P - 50</b> | 1.0~16.0 | 50  | 50                     | GERC25/1.0 | M7  | 42              | -    | 2 |
|               | <b>70</b>          | 1.0~16.0 | 70  | 50                     | GERC25/1.0 | M18 | 42              | 41   | 1 |
|               | <b>100</b>         | 1.0~16.0 | 100 | 50                     | GERC25/1.0 | M18 | 42              | 41   | 1 |
|               | <b>SDC20P - 60</b> | 1.0~20.0 | 60  | 60                     | GERC32/1.0 | M7  | 50              | -    | 2 |
| <b>90</b>     | 1.0~20.0           | 90       | 60  | GERC32/1.0             | M22        | 50  | 49              | 3    |   |
| <b>120</b>    | 1.0~20.0           | 120      | 60  | GERC32/1.0             | M22        | 50  | 49              | 3    |   |
| <b>BT40 -</b> | <b>SDC7P - 70</b>  | 1.0~7.0  | 70  | 33                     | GERC11/0.5 | M7  | 18              | 17   | 1 |
|               | <b>90</b>          | 1.0~7.0  | 90  | 33                     | GERC11/0.5 | M7  | 18              | 17   | 1 |
|               | <b>130</b>         | 1.0~7.0  | 130 | 33                     | GERC11/0.5 | M7  | 18              | 17   | 1 |
|               | <b>SDC10P - 70</b> | 1.0~10.0 | 70  | 44.5                   | GERC16/1.0 | M10 | 32              | 31   | 1 |
|               | <b>90</b>          | 1.0~10.0 | 90  | 44.5                   | GERC16/1.0 | M10 | 32              | 31   | 1 |
|               | <b>130</b>         | 1.0~10.0 | 130 | 44.5                   | GERC16/1.0 | M10 | 32              | 31   | 1 |
|               | <b>SDC13P - 70</b> | 1.0~13.0 | 70  | 49                     | GERC20/1.0 | M13 | 35              | 34   | 1 |
|               | <b>90</b>          | 1.0~13.0 | 90  | 49                     | GERC20/1.0 | M13 | 35              | 34   | 1 |
|               | <b>130</b>         | 1.0~13.0 | 130 | 49                     | GERC20/1.0 | M13 | 35              | 34   | 1 |
|               | <b>150</b>         | 1.0~13.0 | 150 | 49                     | GERC20/1.0 | M13 | 35              | 34   | 1 |
|               | <b>SDC16P - 70</b> | 1.0~16.0 | 70  | 50                     | GERC25/1.0 | M18 | 42              | 41   | 1 |
|               | <b>90</b>          | 1.0~16.0 | 90  | 50                     | GERC25/1.0 | M18 | 42              | 41   | 1 |
|               | <b>130</b>         | 1.0~16.0 | 130 | 50                     | GERC25/1.0 | M18 | 42              | 41   | 1 |
|               | <b>SDC20P - 70</b> | 1.0~20.0 | 70  | 60                     | GERC32/1.0 | M22 | 50              | -    | 2 |
|               | <b>90</b>          | 1.0~20.0 | 90  | 60                     | GERC32/1.0 | M22 | 50              | 49   | 1 |
|               | <b>130</b>         | 1.0~20.0 | 130 | 60                     | GERC32/1.0 | M22 | 50              | 49   | 1 |
|               | <b>150</b>         | 1.0~20.0 | 150 | 60                     | GERC32/1.0 | M22 | 50              | 49   | 1 |
|               | <b>SDC26P - 90</b> | 3.0~26.0 | 90  | 71                     | GERC40/1.0 | M28 | 63              | 62   | 1 |

⊗ Piezas de refacción 126

• Sistema de lubricación interno es opcional

• Seleccione el portapinzas correcto para herramientas con refrigeración interior



## BT-SDC/P

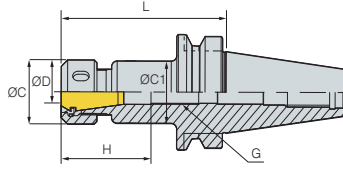


Fig. 1

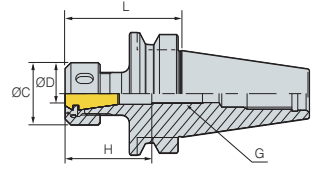


Fig. 2

| Código |                     | ØD       | L   | H    | Portapinzas<br>ER / rango | G   | ØC | ØC <sub>1</sub> | Fig. |
|--------|---------------------|----------|-----|------|---------------------------|-----|----|-----------------|------|
| BT50 - | <b>SDC10P - 100</b> | 1.0~10.0 | 100 | 44.5 | GERC16/1.0                | M10 | 32 | 31              | 1    |
|        | <b>120</b>          | 1.0~10.0 | 120 | 44.5 | GERC16/1.0                | M10 | 32 | 31              | 1    |
|        | <b>160</b>          | 1.0~10.0 | 160 | 44.5 | GERC16/1.0                | M10 | 32 | 31              | 1    |
|        | <b>SDC13P - 100</b> | 1.0~13.0 | 100 | 49   | GERC20/1.0                | M13 | 35 | 34              | 1    |
|        | <b>130</b>          | 1.0~13.0 | 130 | 49   | GERC20/1.0                | M13 | 35 | 34              | 1    |
|        | <b>160</b>          | 1.0~13.0 | 160 | 49   | GERC20/1.0                | M13 | 35 | 34              | 1    |
|        | <b>180</b>          | 1.0~13.0 | 180 | 49   | GERC20/1.0                | M13 | 35 | 34              | 1    |
|        | <b>SDC16P - 100</b> | 1.0~16.0 | 100 | 50   | GERC25/1.0                | M18 | 42 | 41              | 1    |
|        | <b>160</b>          | 1.0~16.0 | 160 | 50   | GERC25/1.0                | M18 | 42 | 41              | 1    |
|        | <b>SDC20P - 70</b>  | 1.0~20.0 | 70  | 60   | GERC32/1.0                | M22 | 50 | -               | 2    |
|        | <b>100</b>          | 1.0~20.0 | 100 | 60   | GERC32/1.0                | M22 | 50 | 49              | 1    |
|        | <b>130</b>          | 1.0~20.0 | 130 | 60   | GERC32/1.0                | M22 | 50 | 49              | 1    |
|        | <b>160</b>          | 1.0~20.0 | 160 | 60   | GERC32/1.0                | M22 | 50 | 49              | 1    |
|        | <b>180</b>          | 1.0~20.0 | 180 | 60   | GERC32/1.0                | M22 | 50 | 49              | 1    |
|        | <b>SDC26P - 160</b> | 3.0~26.0 | 160 | 71   | GERC40/1.0                | M28 | 63 | 62              | 1    |

(mm)

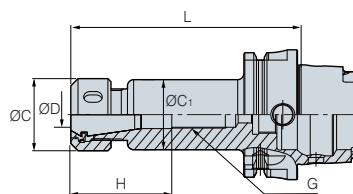
➔ Piezas de refacción 126

• Sistema de lubricación interno es opcional

• Seleccione el portapinzas correcto para herramientas con refrigeración interior



# HSK-SDC/P



(mm)

| Código    | ØD           | L        | H   | Portapinzas ER / rango | G         | ØC  | ØC <sub>1</sub> |    |
|-----------|--------------|----------|-----|------------------------|-----------|-----|-----------------|----|
| HSK63A -  | SDC10P - 100 | 1.0~10.0 | 100 | 44.5                   | GER16/1.0 | M10 | 32              | 31 |
|           | SDC13P - 100 | 1.0~13.0 | 100 | 49                     | GER20/1.0 | M7  | 35              | 34 |
|           | SDC16P - 100 | 1.0~16.0 | 100 | 50                     | GER25/1.0 | M7  | 42              | 41 |
|           | SDC20P - 110 | 1.0~20.0 | 110 | 60                     | GER32/1.0 | M7  | 50              | 49 |
| HSK100A - | SDC16P - 110 | 1.0~16.0 | 110 | 50                     | GER25/1.0 | M13 | 42              | 41 |
|           | SDC20P - 120 | 2.0~20.0 | 120 | 60                     | GER32/1.0 | M10 | 50              | 49 |

🔄 Piezas de refacción 126

• Sistema de lubricación interno es opcional

• Seleccione el portapinzas correcto para herramientas con refrigeración interior

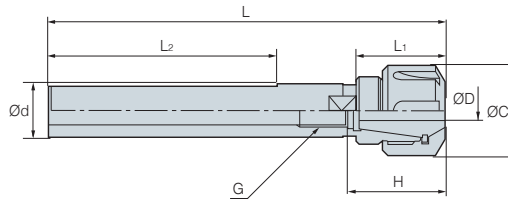
## 🔄 Partes


| División | Piezas de Refacción   |   |   |   |
|----------|---|---|---|---|
|          | Básico  |   | Opcional  |   |
|          | Tuerca de agarre  | Tornillo de Ajuste  | Llave   | Portapinzas   |
| Tipo     |  |  |  |  |
| SDC7     | RN11  | BN0716F   | 20-22   | GER/ER 11-ØD  |
| SDC10    | RN16  | BN1025F   | 32-35   | GER/ER 16-ØD  |
| SDC13    | RN20  | BN1325F   | 35-38   | GER/ER 20-ØD  |
| SDC16    | RN25  | BN1830F   | 42-46   | GER/ER 25-ØD  |
| SDC20    | RN32  | BN2230F   | 48-52   | GER/ER 32-ØD  |
| SDC26    | RN40  | BN2838F   | 62-65   | GER/ER 40-ØD  |

• Notas: para RU20, encargue llaves de 35-38; para R20, llaves S-30



## S-SDC



|       |         |      |          |    |    |     |                |                |      |                           | (mm) |   |
|-------|---------|------|----------|----|----|-----|----------------|----------------|------|---------------------------|------|---|
|       | Código  |      | ØD       | Ød | ØC | L   | L <sub>1</sub> | L <sub>2</sub> | H    | Portapinzas<br>ER / rango | G    |  |
| S16 - | SDC7 -  | 120M | 1.0~7.0  | 16 | 19 | 120 | -              | -              | 33   | GER11/0.5                 | M7   | 0.2   |
|       |         | 120T | 1.0~7.0  | 16 | 19 | 120 | -              | 73             | 33   | GER11/0.5                 | M7   | 0.2   |
|       | SDC10 - | 150T | 1.0~10.0 | 16 | 28 | 150 | 46.5           | 83             | 34.5 | GER16/1.0                 | M10  | 0.2   |
| S20 - | SDC10 - | 150M | 1.0~10.0 | 20 | 28 | 150 | 26.5           | -              | 34.5 | GER16/1.0                 | M10  | 0.3   |
|       |         | 150T | 1.0~10.0 | 20 | 28 | 150 | 26.5           | 83             | 34.5 | GER16/1.0                 | M10  | 0.3   |
|       | SDC13 - | 150M | 1.0~13.0 | 20 | 35 | 150 | 50             | -              | 49   | GER20/1.0                 | M13  | 0.3   |
|       |         | 150T | 1.0~13.0 | 20 | 35 | 150 | 50             | 83             | 49   | GER20/1.0                 | M13  | 0.3   |
| S25 - | SDC10 - | 150M | 1.0~10.0 | 25 | 28 | 150 | -              | -              | 34.5 | GER16/1.0                 | M10  | 0.5   |
|       |         | 150T | 1.0~10.0 | 25 | 28 | 150 | -              | 83             | 34.5 | GER16/1.0                 | M10  | 0.5   |
|       | SDC13 - | 150M | 1.0~13.0 | 25 | 35 | 150 | -              | -              | 49   | GER20/1.0                 | M13  | 0.5   |
|       |         | 150T | 1.0~13.0 | 25 | 35 | 150 | -              | 83             | 49   | GER20/1.0                 | M13  | 0.5   |
| S32 - | SDC13 - | 150M | 1.0~13.0 | 32 | 35 | 150 | -              | -              | 49   | GER20/1.0                 | M13  | 0.7   |
|       |         | 150T | 1.0~13.0 | 32 | 35 | 150 | -              | 83             | 49   | GER20/1.0                 | M13  | 0.7   |
|       | SDC20 - | 165M | 2.0~20.0 | 32 | 50 | 165 | -              | -              | 60   | GER32/1.0                 | M22  | 0.7   |
|       |         | 165T | 2.0~20.0 | 32 | 50 | 165 | -              | 83             | 60   | GER32/1.0                 | M22  | 0.7   |

 Piezas de refacción 128

• Sistema de lubricación interno es opcional



# S-SDC/S

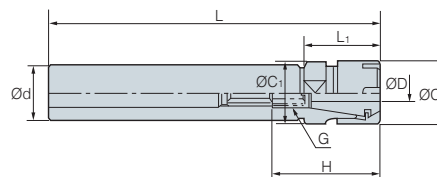


Fig. 1

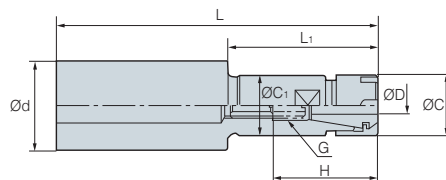



Fig. 2

(mm)

| Código       | ØD                   | Ød       | ØC       | L  | L <sub>1</sub> | H   | Portapinzas ER / rango | G         |  |     |
|--------------|----------------------|----------|----------|----|----------------|-----|------------------------|-----------|---|-----|
| <b>S16 -</b> | <b>SDC7S - 100M</b>  | 1.0~7.0  | 16       | 16 | 100            | -   | 33                     | GER11/0.5 | M7  | 0.2 |
|              |                      | 150M     | 1.0~7.0  | 16 | 16             | 150 | -                      | 33        | GER11/0.5   | M7  |
|              | <b>SDC10S - 100M</b> | 1.0~10.0 | 16       | 22 | 100            | 50  | 44.5                   | GER16/1.0 | M10   | 0.3 |
|              |                      | 150M     | 1.0~10.0 | 16 | 22             | 150 | 50                     | 44.5      | GER16/1.0   | M10 |
| <b>S20 -</b> | <b>SDC7S - 100M</b>  | 1.0~7.0  | 20       | 16 | 100            | 30  | 35                     | GER11/0.5 | M7  | 0.3 |
|              |                      | 150M     | 1.0~7.0  | 20 | 16             | 150 | 80                     | 35        | GER11/0.5   | M7  |
|              | <b>SDC10S - 100M</b> | 1.0~10.0 | 20       | 22 | 100            | 50  | 44.5                   | GER16/1.0 | M10   | 0.3 |
|              |                      | 150M     | 1.0~10.0 | 20 | 22             | 150 | 50                     | 44.5      | GER16/1.0   | M10 |
|              | <b>SDC13S - 100M</b> | 1.0~13.0 | 20       | 28 | 100            | 50  | 49                     | GER20/1.0 | M13   | 0.3 |
|              |                      | 150M     | 1.0~13.0 | 20 | 28             | 150 | 50                     | 49        | GER20/1.0   | M13 |
| <b>S25 -</b> | <b>SDC7S - 100M</b>  | 1.0~7.0  | 25       | 16 | 100            | 30  | 33                     | GER11/0.5 | M7  | 0.4 |
|              |                      | 150M     | 1.0~7.0  | 25 | 16             | 150 | 80                     | 33        | GER11/0.5   | M7  |
|              | <b>SDC10S - 100M</b> | 1.0~10.0 | 25       | 22 | 100            | 30  | 44.5                   | GER16/1.0 | M10   | 0.4 |
|              |                      | 150M     | 1.0~10.0 | 25 | 22             | 150 | 80                     | 44.5      | GER16/1.0   | M10 |
|              | <b>SDC13S - 100M</b> | 1.0~13.0 | 25       | 28 | 100            | -   | 49                     | GER20/1.0 | M13   | 0.5 |
|              |                      | 150M     | 1.0~13.0 | 25 | 28             | 150 | -                      | 49        | GER20/1.0   | M13 |
|              | <b>SDC16S - 100M</b> | 1.0~16.0 | 25       | 35 | 100            | 50  | 50                     | GER25/1.0 | M18   | 0.5 |
|              |                      | 150M     | 1.0~16.0 | 25 | 35             | 150 | 50                     | 50        | GER25/1.0   | M18 |
| <b>S32 -</b> | <b>SDC16S - 120M</b> | 1.0~16.0 | 32       | 35 | 120            | -   | 50                     | GER25/1.0 | M18   | 1   |
|              |                      | 150M     | 1.0~16.0 | 32 | 35             | 150 | -                      | 50        | GER25/1.0   | M18 |

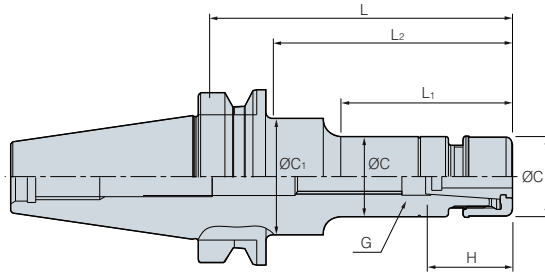
• Sistema de lubricación interno es opcional


## Partes

| División      | Piezas de Refacción   |   |  |   |
|---------------|---|---|--|---|
|               | Básico  |   | Opcional   |   |
|               | Tuerca  | Tornillo de Ajuste  | Llave  | (G)ER Portapinzas   |
| Tipo          |  |  |  |  |
| <b>SDC7S</b>  | R11M  | BN0716F   | M11M   | (G)ER 11-ØD   |
| <b>SDC10S</b> | R16M  | BN1025F   | M16M   | (G)ER 16-ØD   |
| <b>SDC13S</b> | R20M  | BN1325F   | M20M   | (G)ER 20-ØD   |
| <b>SDC16S</b> | R25M  | BN1830F   | M25M   | (G)ER 25-ØD   |



# BT-GSK

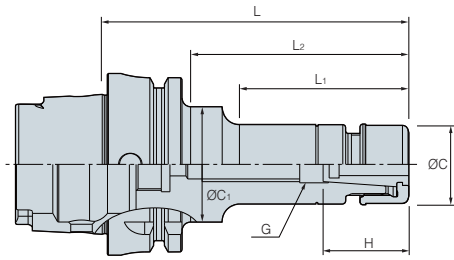


| Código            |                    | ØD        | L    | L <sub>1</sub> | L <sub>2</sub> | H        | Portapinzas<br>ER / rango | G   | ØC   | ØC <sub>1</sub> |  kg | Rpm<br>máximas |
|-------------------|--------------------|-----------|------|----------------|----------------|----------|---------------------------|-----|------|-----------------|--|----------------|
| <b>BT30 -</b>     | <b>GSK6 - 60</b>   | 1.0~6.0   | 60   | 33             | 33             | 35       | HC6/0.5                   | M8  | 19.5 | 19.5            | 0.7  | 25,000         |
|                   | <b>90</b>          | 1.0~6.0   | 90   | 56             | 65             | 35       | HC6/0.5                   | M8  | 19.5 | 32              | 0.8  | 25,000         |
|                   | <b>GSK10 - 60</b>  | 2.0~10.0  | 60   | 35             | 35             | 50       | HC10/0.5                  | M12 | 27   | 27              | 0.9  | 25,000         |
|                   | <b>90</b>          | 2.0~10.0  | 90   | 65             | 65             | 50       | HC10/0.5                  | M12 | 27   | 27              | 1.0  | 25,000         |
|                   | <b>GSK13 - 60</b>  | 3.0~13.0  | 60   | 36             | 36             | 43       | HC13/1.0                  | M12 | 35   | 35              | 0.6  | 25,000         |
|                   | <b>GSK16 - 60</b>  | 3.0~16.0  | 60   | 37             | 37             | 60       | HC16/0.5                  | M12 | 40   | 40              | 1.1  | 25,000         |
|                   | <b>90</b>          | 3.0~16.0  | 90   | 67             | 67             | 60       | HC16/0.5                  | M18 | 40   | 40              | 1.2  | 25,000         |
| <b>GSK25 - 90</b> | 16.0~25.0          | 90        | 67.5 | 67.5           | 63.5           | HC25/0.5 | M12                       | 55  | 55   | 1.1             | 25,000   |                |
| <b>BT40 -</b>     | <b>GSK6 - 90</b>   | 1.0~6.0   | 90   | 51             | 61             | 35       | HC6/0.5                   | M8  | 19.5 | 32              | 1.1  | 20,000         |
|                   | <b>120</b>         | 1.0~6.0   | 120  | 60             | 90             | 35       | HC6/0.5                   | M8  | 19.5 | 32              | 1.4  | 20,000         |
|                   | <b>150</b>         | 1.0~6.0   | 150  | 60             | 120            | 35       | HC6/0.5                   | M8  | 19.5 | 25              | 1.5  | 20,000         |
|                   | <b>GSK10 - 90</b>  | 2.0~6.0   | 90   | 48             | 60             | 50       | HC10/0.5                  | M12 | 27   | 40              | 1.2  | 20,000         |
|                   | <b>120</b>         | 2.0~6.0   | 120  | 73             | 90             | 50       | HC10/0.5                  | M12 | 27   | 40              | 1.4  | 20,000         |
|                   | <b>150</b>         | 2.0~6.0   | 150  | 73             | 118            | 50       | HC10/0.5                  | M12 | 27   | 34.5            | 1.6  | 20,000         |
|                   | <b>GSK13 - 90</b>  | 3.0~13.0  | 90   | 59             | 59             | 43       | HC13/1.0                  | M15 | 35   | 35              | 1.4  | 20,000         |
|                   | <b>GSK16 - 90</b>  | 3.0~16.0  | 90   | 58             | 58             | 60       | HC16/0.5                  | M18 | 40   | 40              | 1.5  | 20,000         |
|                   | <b>120</b>         | 3.0~16.0  | 120  | 88             | 88             | 60       | HC16/0.5                  | M18 | 40   | 40              | 1.7  | 20,000         |
|                   | <b>150</b>         | 3.0~16.0  | 150  | 118            | 118            | 60       | HC16/0.5                  | M18 | 40   | 40              | 1.9  | 20,000         |
|                   | <b>GSK20 - 90</b>  | 4.0~20.0  | 90   | 60             | 60             | 70       | HC20/0.5                  | M22 | 48   | 48              | 1.6  | 20,000         |
|                   | <b>120</b>         | 4.0~20.0  | 120  | 90             | 90             | 70       | HC20/0.5                  | M22 | 48   | 48              | 2.0  | 20,000         |
|                   | <b>GSK25- 90</b>   | 16.0~25.0 | 90   | 61             | 61             | 75       | HC25/0.5                  | M28 | 55   | 55              | 1.8  | 20,000         |
|                   | <b>120</b>         | 16.0~25.0 | 120  | 91             | 91             | 85       | HC25/0.5                  | M28 | 55   | 55              | 2.0  | 20,000         |
| <b>BT50 -</b>     | <b>GSK6 - 105</b>  | 1.0~6.0   | 105  | 55             | 64             | 35       | HC6/0.5                   | M8  | 19.5 | 32              | 3.8  | 15,000         |
|                   | <b>135</b>         | 1.0~6.0   | 135  | 60             | 92             | 35       | HC6/0.5                   | M8  | 19.5 | 32              | 3.9  | 15,000         |
|                   | <b>165</b>         | 1.0~6.0   | 165  | 60             | 114            | 35       | HC6/0.5                   | M8  | 19.5 | 32              | 4.0  | 15,000         |
|                   | <b>GSK10 - 105</b> | 2.0~10.0  | 105  | 57             | 57             | 50       | HC10/0.5                  | M12 | 27   | 27              | 3.8  | 15,000         |
|                   | <b>135</b>         | 2.0~10.0  | 135  | 70             | 92             | 50       | HC10/0.5                  | M12 | 27   | 32              | 4.0  | 15,000         |
|                   | <b>165</b>         | 2.0~10.0  | 165  | 75             | 114            | 50       | HC10/0.5                  | M12 | 27   | 36              | 4.2  | 15,000         |
|                   | <b>GSK13 - 135</b> | 3.0~13.0  | 135  | 92             | 92             | 43       | HC13/1.0                  | M15 | 35   | 35              | 4.2  | 15,000         |
|                   | <b>GSK16 - 105</b> | 3.0~16.0  | 105  | 62             | 62             | 60       | HC16/0.5                  | M18 | 40   | 40              | 4.1  | 15,000         |
|                   | <b>135</b>         | 3.0~16.0  | 135  | 92             | 92             | 60       | HC16/0.5                  | M18 | 40   | 40              | 4.3  | 15,000         |
|                   | <b>165</b>         | 3.0~16.0  | 165  | 40             | 122            | 60       | HC16/0.5                  | M18 | 40   | 50              | 4.5  | 15,000         |
|                   | <b>GSK20 - 105</b> | 4.0~20.0  | 105  | 62             | 62             | 70       | HC20/0.5                  | M22 | 48   | -               | 4.3  | 15,000         |
|                   | <b>135</b>         | 4.0~20.0  | 135  | 92             | 92             | 70       | HC20/0.5                  | M22 | 48   | -               | 4.6  | 15,000         |
|                   | <b>165</b>         | 4.0~20.0  | 165  | 122            | 122            | 70       | HC20/0.5                  | M22 | 48   | -               | 5.0  | 15,000         |
|                   | <b>GSK25 - 105</b> | 16.0~25.0 | 105  | 62             | 62             | 85       | HC25/0.5                  | M28 | 55   | 55              | 4.8  | 15,000         |
|                   | <b>135</b>         | 16.0~25.0 | 135  | 92             | 92             | 85       | HC25/0.5                  | M28 | 55   | 55              | 5.2  | 15,000         |
| <b>165</b>        | 16.0~25.0          | 165       | 122  | 122            | 85             | HC25/0.5 | M28                       | 55  | 55   | 5.6             | 15,000   |                |

 Piezas de refacción 130



# HSK-GSK



(mm)

| Código    | ØD          | L <sub>1</sub> | L <sub>2</sub> | H   | Portapinzas ER / rango | G        | ØC  | ØC <sub>1</sub> | Rpm máximas |        |
|-----------|-------------|----------------|----------------|-----|------------------------|----------|-----|-----------------|-------------|--------|
| HSK63A -  | GSK6 - 100  | 1.0~6.0        | 51             | 61  | 35                     | HC6/0.5  | M8  | 19.5            | 32          | 20,000 |
|           | GSK10 - 105 | 2.0~6.0        | 73             | 118 | 50                     | HC10/0.5 | M12 | 27              | 34.5        | 20,000 |
|           | GSK16 - 120 | 3.0~16.0       | 58             | 58  | 60                     | HC16/0.5 | M18 | 40              | 40          | 20,000 |
|           | GSK20 - 120 | 4.0~20.0       | 60             | 60  | 70                     | HC20/0.5 | M22 | 48              | 48          | 20,000 |
| HSK100A - | GSK6 - 120  | 1.0~6.0        | 55             | 64  | 35                     | HC6/0.5  | M8  | 19.5            | 32          | 15,000 |
|           | GSK10 - 120 | 2.0~10.0       | 57             | 57  | 50                     | HC10/0.5 | M12 | 27              | 27          | 15,000 |
|           | GSK16 - 140 | 3.0~16.0       | 62             | 62  | 60                     | HC16/0.5 | M18 | 40              | 40          | 15,000 |
|           | GSK25 - 155 | 16.0~25.0      | 62             | 62  | 85                     | HC25/0.5 | M28 | 55              | 55          | 15,000 |

## Partes

| División | Piezas de Refacción   |   |   |
|----------|---|---|---|
|          | Básico  |   |   |
|          | Tuerca  | Tornillo de Ajuste  | Extractor de pinza  |
| Tipo     |  |  |  |
| GSK6     | GN6   | M820C   | GSK-6CE   |
| GSK10    | GN10  | M1230C  | GSK-10CE  |
| GSK13    | GN13  | BN1530F   | GSK-13CE  |
| GSK16    | GN16  | BN1830F   | GSK-16CE  |
| GSK20    | GN20  | BN2230F   | GSK-20CE  |
| GSK25    | GN25  | BN2838F   | GSK-25CE  |

## Llave (Opcional)



| Código |
|--------|
| GSK6   |
| GSK10  |
| GSK13  |
| GSK16  |
| GSK20  |
| GSK25  |





Portapinzas ER de diámetro reducido

# DSK

- Equilibrio G6.3 disponible para maquinado a max. 15,000 RPM
- Vibración minimizada de la herramienta durante el funcionamiento mediante el uso de boquilla 8°
- La tuerca de alta precisión de fabricación suiza mejora la estabilidad
- Diámetro del vástago aplicable: Ø1.8~Ø25



➤ Sistema de codificación



➤ Boquilla de primera clase (Hecha en Suiza )

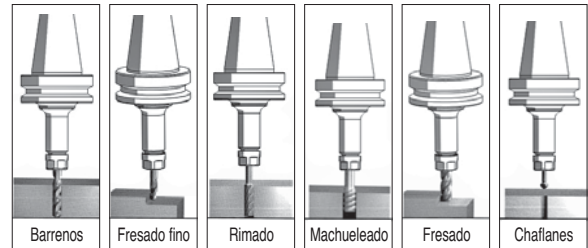


Boquillas de fácil acoplaje

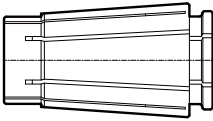


Herramientas endurecidas con tratamiento especial


➤ Aplicaciones multifuncionales



➤ Portapinzas


| Tipo estandar & tipo precision  | Designacion | Adaptador | Max a adaptar | Excentricidad      |
|---|-------------|-----------|---------------|--------------------|
|  | HC6-Ød      | 10.5      | 6.0           | Estándar Tipo 5µm  |
|   | HC10-Ød     | 15.5      | 10.0          |                    |
|   | HC13-Ød     | 20.1      | 13.0          | Precision Tipo 3µm |
|   | HC16-Ød     | 24.6      | 16.0          |                    |
|   | HC20-Ød     | 29.1      | 20.0          |                    |
|   | HC25-Ød     | 35.6      | 25.0          |                    |

**Boquilla HC a 8°**



Vibracion minimizada

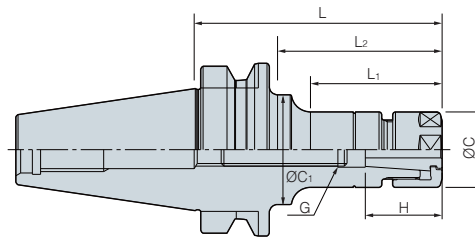
➤ Llave (opcional)

|  | Código | Chuck  |
|--|--------|--------|
|  <p>Llave</p> | DSS-6  | DSK-6  |
|  | DSS-10 | DSK-10 |
|  | DSS-16 | DSK-16 |
|  | DSS-20 | DSK-20 |
|  | DSS-25 | DSK-25 |


|  | Código | Chuck  |
|--|--------|--------|
|  <p>Extractor de pinza</p> | DSS-6  | DSK-6  |
|  | DSS-10 | DSK-10 |
|  | DSS-16 | DSK-16 |
|  | DSS-20 | DSK-20 |
|  | DSS-25 | DSK-25 |



# BT-DSK



(mm)

| Código     |            | ØD        | L    | L <sub>1</sub> | L <sub>2</sub> | H        | Portapinzas ER / rango | G   | ØC   | ØC <sub>1</sub> |  kg | Rpm máximas |
|------------|------------|-----------|------|----------------|----------------|----------|------------------------|-----|------|-----------------|--|-------------|
| BT30 -     | DSK6 - 60  | 1.0~6.0   | 60   | 33             | 33             | 35       | HC6/0.5                | M8  | 19.5 | 19.5            | 0.7  | 15,000      |
|            | 90         | 1.0~6.0   | 90   | 56             | 65             | 35       | HC6/0.5                | M8  | 19.5 | 32              | 0.8  | 15,000      |
|            | DSK10- 60  | 2.0~10.0  | 60   | 35             | 35             | 50       | HC10/0.5               | M12 | 27.5 | 27.5            | 0.9  | 15,000      |
|            | 90         | 2.0~10.0  | 90   | 65             | 65             | 50       | HC10/0.5               | M12 | 27.5 | 27.5            | 1.0  | 15,000      |
|            | DSK13 - 60 | 3.0~13.0  | 60   | 36             | 36             | 43       | HC13/0.5               | M12 | 33   | 33              | 0.6  | 15,000      |
|            | DSK16 - 60 | 3.0~16.0  | 60   | 37             | 37             | 60       | HC16/0.5               | M12 | 40   | 40              | 1.1  | 15,000      |
|            | 90         | 3.0~16.0  | 90   | 67             | 67             | 60       | HC16/0.5               | M18 | 40   | 40              | 1.2  | 15,000      |
| DSK25 - 90 | 16.0~25.0  | 90        | 67.5 | 67.5           | 63.5           | HC25/0.5 | M12                    | 55  | 55   | 1.1             | 15,000   |             |
| BT40 -     | DSK6 - 90  | 1.0~6.0   | 90   | 51             | 61             | 35       | HC6/0.5                | M8  | 19.5 | 32              | 1.1  | 10,000      |
|            | 120        | 1.0~6.0   | 120  | 60             | 90             | 35       | HC6/0.5                | M8  | 19.5 | 32              | 1.4  | 10,000      |
|            | 150        | 1.0~6.0   | 150  | 60             | 120            | 35       | HC6/0.5                | M8  | 19.5 | 25              | 1.5  | 10,000      |
|            | DSK10 - 90 | 2.0~6.0   | 90   | 48             | 60             | 50       | HC10/0.5               | M12 | 27.5 | 40              | 1.2  | 10,000      |
|            | 120        | 2.0~6.0   | 120  | 73             | 90             | 50       | HC10/0.5               | M12 | 27.5 | 40              | 1.4  | 10,000      |
|            | 150        | 2.0~6.0   | 150  | 73             | 118            | 50       | HC10/0.5               | M12 | 27.5 | 34.5            | 1.6  | 10,000      |
|            | DSK13 - 90 | 3.0~13.0  | 90   | 59             | 59             | 43       | HC13/1.0               | M15 | 33   | 33              | 1.4  | 10,000      |
|            | DSK16 - 90 | 3.0~16.0  | 90   | 58             | 58             | 60       | HC16/0.5               | M18 | 40   | 40              | 1.5  | 10,000      |
|            | 120        | 3.0~16.0  | 120  | 88             | 88             | 60       | HC16/0.5               | M18 | 40   | 40              | 1.7  | 10,000      |
|            | 150        | 3.0~16.0  | 150  | 118            | 118            | 60       | HC16/0.5               | M18 | 40   | 40              | 1.9  | 10,000      |
|            | DSK20 - 90 | 4.0~20.0  | 90   | 60             | 60             | 70       | HC20/0.5               | M22 | 46.5 | 48.5            | 1.6  | 10,000      |
|            | 120        | 4.0~20.0  | 120  | 90             | 90             | 70       | HC20/0.5               | M22 | 46.5 | 48.5            | 2.0  | 10,000      |
|            | DSK25 - 90 | 16.0~25.0 | 90   | 61             | 61             | 75       | HC25/0.5               | M28 | 55   | 55              | 1.8  | 10,000      |
|            | 120        | 16.0~25.0 | 120  | 91             | 91             | 85       | HC25/0.5               | M28 | 55   | 55              | 2.0  | 10,000      |

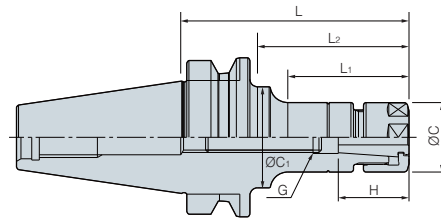
 Piezas de refacción | 33

• Sistema de lubricación interno es opcional

• Se recomiendan las boquillas de refrigerante cuando se usa el sistema de refrigerante



# BT-DSK



|        |         |           |           |     |                |                |          |                        |     |      |                 |       | (mm)        |
|--------|---------|-----------|-----------|-----|----------------|----------------|----------|------------------------|-----|------|-----------------|-------|-------------|
| Código |         |           | ØD        | L   | L <sub>1</sub> | L <sub>2</sub> | H        | Portapinzas ER / rango | G   | ØC   | ØC <sub>1</sub> | kg    | Rpm máximas |
| BT50 - | DSK6 -  | 105       | 1.0~6.0   | 105 | 55             | 64             | 35       | HC6/0.5                | M8  | 19.5 | 32              | 3.8   | 8,000       |
|        |         | 135       | 1.0~6.0   | 135 | 60             | 92             | 35       | HC6/0.5                | M8  | 19.5 | 32              | 3.9   | 8,000       |
|        |         | 165       | 1.0~6.0   | 165 | 60             | 114            | 35       | HC6/0.5                | M8  | 19.5 | 32              | 4.0   | 8,000       |
|        | DSK10 - | 105       | 2.0~10.0  | 105 | 57             | 57             | 50       | HC10/0.5               | M12 | 27.5 | 27.5            | 3.8   | 8,000       |
|        |         | 135       | 2.0~10.0  | 135 | 70             | 92             | 50       | HC10/0.5               | M12 | 27.5 | 32              | 4.0   | 8,000       |
|        |         | 165       | 2.0~10.0  | 165 | 75             | 114            | 50       | HC10/0.5               | M12 | 27.5 | 36              | 4.2   | 8,000       |
|        | DSK13 - | 135       | 3.0~13.0  | 135 | 92             | 92             | 43       | HC13/1.0               | M15 | 33   | 33              | 4.2   | 8,000       |
|        | DSK16 - | 105       | 3.0~16.0  | 105 | 62             | 62             | 60       | HC16/0.5               | M18 | 40   | 40              | 4.1   | 8,000       |
|        |         | 135       | 3.0~16.0  | 135 | 92             | 92             | 60       | HC16/0.5               | M18 | 40   | 40              | 4.3   | 8,000       |
|        |         | 165       | 3.0~16.0  | 165 | 40             | 122            | 60       | HC16/0.5               | M18 | 40   | 50              | 4.5   | 8,000       |
|        | DSK20 - | 105       | 4.0~20.0  | 105 | 62             | 62             | 70       | HC20/0.5               | M22 | 48.5 | -               | 4.3   | 8,000       |
|        |         | 135       | 4.0~20.0  | 135 | 92             | 92             | 70       | HC20/0.5               | M22 | 48.5 | -               | 4.6   | 8,000       |
|        |         | 165       | 4.0~20.0  | 165 | 122            | 122            | 70       | HC20/0.5               | M22 | 48.5 | -               | 5.0   | 8,000       |
|        | DSK25 - | 105       | 16.0~25.0 | 105 | 62             | 62             | 85       | HC25/0.5               | M28 | 55   | 55              | 4.8   | 8,000       |
|        |         | 135       | 16.0~25.0 | 135 | 92             | 92             | 85       | HC25/0.5               | M28 | 55   | 55              | 5.2   | 8,000       |
| 165    |         | 16.0~25.0 | 165       | 122 | 122            | 85             | HC25/0.5 | M28                    | 55  | 55   | 5.6             | 8,000 |             |

• Sistema de lubricación interno es opcional  
 • Se recomiendan las boquillas de refrigerante cuando se usa el sistema de refrigerante

## Partes

| División | Piezas de Refacción |                    |       |
|----------|---------------------|--------------------|-------|
|          | Opcional            |                    |       |
|          | Tuerca              | Tornillo de Ajuste | Llave |
| Tipo     |                     |                    |       |
| DSK6     | DN6                 | BN0825F            | DSS-6 |
| DSK10    | DN10                | BN1225F            | DSS10 |
| DSK16    | DN16                | BN1830F            | DSS16 |
| DSK20    | DN20                | BN2230F            | DSS20 |
| DSK25    | DN25                | BN2838F            | DSS25 |



# Información técnica para portapinzas GERC

GER Boquilla\_GER

**GERC** *new*

- Pinza resistente a la corrosión a micro unidad
- Recubrimiento de alta tecnología para una precisión duradera
- Mayor vida útil de la herramienta y mayor productividad.



## Sistema de codificación



## Tecnología especial para recubrimiento

A diferencia de las pinzas GERC, las pinzas no recubiertas convencionales tienen las siguientes características:  
Las pinzas no recubiertas se ven afectadas por la corrosión debido a la alta humedad, el fluido de corte, el limpiador, la sal, el gas y muchos otros factores, lo que en consecuencia deteriora toda la calidad del mecanizado.



Cuando un collar se oxida, la vida útil de la herramienta se reduce y la precisión disminuye considerablemente. Para prevenir este problema, el tratamiento de la superficie por Se aplicó una micro unidad a las pinzas GERC para una protección eficaz y larga precisión duradera.



GERC

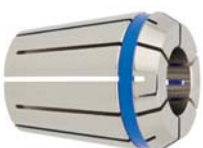


Competencia

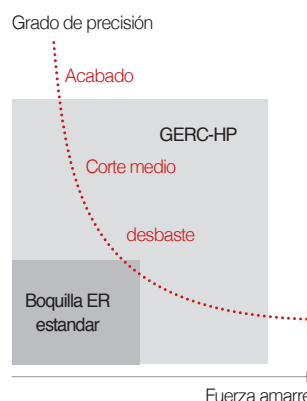
Dos muestras de pinzas después de 4 meses de uso. Izquierda: pinza GERC, derecha: sin recubrimiento

## GERC-HP

Un mandril de precisión del tipo pinza es caro que Estándar, pero aún tiene más ventajas en largo. Término costo y eficiencia. Usando GERC-HP puede Minimizar el reprocesamiento caro debido a una menor tolerancia con máxima precisión

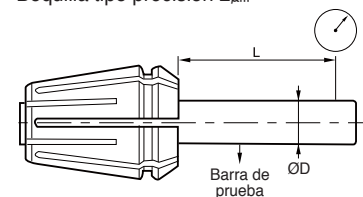


Boquilla tipo precisión 2 $\mu$ m



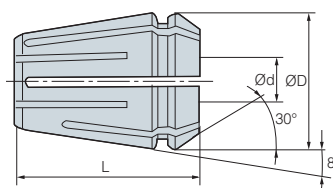
## Precisión (L/D = 3)

Boquilla tipo estandar 5 $\mu$ m  
Boquilla tipo precisión 2 $\mu$ m



## GERC Portapinzas

Tipo de precisión / Tipo de alta precisión

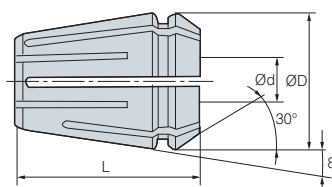


(mm)

| Código         | Tamaño pinza | ØD   | L    | Ød (Max.) | Rango (mm) | Tolerancia   |                     |
|----------------|--------------|------|------|-----------|------------|--------------|---------------------|
|                |              |      |      |           |            | General Tipo | Precisión Tipo (HP) |
| GER11 - Ød(HP) | 11           | 11.5 | 18.0 | 7.0       | 0.5        | 5 µm         | 2 µm                |
| GER16 - Ød(HP) | 16           | 17.0 | 27.5 | 10.0      | 1.0        |              |                     |
| GER20 - Ød(HP) | 20           | 21.0 | 31.5 | 13.0      | 1.0        |              |                     |
| GER25 - Ød(HP) | 25           | 26.0 | 34.0 | 16.0      | 1.0        |              |                     |
| GER32 - Ød(HP) | 32           | 33.0 | 40.0 | 20.0      | 1.0        |              |                     |
| GER40 - Ød(HP) | 40           | 41.0 | 46.0 | 26.0      | 1.0        |              |                     |

## ER Portapinzas

Tipo sistema de lubricación interno

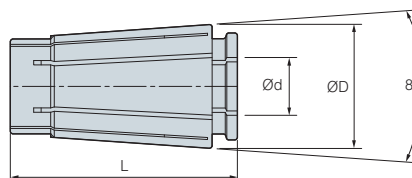


(mm)

| Código       | Tamaño pinza | ØD   | L    | Ød (Max.) | Diámetro mínimo de tipo lubricante | Rango (mm) | Tolerancia |
|--------------|--------------|------|------|-----------|------------------------------------|------------|------------|
|              |              |      |      |           |                                    |            |            |
| ER16 - Ød(C) | 16           | 17.0 | 27.5 | 10.0      | 4.0                                | 1.0        |            |
| ER20 - Ød(C) | 20           | 21.0 | 31.5 | 13.0      | 6.0                                | 1.0        |            |
| ER25 - Ød(C) | 25           | 26.0 | 34.0 | 16.0      | 6.0                                | 1.0        |            |
| ER32 - Ød(C) | 32           | 33.0 | 40.0 | 20.0      | 8.0                                | 1.0        |            |
| ER40 - Ød(C) | 40           | 41.0 | 46.0 | 26.0      | 10.0                               | 1.0        |            |

## HC Portapinzas ER de diámetro reducido

Diámetro mínimo de tipo lubricante



(mm)

| Código       | ØD   | L    | Ød (Max.) | Distance (mm) | Tolerancia   |                     |
|--------------|------|------|-----------|---------------|--------------|---------------------|
|              |      |      |           |               | General Tipo | Precisión Tipo (HP) |
| HC6 - Ød(P)  | 10.5 | 25.0 | 6.0       | 1.0           | 5 µm         | 3 µm                |
| HC10 - Ød(P) | 15.6 | 30.5 | 10.0      | 1.0           |              |                     |
| HC13 - Ød(P) | 20.1 | 39.0 | 13.0      | 1.0           |              |                     |
| HC16 - Ød(P) | 24.6 | 45.0 | 16.0      | 1.0           |              |                     |
| HC20 - Ød(P) | 29.2 | 54.3 | 20.0      | 1.0           |              |                     |
| HC25 - Ød(P) | 35.7 | 57.0 | 25.0      | 1.0           |              |                     |



## GERC Portapinzas

Tipo de precisión



(mm)

| Código                  | Ød       | Rango | Cantidad de portapinzas | Tolerancia |
|-------------------------|----------|-------|-------------------------|------------|
| GERC11 1.0-7.0mm/0.5mm  | 1.0-7.0  | 0.5   | 13pcs                   | 5 µm       |
| GERC16 1.0-10.0mm/1.0mm | 1.0-10.0 | 1.0   | 10pcs                   | 5 µm       |
| GERC20 2.0-13.0mm/1.0mm | 2.0-13.0 | 1.0   | 12pcs                   | 5 µm       |
| GERC25 2.0-16.0mm/1.0mm | 2.0-16.0 | 1.0   | 15pcs                   | 5 µm       |
| GERC32 3.0-20.0mm/1.0mm | 3.0-20.0 | 1.0   | 18pcs                   | 5 µm       |
| GERC40 4.0-26.0mm/1.0mm | 4.0-26.0 | 1.0   | 23pcs                   | 5 µm       |

## ER Portapinzas

General Tipo



(mm)

| Código    | Ød       | Rango | Cantidad de portapinzas | Tolerancia |
|-----------|----------|-------|-------------------------|------------|
| ER11(SET) | 1.5-7.0  | 0.5   | 12pcs                   | 10 µm      |
| ER16(SET) | 2.0-10.0 | 1.0   | 10pcs                   | 10 µm      |
| ER20(SET) | 2.0-13.0 | 1.0   | 12pcs                   | 10 µm      |
| ER25(SET) | 2.0-16.0 | 1.0   | 15pcs                   | 10 µm      |
| ER32(SET) | 3.0-20.0 | 1.0   | 18pcs                   | 10 µm      |
| ER40(SET) | 6.0-26.0 | 1.0   | 21pcs                   | 15 µm      |



Adaptador machos de alta velocidad

DST **new**

- Mandril roscado para maquinado de alta velocidad
- Estructura especialmente diseñada para absorber la carga de empuje y evitando daños en el grifo
- A través del sistema de refrigeración disponible.
- Rango aplicable: M1-M22



➤ Sistema de codificación



➤ Excelentes resultados, maquinado preciso

área de maquinado excelente

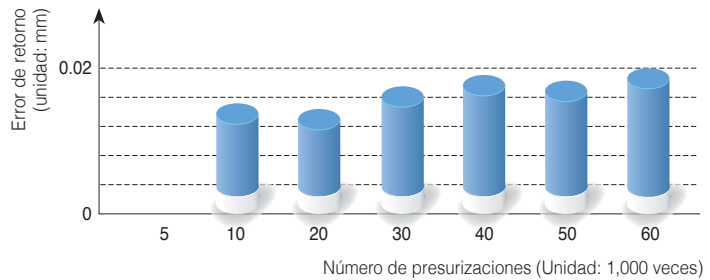


DST22  
(vc = 100 m/min)

Excelente corte



Adaptador convencional



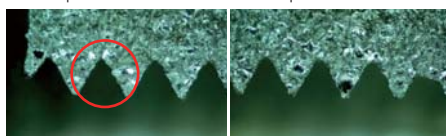
Adaptador exclusivo para rosca

- Al roscar usar adaptador TER
- DST3: usar adaptador ER11

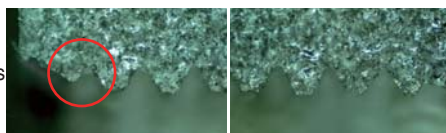
➤ Comparación de los perfiles de la rosca

Parte de entrada después de un uso      Extremo del macho después de un uso

DST



Adaptador portapinzas normal



Adaptador Synchro tap (DST7)



Buena figura de las estrías y en forma

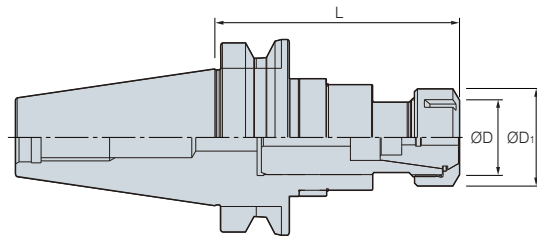
Adaptador portapinzas general



El hilo está fuera de su forma. debido a un error de sincronización



# BT-DST



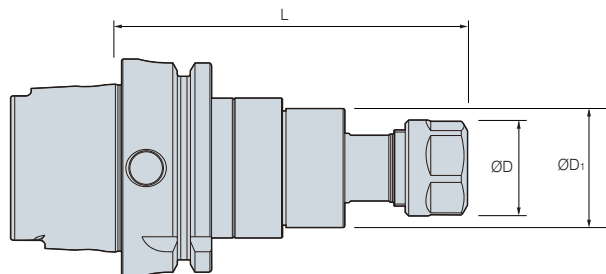
(mm)

| Código | ØD          | ØD <sub>1</sub> | L    | Portapinzas | Rango del Machuelo | F-     | F+  |     |
|--------|-------------|-----------------|------|-------------|--------------------|--------|-----|-----|
| BT30 - | DST3 - 70   | 26              | 19   | 70          | ER11               | M1~M3  | 0.5 | 0.5 |
|        | DST10 - 95  | 40.4            | 28   | 95          | TER16              | M3~M10 | 0.5 | 0.5 |
| BT40 - | DST10 - 100 | 40.4            | 28   | 100         | TER16              | M3~M10 | 0.5 | 0.5 |
|        | DST22 - 110 | 60              | 49.5 | 110         | TER32              | M6~M22 | 0.7 | 0.7 |
| BT50 - | DST10 - 110 | 60              | 49.5 | 110         | TER16              | M3~M10 | 0.5 | 0.5 |
|        | DST22 - 130 | 60              | 49.5 | 125         | TER32              | M6~M22 | 0.7 | 0.7 |

Portapinzas 135, 143

• Sistema de lubricación interno es opcional

# HSK-DST



(mm)

| Código   | ØD          | ØD <sub>1</sub> | L    | Portapinzas | Rango del Machuelo | F-     | F+  |     |
|----------|-------------|-----------------|------|-------------|--------------------|--------|-----|-----|
| HSK63A - | DST10 - 100 | 40.4            | 28   | 100         | TER16              | M3~M10 | 0.5 | 0.5 |
|          | DST22 - 130 | 60              | 49.5 | 130         | TER32              | M6~M22 | 0.7 | 0.7 |

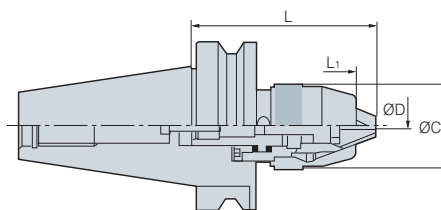
Portapinzas 143


• Sistema de lubricación interno es opcional





# BT-NPU



| Código |              | ØD<br>(Rango de amarre) | ØC | L   | L <sub>1</sub> |  |
|--------|--------------|-------------------------|----|-----|----------------|---|
| BT30 - | NPU8 - 97    | 0~8                     | 38 | 97  | 8.5            | 0.8   |
|        | NPU13 - 125  | 1~13                    | 50 | 125 | 12.5           | 1.5   |
| BT40 - | NPU8 - 87    | 0~8                     | 38 | 87  | 8.5            | 1.3   |
|        | NPU13 - 105  | 1~13                    | 50 | 105 | 12.5           | 1.7   |
|        | NPU1a3 - 130 | 1~13                    | 50 | 130 | 12.5           | 2.0   |
| BT50 - | NPU13 - 115  | 1~13                    | 50 | 115 | 12.5           | 4.4   |
|        | NPU13 - 130  | 1~13                    | 50 | 130 | 12.5           | 4.6   |
|        | NPU13 - 190  | 1~13                    | 50 | 190 | 12.5           | 5.4   |

(mm)

• Sistema de lubricación interno no disponible

## Partes

| División | Piezas de Refacción   |   |   |
|----------|---|---|---|
|          | Básico  |   | Opcional  |
|          | Adaptador   | Tornillo  | Llave   |
| Tipo     |  |  |  |
| NPU08    | NPU08   | BX0820  | NPU0836   |
| NPU13    | NPU13   | BX0825  | NPU1348   |



# Serie DTN

## Adaptador de machos

# DTN

- Diseño compacto y delgado
- Mejor aprovechamiento de la fuerza
- Rango M3 ~ M38

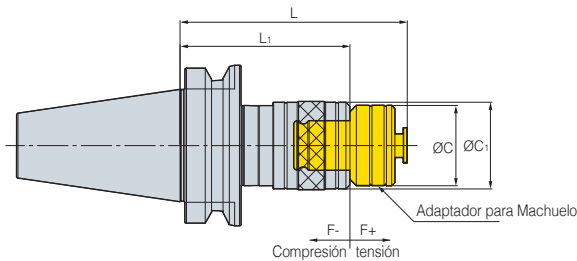


### ☞ Sistema de codificación



### ☞ Cambio fácil del TCA (adaptador para machos)

Tipo de intercambio de un solo toque conveniente para alta precisión y mayor vida útil de la herramienta. La contracción de longitud es posible por vía axial flotante.



### ☞ Resultados mejorados

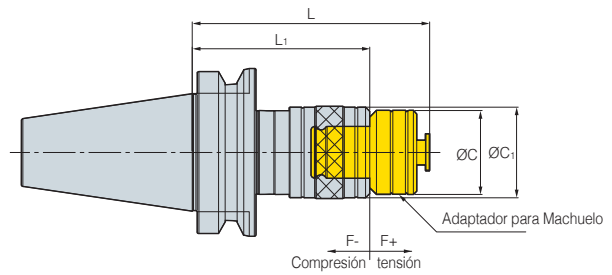


### ☞ Método de adaptación de machos de roscar en adaptador TCA

| Antes de instalación  | Después de instalación   | Desmontaje   |
|---|--|--|
|   |  |  |
| <ol style="list-style-type: none"> <li>1. Inserte la tuerca TCA empujando la cubierta del soporte del macho de roscar</li> <li>2. Fije la tuerca TCA a la ranura principal con firmeza</li> </ol> | <ol style="list-style-type: none"> <li>1. Cubierta del soporte del macho de roscar colocada correctamente</li> </ol> | <ol style="list-style-type: none"> <li>1. Separe la tuerca TCA tirando de la cubierta del soporte del macho de roscar</li> </ol> |



# BT-DTN

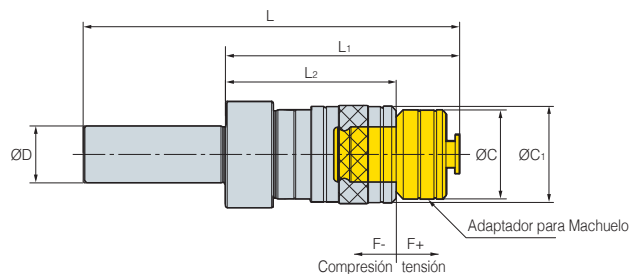


| Código |             | Rango del Machuelo | L   | L <sub>1</sub> | ØC | ØC <sub>1</sub> | Adaptador | F-   | F+   | (mm) |
|--------|-------------|--------------------|-----|----------------|----|-----------------|-----------|------|------|------|
| BT30 - | DTN12 - 85  | M3~M12             | 85  | 60             | 32 | 39              | TCA1-M    | 4    | 10   | 0.7  |
|        | DTN12 - 90  | M3~M12             | 90  | 65             | 32 | 39              | TCA1-M    | 4    | 10   | 1.2  |
| BT40 - | 120         | M3~M12             | 120 | 95             | 32 | 39              | TCA1-M    | 4    | 10   | 1.4  |
|        | DTN22 - 130 | M8~M22             | 130 | 96             | 50 | 56              | TCA2-M    | 12.5 | 12.5 | 1.7  |
|        | 160         | M8~M22             | 160 | 126            | 50 | 56              | TCA2-M    | 12.5 | 12.5 | 2.1  |
| BT50 - | DTN12 - 100 | M3~M12             | 100 | 75             | 32 | 39              | TCA1-M    | 4    | 10   | 3.7  |
|        | 130         | M3~M12             | 130 | 105            | 32 | 39              | TCA1-M    | 4    | 10   | 3.9  |
|        | DTN22 - 140 | M8~M22             | 140 | 104            | 50 | 56              | TCA2-M    | 12.5 | 12.5 | 4.2  |
|        | 170         | M8~M22             | 170 | 134            | 50 | 56              | TCA2-M    | 12.5 | 12.5 | 4.7  |
|        | DTN38 - 185 | M16~M38            | 185 | 140            | 72 | 81              | TCA3-M    | 20   | 20   | 5.7  |
|        | 215         | M16~M38            | 215 | 170            | 72 | 81              | TCA3-M    | 20   | 20   | 6.6  |

➔ Adaptador Para machuelos (TCA) I42

• Sistema de lubricación interno no disponible • El adaptador para machos es opcional

# S-DTN



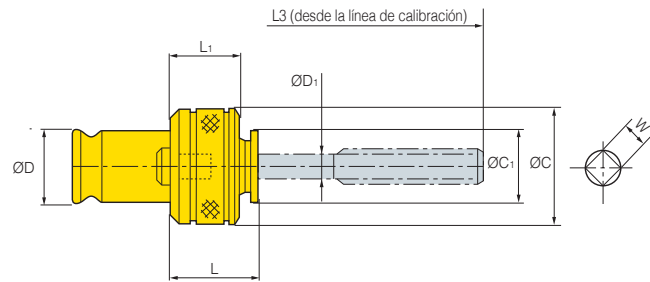
| Código |             | Rango del Machuelo | ØD | L   | L <sub>1</sub> | L <sub>2</sub> | ØD | ØD | F-   | F+   | Adaptador |
|--------|-------------|--------------------|----|-----|----------------|----------------|----|----|------|------|-----------|
| S32 -  | DTN12 - 90  | M3-M12             | 32 | 170 | 90             | 65             | 32 | 39 | 4    | 10   | TCA1      |
| S32 -  | DTN22 - 130 | M8-M24             | 32 | 210 | 130            | 96             | 50 | 56 | 12.5 | 12.5 | TCA2      |

➔ Adaptador Para machuelos (TCA) I42

• Sistema de lubricación interno no disponible • El adaptador para machos es opcional



# TCA adaptador de machos

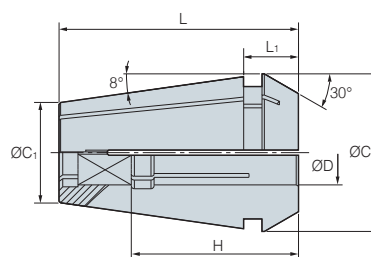
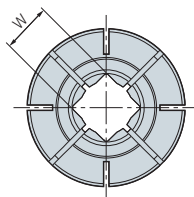


| Código        | ØD   | ØC  | L  | L <sub>1</sub> | kg  |
|---------------|------|-----|----|----------------|-----|
| <b>TCA1 -</b> |      |     |    |                |     |
| M3            | 4    | 3.2 | 24 | 22             | 0.2 |
| M4            | 5    | 4   | 24 | 22             | 0.2 |
| M5            | 5.5  | 4.5 | 24 | 22             | 0.2 |
| M6, 1/4U      | 6    | 4.5 | 24 | 22             | 0.2 |
| M8            | 6.2  | 5   | 25 | 22             | 0.2 |
| M10, 3/8U     | 7    | 5.5 | 25 | 22             | 0.2 |
| M11           | 8    | 6   | 39 | 22             | 0.2 |
| M12           | 8.5  | 6.5 | 26 | 22             | 0.2 |
| <b>TCA2 -</b> |      |     |    |                |     |
| M8            | 6.2  | 5   | 38 | 28             | 0.6 |
| <b>TCS2 -</b> |      |     |    |                |     |
| M10           | 7    | 5.5 | 38 | 28             | 0.6 |
| <b>TCA2 -</b> |      |     |    |                |     |
| M12           | 8.5  | 6.5 | 39 | 28             | 0.6 |
| M14, 3/4U     | 10.5 | 8   | 41 | 28             | 0.6 |
| P1/4          | 11   | 9   | 31 | 28             | 0.6 |
| <b>TCS2 -</b> |      |     |    |                |     |
| M16           | 12.5 | 10  | 43 | 28             | 0.6 |
| <b>TCA2 -</b> |      |     |    |                |     |
| M18, P3/8     | 14   | 11  | 44 | 28             | 0.6 |
| M20           | 15   | 12  | 45 | 28             | 0.6 |
| M22           | 17   | 13  | 46 | 28             | 0.6 |
| P1/2          | 18   | 14  | 36 | 28             | 0.6 |
| M24           | 19   | 15  | 46 | 28             | 1.8 |
| <b>TCA3 -</b> |      |     |    |                |     |
| M16           | 12.5 | 10  | 35 | 37             | 1.8 |
| M18           | 14   | 11  | 37 | 37             | 1.8 |
| M20           | 15   | 12  | 37 | 37             | 1.8 |
| M22           | 17   | 13  | 38 | 37             | 1.8 |
| M24           | 19   | 15  | 44 | 37             | 1.8 |
| M27, 1U       | 20   | 15  | 62 | 37             | 1.8 |
| M30, P3/4     | 23   | 17  | 62 | 37             | 1.8 |
| M33           | 25   | 19  | 66 | 37             | 1.8 |
| M36, M38      | 28   | 21  | 68 | 37             | 1.8 |

• Productos estándar DIN pueden ser encargados • Sistema de lubricación interno no disponible



# TER adaptador para machos

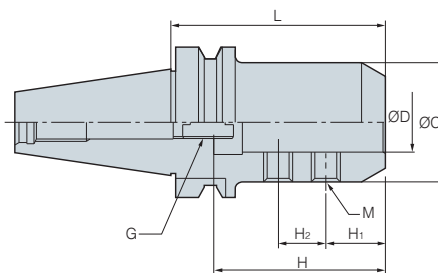


|         | Código  | Estándar Tornillo | ØD   | W   | ØC    | ØC <sub>1</sub> | L    | L <sub>1</sub> | H  |
|---------|---------|-------------------|------|-----|-------|-----------------|------|----------------|----|
| TER16 - | 4x3.2   | M3                | 4    | 3.2 | 16.74 | 10.1            | 27.5 | 6.3            | 18 |
|         | 5x4     | M4                | 5    | 4   | 16.74 | 10.1            | 27.5 | 6.3            | 18 |
|         | 5.5x4.5 | M5                | 5.5  | 4.5 | 16.74 | 10.1            | 27.5 | 6.3            | 18 |
|         | 6x4.5   | M6, U1/4          | 6    | 4.5 | 16.74 | 10.1            | 27.5 | 6.3            | 18 |
|         | 6.2x5   | M7, M8            | 6.2  | 5   | 16.74 | 10.1            | 27.5 | 6.3            | 18 |
|         | 7x5.5   | M9, M10, U3/8     | 7    | 5.5 | 16.74 | 10.1            | 27.5 | 6.3            | 18 |
| TER20 - | 5x4     | M4                | 5    | 4   | 20.74 | 13.2            | 31.5 | 7.2            | 18 |
|         | 5.5x4.5 | M5                | 5.5  | 4.5 | 20.74 | 13.2            | 31.5 | 7.2            | 18 |
|         | 6x4.5   | M6, U1/4          | 6    | 4.5 | 20.74 | 13.2            | 31.5 | 7.2            | 18 |
|         | 6.2x5   | M7, M8            | 6.2  | 5   | 20.74 | 13.2            | 31.5 | 7.2            | 18 |
|         | 7x5.5   | M9, M10, U3/8     | 7    | 5.5 | 20.74 | 13.2            | 31.5 | 7.2            | 18 |
|         | 8x6     | M11, U7/16, P1/8  | 8    | 6   | 20.74 | -               | -    | -              | -  |
|         | 8.5x6.5 | M12               | 8.5  | 6.5 | 20.74 | 13.2            | 31.5 | 7.2            | 22 |
| TER25 - | 5x4     | M4                | 5    | 4   | 25.74 | 17.6            | 34   | 7.5            | 18 |
|         | 5.5x4.5 | M5                | 5.5  | 4.5 | 25.74 | 17.6            | 34   | 7.5            | 18 |
|         | 6x4.5   | M6                | 6    | 4.5 | 25.74 | 17.6            | 34   | 7.5            | 18 |
|         | 6.2x5   | M7, M8            | 6.2  | 5   | 25.74 | 17.6            | 34   | 7.5            | 18 |
|         | 7x5.5   | M9, M10, U3/8     | 7    | 5.5 | 25.74 | 17.6            | 34   | 7.5            | 18 |
|         | 8.5x6.5 | M12               | 8.5  | 6.5 | 25.74 | 17.6            | 34   | 7.5            | 22 |
| TER32 - | 6x4.5   | M6, U1/4          | 6    | 4.5 | 32.74 | 23.1            | 40   | 8.2            | 18 |
|         | 6.2x5   | M7, M8            | 6.2  | 5   | 32.74 | 23.1            | 40   | 8.2            | 18 |
|         | 7x5.5   | M9, M10, U3/8     | 7    | 5.5 | 32.74 | 23.1            | 40   | 8.2            | 18 |
|         | 8X6     | M11, U7/16, P1/8  | 8    | 6   | 32.74 | 23.1            | 40   | 8.2            | 22 |
|         | 8.5x6.5 | M12               | 8.5  | 6.5 | 32.74 | 23.1            | 40   | 8.2            | 22 |
|         | 10.5x8  | M14, U9/16        | 10.5 | 8   | 32.74 | 23.1            | 40   | 8.2            | 25 |
|         | 12.5x10 | M16               | 12.5 | 10  | 32.74 | 23.1            | 40   | 8.2            | 25 |
|         | 14x11   | M18, P3/8         | 14   | 11  | 32.74 | 23.1            | 40   | 8.2            | 25 |
|         | 15x12   | M20               | 15   | 12  | 32.74 | 23.1            | 40   | 8.2            | 25 |
|         | 17x13   | M22, U7/8         | 17   | 13  | 32.74 | 23.1            | 40   | 8.2            | 25 |
|         | 11x9    | P1/4              | 11   | 9   | 32.74 | 23.1            | 40   | 8.2            | 25 |
|         | 12x9    | U5/8              | 12   | 9   | 32.74 | 23.1            | 40   | 8.2            | 25 |
|         | 9x7     | U1/2              | 9    | 7   | 32.74 | 23.1            | 40   | 8.2            | 22 |


• Roscado con machos resistentes al agua disponibles con el uso de nuestras RTJW y nuestras tuercas (limitado a ciertas medidas)



# BT-SLA



(mm)

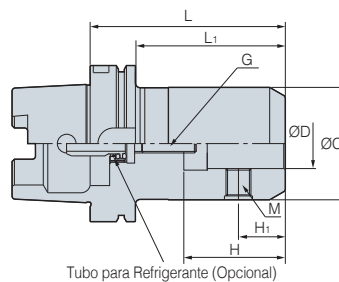
| Código             | ØD                 | L   | ØC  | H  | H <sub>1</sub> | H <sub>2</sub> | M   | G   |  |     |
|--------------------|--------------------|-----|-----|----|----------------|----------------|-----|-----|---|-----|
| <b>BT30 -</b>      | <b>SLA16 - 90</b>  | 16  | 90  | 40 | 70             | 25             | 20  | M10 | M12   | 1.1 |
|                    | <b>SLA20 - 90</b>  | 20  | 90  | 50 | 70             | 25             | 20  | M12 | M12   | 1.2 |
|                    | <b>SLA25 - 90</b>  | 25  | 90  | 50 | 70             | 25             | 20  | M12 | M12   | 1.2 |
| <b>BT40 -</b>      | <b>SLA16 - 90</b>  | 16  | 90  | 40 | 70             | 25             | 20  | M10 | M12   | 1.5 |
|                    | <b>SLA20 - 90</b>  | 20  | 90  | 50 | 70             | 25             | 20  | M12 | M12   | 1.8 |
|                    | <b>SLA25 - 90</b>  | 25  | 90  | 50 | 70             | 25             | 20  | M12 | M12   | 2.0 |
|                    | <b>SLA32 - 90</b>  | 32  | 90  | 60 | 80             | 25             | 25  | M14 | M12   | 2.2 |
|                    | <b>105</b>         | 32  | 105 | 60 | 80             | 25             | 25  | M14 | M12   | 2.4 |
|                    | <b>SLA40 - 105</b> | 40  | 105 | 80 | 80             | 25             | 25  | M16 | M12   | 2.4 |
| <b>BT50 -</b>      | <b>SLA16 - 90</b>  | 16  | 90  | 40 | 70             | 25             | 20  | M10 | M12   | 4.2 |
|                    | <b>SLA20 - 105</b> | 20  | 105 | 50 | 70             | 25             | 20  | M12 | M12   | 4.4 |
|                    | <b>SLA25 - 105</b> | 25  | 105 | 50 | 70             | 25             | 20  | M12 | M12   | 4.4 |
|                    | <b>135</b>         | 25  | 135 | 50 | 70             | 25             | 20  | M12 | M12   | 4.7 |
|                    | <b>SLA32 - 105</b> | 32  | 105 | 60 | 80             | 25             | 25  | M14 | M12   | 4.8 |
|                    | <b>135</b>         | 32  | 135 | 60 | 80             | 25             | 25  | M14 | M12   | 5.4 |
|                    | <b>165</b>         | 32  | 165 | 60 | 80             | 25             | 25  | M14 | M12   | 6.2 |
|                    | <b>SLA40 - 105</b> | 40  | 105 | 90 | 80             | 25             | 25  | M16 | M12   | 5.2 |
|                    | <b>150</b>         | 40  | 150 | 90 | 80             | 25             | 25  | M16 | M12   | 5.8 |
| <b>SLA42 - 105</b> | 42                 | 105 | 90  | 80 | 25             | 25             | M16 | M12 | 5.8   |     |

 Piezas de Refacción 145

• Sistema de lubricación interno es opcional



# HSK-SLA



| Código    |             | ØD | L   | ØC | H  | H <sub>1</sub> | M   | G   | (mm) |
|-----------|-------------|----|-----|----|----|----------------|-----|-----|------|
| HSK63A -  | SLA20 - 100 | 20 | 100 | 52 | 51 | 25             | M16 | M12 | 2.0  |
|           | SLA25 - 105 | 25 | 105 | 65 | 59 | 25             | M18 | M12 | 2.7  |
|           | SLA32 - 105 | 32 | 105 | 72 | 63 | 30             | M20 | M12 | 2.9  |
| HSK100A - | SLA20 - 105 | 20 | 105 | 52 | 51 | 25             | M16 | M12 | 3.9  |
|           | SLA25 - 110 | 25 | 110 | 65 | 59 | 25             | M18 | M12 | 4.0  |
|           | SLA32 - 125 | 32 | 125 | 72 | 63 | 30             | M20 | M12 | 4.3  |

• Sistema de lubricación interno es opcional

## Partes

| División | Piezas de Refacción   |             |   |   |             |
|----------|---|-------------|---|---|-------------|
|          | Básico  |             | Opcional  |   |             |
|          | Set Tornillo  |             | Tornillo de Ajuste  | Llave   |             |
| Tipo     |  |             |  |  |             |
|          | DBT/BT Tipo   | HSK/SK Tipo | M1230C  | DBT/BT Tipo   | HSK/SK Tipo |
| SLA16    | BTF1010   | BTF1414-1.5 |   | LW-5  | LW-6        |
| SLA19    | BTF1212-1.5   | BTF1616-1.5 |   | LW-6  | LW-8        |
| SLA20    |   | BTF1818-1.5 |   | LW-6  | LW-10       |
| SLA25    | BTF1414-1.5   | BTF2020-1.5 |   | LW-6  |             |
| SLA32    | BTF1624-1.5   |             |   | LW-8  |             |
| SLA40    |   |             |   |   |             |
| SLA42    |   |             |   |   |             |



## BT-FMA

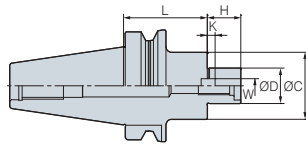


Fig. 1

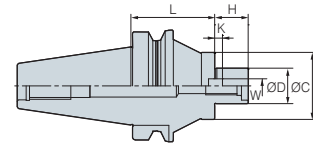
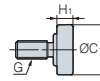


Fig. 2

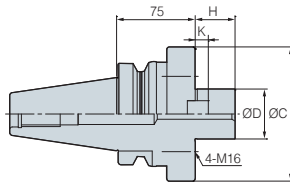
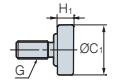


Fig. 3

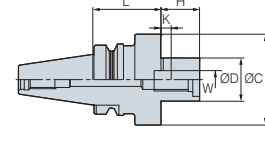
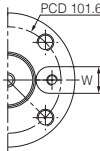



Fig. 4

(mm)

| Código              | Diámetro del Cortador | ØD     | L     | ØC  | H   | W    | K     | G   |  | Fig. |   |
|---------------------|-----------------------|--------|-------|-----|-----|------|-------|-----|---|------|---|
| BT30 - FMA25.4 - 45 | 80                    | 25.4   | 45    | 50  | 22  | 9.5  | 5     | M12 | 1.2   | 4    |   |
| BT40 -              | FMA25.4 - 45          | 80     | 25.4  | 45  | 50  | 22   | 9.5   | 5   | M12   | 1.4  | 1 |
|                     | FMA25.4 - 90          | 80     | 25.4  | 90  | 50  | 22   | 9.5   | 5   | M12   | 3.1  | 1 |
|                     | FMA31.75 - 45         | 100    | 31.75 | 45  | 60  | 30   | 12.7  | 7   | M16   | 1.6  | 1 |
|                     | FMA31.75 - 90         | 100    | 31.75 | 90  | 60  | 30   | 12.7  | 7   | M16   | 3.0  | 1 |
|                     | FMA38.1 - 60          | 125    | 38.1  | 60  | 80  | 34   | 15.87 | 9   | M20   | 2.9  | 4 |
| BT50 -              | FMA25.4 - 45          | 80     | 25.4  | 45  | 50  | 22   | 9.5   | 5   | M12   | 3.8  | 1 |
|                     | FMA25.4 - 90          | 80     | 25.4  | 90  | 50  | 22   | 9.5   | 5   | M12   | 4.5  | 1 |
|                     | FMA25.4 - 150         | 80     | 25.4  | 150 | 50  | 22   | 9.5   | 5   | M12   | 5.5  | 2 |
|                     | FMA31.75 - 45         | 100    | 31.75 | 45  | 60  | 30   | 12.7  | 7   | M16   | 4.6  | 1 |
|                     | FMA31.75 - 75         | 100    | 31.75 | 75  | 60  | 30   | 12.7  | 7   | M16   | 5.2  | 1 |
|                     | FMA31.75 - 105        | 100    | 31.75 | 105 | 60  | 30   | 12.7  | 7   | M16   | 6.0  | 2 |
|                     | FMA38.1 - 45          | 125    | 38.1  | 45  | 80  | 34   | 15.87 | 9   | M20   | 4.3  | 1 |
|                     | FMA38.1 - 75          | 125    | 38.1  | 75  | 80  | 34   | 15.87 | 9   | M20   | 5.5  | 1 |
|                     | FMA50.8 - 45          | 160    | 50.8  | 45  | 100 | 36   | 19.05 | 10  | M24   | 4.8  | 1 |
|                     | FMA50.8 - 75          | 160    | 50.8  | 75  | 100 | 36   | 19.05 | 10  | M24   | 6.8  | 1 |
| FMA47.625 - 75      | 200                   | 47.625 | 75    | 128 | 38  | 25.4 | 12.5  | -   | 7.5   | 3    |   |

• Sistema de lubricación interno es opcional • El peso arriba mencionado excluye el peso de la fresa

### Partes

| División   | Piezas de Refacción   |   |   |   |   |
|------------|---|---|---|---|---|
|            | Básico  |   |   |   | Opcional  |
|            | Cuña  | Tornillo Sujeción   | Perno de Sujeción   | Perno de Sujeción   | Llave   |
| Tipo       |  |  |  |  |  |
| FMA22      | K8.0  | MBA-M10   | BX0310  | -   | LW-8  |
| FMA22.225  | K8.0  | MBA-M10   | BX0310  | -   | LW-8  |
| FMA25.4    | K9.5  | MBA-M12   | BX0412  | BX1230  | LW-10   |
| FMA31.75   | K12.7   | MBA-M16   | BX0516  | -   | LW-14   |
| FMA38.1    | K15.87  | MBA-M20   | BX0616  | -   | LW-17   |
| FMA50.8    | K19.05  | MBA-M24   | BX0820  | -   | LW-19   |
| FMA47.625  | K25.4   | -   | BX1020  | BX1645  | -   |
| S-FMA25.4  | -   | -   | -   | -   | LW-10   |
| S-FMA31.75 | -   | -   | -   | -   | LW-14   |





# BT-FMC

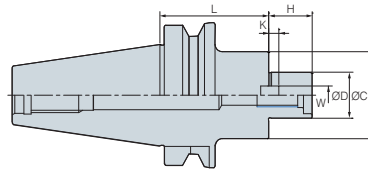


Fig. 1

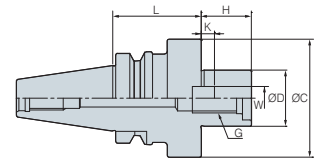


Fig. 2

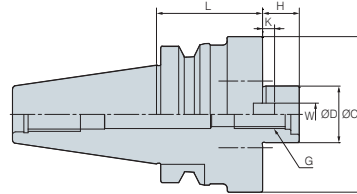
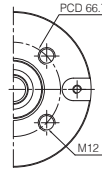


Fig. 3



|        |         |     |                       |    |     |    |    |       |     |     |     | (mm) |
|--------|---------|-----|-----------------------|----|-----|----|----|-------|-----|-----|-----|------|
|        | Código  |     | Diámetro del Cortador | ØD | L   | ØC | H  | W     | K   | G   | kg  | Fig. |
| BT30 - | FMC16 - | 45  | 40                    | 16 | 45  | 38 | 17 | 8     | 5.0 | M8  | 0.7 | 1    |
|        | FMC22 - | 45  | 50/63                 | 22 | 45  | 48 | 19 | 10    | 5.6 | M10 | 0.8 | 2    |
|        | FMC27 - | 50  | 80                    | 27 | 50  | 60 | 21 | 12    | 6.3 | M12 | 1.2 | 2    |
| BT40 - | FMC16 - | 60  | 40                    | 16 | 60  | 38 | 17 | 8     | 5.0 | M8  | 1.2 | 1    |
|        | FMC22 - | 45  | 50/63                 | 22 | 45  | 48 | 19 | 10    | 5.6 | M10 | 1.2 | 1    |
|        | FMC22 - | 90  | 50/63                 | 22 | 90  | 48 | 19 | 10    | 5.6 | M10 | 1.2 | 1    |
|        | FMC27 - | 60  | 80                    | 27 | 60  | 60 | 21 | 12    | 6.3 | M12 | 1.8 | 2    |
|        | FMC27 - | 90  | 80                    | 27 | 90  | 60 | 21 | 12    | 6.3 | M12 | 3.2 | 2    |
|        | FMC32 - | 60  | 100                   | 32 | 60  | 78 | 24 | 14    | 7.0 | M16 | 2.3 | 2    |
|        | FMC40 - | 50  | 125/160               | 40 | 50  | 89 | 27 | 15.87 | 8.0 | M20 | 3.3 | 3    |
| BT50 - | FMC16 - | 60  | 40                    | 16 | 60  | 38 | 17 | 8     | 5.0 | M8  | 3.9 | 1    |
|        | FMC22 - | 60  | 50/63                 | 22 | 60  | 48 | 19 | 10    | 5.6 | M10 | 4.1 | 1    |
|        | FMC27 - | 40  | 80                    | 27 | 40  | 60 | 21 | 12    | 6.3 | M12 | 4.1 | 1    |
|        | FMC27 - | 90  | 80                    | 27 | 90  | 60 | 21 | 12    | 6.3 | M12 | 5.5 | 1    |
|        | FMC27 - | 150 | 80                    | 27 | 150 | 60 | 21 | 12    | 6.3 | M12 | 6.1 | 1    |
|        | FMC32 - | 45  | 100                   | 32 | 45  | 78 | 24 | 14    | 7.0 | M16 | 4.2 | 1    |
|        | FMC32 - | 75  | 100                   | 32 | 75  | 78 | 24 | 14    | 7.0 | M16 | 4.2 | 1    |
|        | FMC32 - | 105 | 100                   | 32 | 105 | 78 | 24 | 14    | 7.0 | M16 | 4.2 | 1    |
|        | FMC40 - | 50  | 125/160               | 40 | 50  | 89 | 27 | 15.87 | 8.0 | M20 | 4.6 | 3    |

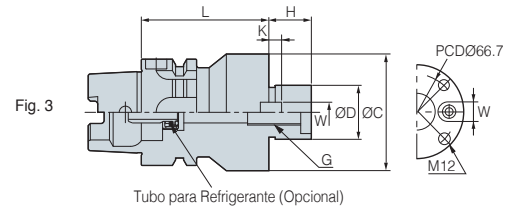
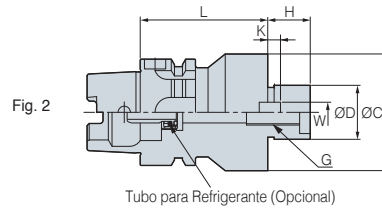
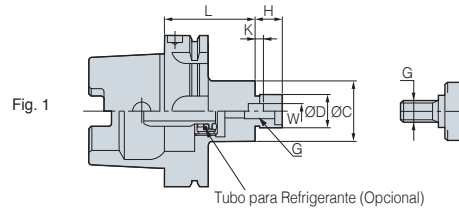
• Sistema de lubricación interno es opcional • El peso arriba mencionado excluye el peso de la fresa

## Partes

| División | Piezas de Refacción |                   |                   |                   |          |
|----------|---------------------|-------------------|-------------------|-------------------|----------|
|          | Básico              |                   |                   |                   | Opcional |
|          | Cuña                | Tornillo Sujeción | Perno de Sujeción | Perno de Sujeción | Llave    |
| Tipo     |                     |                   |                   |                   |          |
| FMC 16   | K8.0                | -                 | BX0310            | BX0830            | LW-6     |
| FMC 22   | K10.0               | -                 | BX0412            | BX1030            | LW-8     |
| FMC 25.4 | K9.5                | -                 | BX0516            | BX1230            | LW-10    |
| FMC 27   | K12.0               | MBA-M12           | BX0616            | -                 | LW-10    |
| FMC 32   | K14.0               | MBA-M16           | BX0616            | -                 | LW-14    |
| FMC38.1  | K15.87              | MBA-M16           | BX0616            | -                 | LW-14    |
| FMC40    | K15.87              | MBA-M20           | BX0616            | -                 | LW-17    |



## HSK-FMC



(mm)

| Código   | Díámetro del Cortador | ØD      | L  | ØC | H  | W  | K     | G   | kg  | Fig. |   |
|----------|-----------------------|---------|----|----|----|----|-------|-----|-----|------|---|
| HSK50A - | FMC16 - 40            | 40      | 16 | 40 | 38 | 17 | 8     | 5   | M8  | 0.8  | 1 |
|          | FMC22 - 50            | 50/63   | 22 | 50 | 48 | 19 | 10    | 5.6 | M10 | 0.9  | 1 |
| HSK63A - | FMC16 - 50            | 40      | 16 | 50 | 38 | 17 | 8     | 5.0 | M8  | 1.1  | 1 |
|          | FMC22 - 50            | 50/63   | 22 | 50 | 48 | 19 | 10    | 5.6 | M10 | 1.2  | 1 |
|          | FMC27 - 60            | 80      | 27 | 60 | 60 | 21 | 12    | 6.3 | M12 | 1.4  | 1 |
|          | FMC32 - 60            | 100     | 32 | 60 | 78 | 24 | 14    | 7.0 | M16 | 1.8  | 2 |
|          | FMC40 - 60            | 125/160 | 40 | 60 | 89 | 27 | 15.87 | 8.0 | M20 | 2    | 3 |

• Sistema de lubricación interno es opcional • El peso arriba mencionado excluye el peso de la fresa

### Partes

| División | Piezas de Refacción |                   |                   |                   |          |
|----------|---------------------|-------------------|-------------------|-------------------|----------|
|          | Básico              |                   |                   |                   | Opcional |
|          | Cuña                | Tornillo Sujeción | Perno de Sujeción | Perno de Sujeción | Llave    |
| Tipo     |                     |                   |                   |                   |          |
| FMC 16   | K8.0                | -                 | BX0310            | BX0830            | LW-6     |
| FMC 22   | K10.0               | -                 | BX0412            | BX1030            | LW-8     |
| FMC 25.4 | K9.5                | -                 | BX0516            | BX1230            | LW-10    |
| FMC 27   | K12.0               | MBA-M12           | BX0616            | -                 | LW-10    |
| FMC 32   | K14.0               | MBA-M16           | BX0616            | -                 | LW-14    |
| FMC38.1  | K15.87              | MBA-M16           | BX0616            | -                 | LW-14    |
| FMC40    | K15.87              | MBA-M20           | BX0616            | -                 | LW-17    |



Aumento de productividad de hasta el doble

# Serie Cabeza Angular



## Características

- Multi función/disponible para varios ángulos
- Cuerpo de aluminio, ligero

## Sistema de codificación



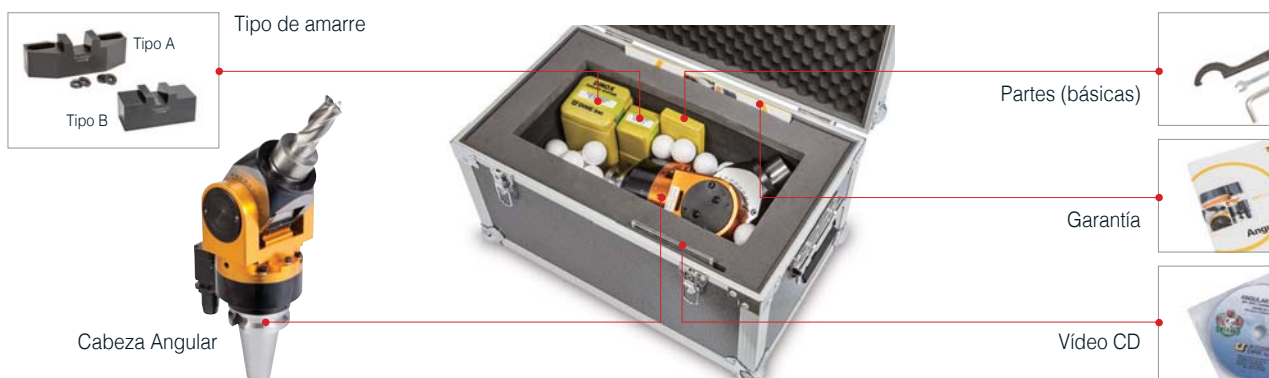
## Nombre de las partes de la cabeza angular



## Aplicaciones variadas

|                                  |                              |                              |                            |
|----------------------------------|------------------------------|------------------------------|----------------------------|
|                                  |                              |                              |                            |
| 0~90-ángulos rotación (MAH, KHU) | Fijado a 90-tipo grado (KAH) | Fijado a 45-tipo grado (KAC) | Tipo de amarre (HRAG, KAG) |

## Components



## Serie Cabeza Angular

### MAH

#### Tipo universal MAH (reforzado)

- Tipo reforzado Mejor rendimiento al mejorar la cabeza angular universal existente
  - Estabilidad en el mecanizado de moldes grandes
  - Utilice fresas integrales de 32 mm
  - Reforzado desde KHU Tipo



### HRAG

#### Tipo adjunto HRAG (reforzado)

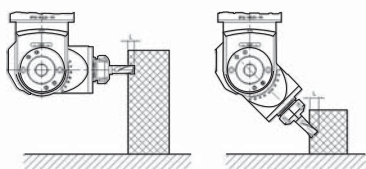
- Tipo reforzado, incrementando la vida útil hasta un 200%
  - Estabilidad en careado
  - Estabilidad mejorada



### KHU

#### Tipo universal KHU

- Ajuste de ángulo libre hasta 90°
  - Los tipos HSK y SK son ordenados

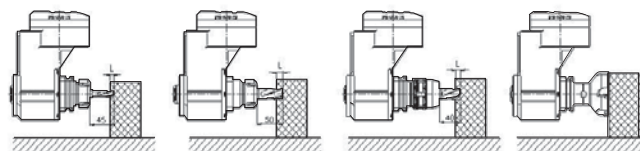


BT50-KHU20-195

### KAG

#### Tipo adjunto KAG

- Ajuste de ángulo libre de 360° de lado a lado
  - Posible utilizar varias herramientas de BT40. y BT30
  - Los tipos HSK y SK son ordenados



BT40-SDC20-60  
(Ø12 E/M)

NT40-SDC20-60  
(Ø20 E/M)

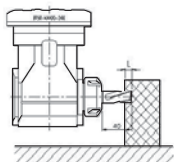
BT40-NPM20-85  
(Ø20 E/M)

BT40-FMA25.4-45  
(Ø80 Fresa para escuadrado)

### KAH

#### Tipo modular KAH (90° Tipo)

- Cabezal angular fijo de 90°
  - En caso de usar una pinza, por favor contáctenos con anticipación
  - Los tipos HSK y SK son ordenados



BT50-KAH20-200

### KAC

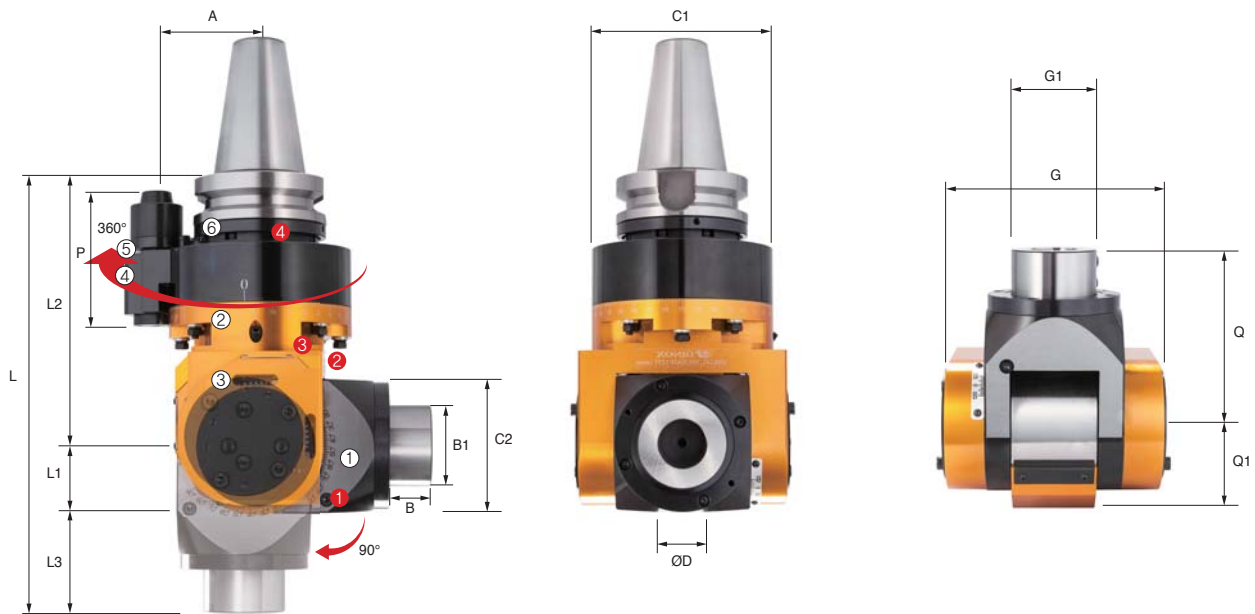
#### Tipo modular KAC (45° Tipo)

- Cabezal angular fijo de 45°
  - Los tipos HSK y SK son ordenados

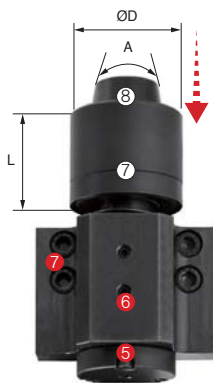


MHA para moldes (0°~90°)\_Tipo Reforzado

# BT-MAH



## Pin de posición



| Tamaño husillo | L    | A   | ØD  |
|----------------|------|-----|-----|
| BT50           | 56.5 | 30° | Ø40 |

| NO | Nombre   |
|----|--|
| ①  | Graduación ángulo inclinación (Posición axial 0°~90°)      |
| ②  | Graduación ángulo de rotación (Posición radial libre 360°) |
| ③  | Cabeza   |
| ④  | Parte posicionamiento pin                                  |
| ⑤  | Llave husillo  |
| ⑥  | Anillo de posición   |
| ⑦  | Recubrimiento anillo posición                              |
| ⑧  | Pin de posición  |

| NO | Nombre parte                           | Código   |
|----|--|----------|
| ①  | Tornillo ángulo inclinación            | BT1216   |
| ②  | Tornillos posicionamiento cabeza       | BT0645   |
| ③  | Tornillo graduación ángulo de rotación | BT0640   |
| ④  | Tornillo posición anillo               | MSST5-12 |
| ⑤  | Control altura pin de posición         | BT0516   |
| ⑥  | Tornillos pin de posición              | BT0512   |
| ⑦  | Tornillos posición bloque              | BX0516   |

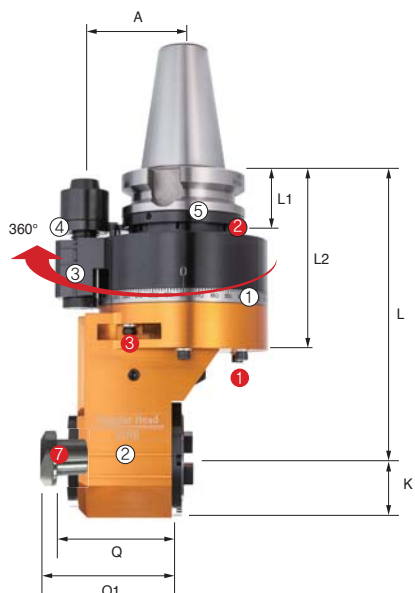
| Código         | ØD | L   | L1 | L2 | L3  | C   | C1 | G   | C2 | Q   | Q1 | B  | B1 | P  | A  | Rpm máximas | Herramienta de instalación | kg |
|----------------|----|-----|----|----|-----|-----|----|-----|----|-----|----|----|----|----|----|-------------|----------------------------|----|
| BT50-MAH32-200 | 32 | 200 | 47 | 78 | 325 | 136 | 95 | 154 | 95 | 125 | 63 | 31 | 60 | 95 | 80 | 3,000       | Trabe lateral              | 19 |



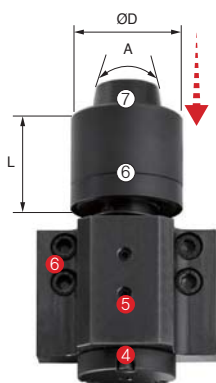
## Serie Cabeza Angular

HRAG (fijado a 90°)\_Tipo Reforzado

# BT-HRAG



### Pin de posición



| Tamaño husillo | L    | A   | ØD  |
|----------------|------|-----|-----|
| BT50           | 56.5 | 30° | Ø40 |

| NO | Nombre   |
|----|--|
| ①  | Graduación ángulo de rotación (Posición radial libre 360°) |
| ②  | Cabeza   |
| ③  | Parte posicionamiento pin                                  |
| ④  | Llave husillo  |
| ⑤  | Anillo de posición   |
| ⑥  | Recubrimiento anillo posición                              |
| ⑦  | Pin de posición  |

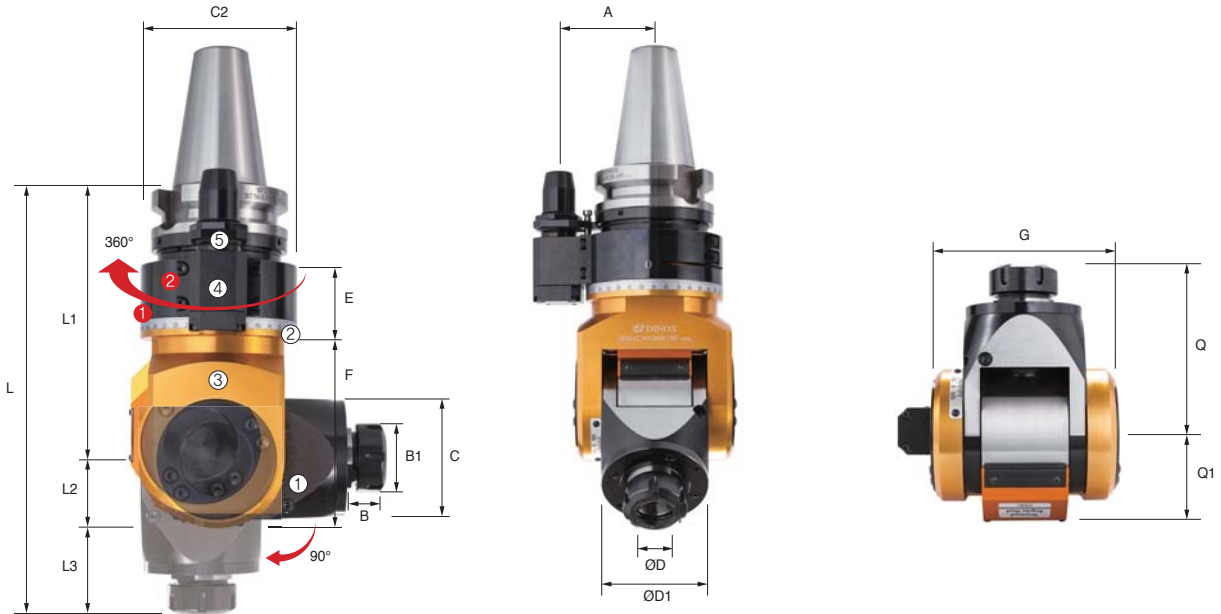
| NO | Nombre parte                     | Código   |
|----|----------------------------------|----------|
| ①  | Tornillos posicionamiento cabeza | BX0660   |
| ②  | Tornillo posición anillo         | MSST5-12 |
| ③  | Tornillo ángulo inclinación      | BT0648   |
| ④  | Control altura pin de posición   | BT0516   |
| ⑤  | Tornillos pin de posición        | BT0512   |
| ⑥  | Tornillos posición bloque        | BX0516   |
| ⑦  | BT/NT Tornillo                   |          |

| Código          | L   | L1   | L2  | L3   | L4    | Q  | Q1  | A  | G  | G1  | Rpm máximas | Husillo | kg    |
|-----------------|-----|------|-----|------|-------|----|-----|----|----|-----|-------------|---------|-------|
| BT50-HRAG40-230 | 230 | 56.5 | 145 | 46.5 | 276.5 | 89 | 101 | 80 | 93 | 136 | 3000        | BT/NT40 | 15.75 |

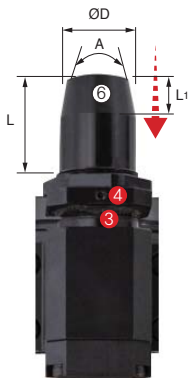


KHU (0°~90°)\_Tipo Portapinzas

# BT-KHU



## Pin de posición



| Tamaño husillo | L                  | L1 | A   | ØD    |
|----------------|--------------------|----|-----|-------|
| BT40           | Max: 32<br>Min: 26 | 10 | 20° | Ø19.6 |
| BT50           | Max: 35<br>Min: 29 | 15 |     |       |

| NO | Nombre   |
|----|--|
| ①  | Graduación ángulo inclinación (Posición axial 0°~90°)      |
| ②  | Graduación ángulo de rotación (Posición radial libre 360°) |
| ③  | Cabeza   |
| ④  | Parte posicionamiento pin                                  |
| ⑤  | Llave husillo  |
| ⑥  | Llave control altura                                       |

| NO | Nombre parte                                | Código  |
|----|---|---------|
| ①  | Tornillo ángulo de fijación de giro         | BX0630  |
| ②  | Tornillo ángulo de fijación pin de posición | BX0512  |
| ③  | Set Tornillo                                | BT0404  |
| ④  | Tornillos de aclopmiento                    | BXS0630 |

| Código         | ØD       | ØD1 | L   | L1 | L2 | L3  | B  | B1 | E  | F   | C   | A  | G   | Q   | Q1 | Ratio del torque (entrada: salida) | Dirección de rotación (entrada: salida) | Rpm máximas | Portapinzas | kg   |
|----------------|----------|-----|-----|----|----|-----|----|----|----|-----|-----|----|-----|-----|----|------------------------------------|---|-------------|-------------|------|
| BT40-KHU10-160 | 1.0~10.0 | 58  | 160 | 33 | 54 | 247 | 22 | 28 | 51 | 98  | 96  | 65 | 90  | 87  | 40 | 1: 2                               | CW: CW                                  | 6,000       | GER16       | 6.4  |
| BT50-KHU10-180 | 1.0~10.0 | 58  | 180 | 33 | 54 | 267 | 22 | 28 | 53 | 103 | 114 | 80 | 90  | 87  | 40 | 1: 2                               | CW: CW                                  | 6,000       | GER16       | 10.5 |
| BT50-KHU20-195 | 2.0~20.0 | 84  | 195 | 47 | 73 | 315 | 29 | 50 | 53 | 132 | 114 | 80 | 124 | 120 | 63 | 1: 1                               | CW: CW                                  | 3,000       | GER32       | 15.8 |



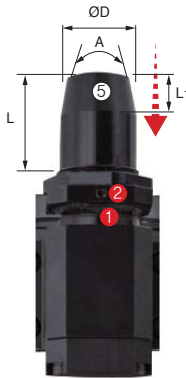
# Serie Cabeza Angular

KAG (fijado a 90°)

## BT-KAG



### Pin de posición



| Tamaño husillo | L                  | L1 | A   | ØD    |
|----------------|--------------------|----|-----|-------|
| BT40           | Max: 32<br>Min: 26 | 10 | 20° | Ø19.6 |
| BT50           | Max: 35<br>Min: 29 | 15 |     | Ø28   |

| NO | Nombre   |
|----|--|
| ①  | Graduación ángulo de rotación (Posición radial libre 360°) |
| ②  | Cabeza   |
| ③  | Parte posicionamiento pin                                  |
| ④  | Llave husillo  |
| ⑤  | Llave control altura                                       |

| NO | Nombre parte             | Código  |
|----|--------------------------|---------|
| ①  | Set Tornillo             | BT0404  |
| ②  | Tornillos de aclopmiento | BXS0630 |
| ③  | BT / NT Tornillo         |         |

| Código         | L1 | L2 | L3 | L4   | L5  | L6    | Q  | Q1 | A  | C   | G  | Ratio del torque (entrada: salida) | Dirección de rotación (entrada: salida) | Rpm máximas | Husillo   | kg   |
|----------------|----|----|----|------|-----|-------|----|----|----|-----|----|------------------------------------|---|-------------|-----------|------|
| BT40-KAG30-195 | 44 | 86 | 65 | 37.5 | 195 | 232.5 | 66 | 70 | 65 | 96  | 75 | 1: 1                               | CW: CW                                  | 4,000       | BT30/NT30 | 6.4  |
| BT50-KAG40-230 | 57 | 88 | 85 | 46.5 | 230 | 276.5 | 89 | 94 | 80 | 114 | 93 | 1: 1                               | CW: CW                                  | 3,000       | BT40/NT40 | 15.8 |



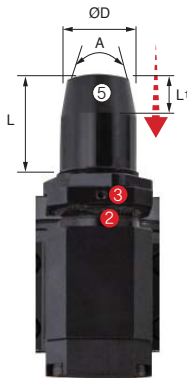


HRAG (fijado a 90°)\_Tipo Portapinzas

# BT-KAH



## Pin de posición



| Tamaño husillo | L                  | L1 | A   | ØD    |
|----------------|--------------------|----|-----|-------|
| BT40           | Max: 32<br>Min: 26 | 10 | 20° | Ø19.6 |
| BT50           | Max: 35<br>Min: 29 | 15 |     | Ø28   |

| NO | Nombre   |
|----|--|
| ①  | Cabeza   |
| ②  | Graduación ángulo de rotación (Posición radial libre 360°) |
| ③  | Parte posicionamiento pin                                  |
| ④  | Llave husillo  |
| ⑤  | Llave control altura                                       |

| NO | Nombre parte                     | Código  |
|----|----------------------------------|---------|
| ①  | Tornillos posicionamiento cabeza | BX0618  |
| ②  | Set Tornillo                     | BT0404  |
| ③  | Tornillos de acoplamiento        | BXS0630 |

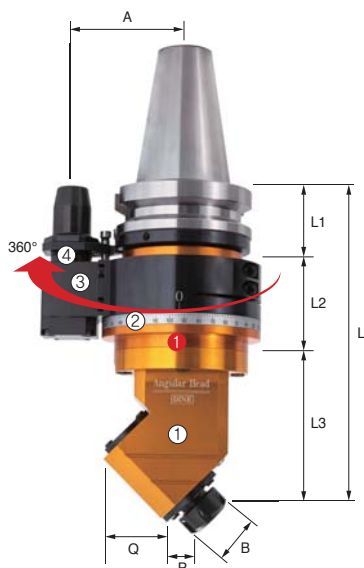
| Código         | ØD       | L   | L1 | L2 | L3 | L4  | B  | A  | P  | Q    | G  | G1 | Ratio del torque (entrada: salida) | Rpm máximas | Portapinzas | kg   |
|----------------|----------|-----|----|----|----|-----|----|----|----|------|----|----|------------------------------------|-------------|-------------|------|
| BT40-KAH7-170  | 1.0~7.0  | 170 | 20 | 44 | 71 | 55  | 19 | 65 | 37 | 24.5 | 40 | 96 | 1: 1                               | 5,000       | GER11       | 4.6  |
| BT40-KAH10-195 | 1.0~10.0 | 195 | 25 | 44 | 71 | 80  | 28 | 65 | 46 | 32   | 58 | 96 | 1: 1                               | 5,000       | GER16       | 5.8  |
| BT40-KAH13-165 | 1.0~13.0 | 165 | 28 | 44 | 71 | 50  | 35 | 65 | 53 | 35   | 60 | 96 | 1: 1                               | 5,000       | GER20       | 5.7  |
| BT40-KAH20-180 | 2.0~20.0 | 180 | 38 | 44 | 71 | 65  | 50 | 65 | 71 | 49   | 76 | 96 | 1: 1                               | 3,500       | GER32       | 6.7  |
| BT50-KAH07-220 | 1.0~7.0  | 220 | 20 | 57 | 54 | 109 | 19 | 80 | 37 | 24.5 | 40 | 96 | 1: 1                               | 5,000       | GER11       | 9.8  |
| BT50-KAH10-215 | 1.0~10.0 | 215 | 25 | 57 | 54 | 104 | 28 | 80 | 46 | 32   | 58 | 96 | 1: 1                               | 5,000       | GER16       | 10.7 |
| BT50-KAH10-260 | 1.0~10.0 | 260 | 25 | 57 | 54 | 149 | 28 | 80 | 46 | 32   | 58 | 96 | 1: 1                               | 5,000       | GER16       | 11.0 |
| BT50-KAH13-260 | 1.0~13.0 | 260 | 28 | 57 | 54 | 149 | 35 | 80 | 53 | 35   | 60 | 96 | 1: 1                               | 5,000       | GER20       | 11.2 |
| BT50-KAH20-200 | 2.0~20.0 | 200 | 38 | 57 | 54 | 89  | 50 | 80 | 71 | 49   | 76 | 96 | 1: 1                               | 3,500       | GER32       | 11.6 |
| BT50-KAH20-240 | 2.0~20.0 | 240 | 38 | 57 | 54 | 129 | 50 | 80 | 71 | 49   | 76 | 96 | 1: 1                               | 3,500       | GER32       | 12.4 |



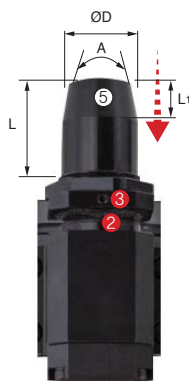
# Serie Cabeza Angular

KAC (fijado a 45°)\_Tipo Portapinzas

## BT-KAC



### Pin de posición



| NO | Nombre   |
|----|--|
| ①  | Cabeza   |
| ②  | Graduación ángulo de rotación (Posición radial libre 360°) |
| ③  | Parte posicionamiento pin                                  |
| ④  | Llave husillo  |
| ⑤  | Llave control altura                                       |

| NO | Nombre parte                     | Código  |
|----|----------------------------------|---------|
| ①  | Tornillos posicionamiento cabeza | BX0618  |
| ②  | Set Tornillo                     | BT0404  |
| ③  | Tornillos de acoplamiento        | BXS0630 |

| Tamaño husillo | L                  | L1 | A   | ØD    |
|----------------|--------------------|----|-----|-------|
| BT40           | Max: 32<br>Min: 26 | 10 | 20° | Ø19.6 |
| BT50           | Max: 35<br>Min: 29 | 15 |     |       |

| Código         | ØD       | L   | L1 | L2 | L3  | B  | G  | G1 | P  | Q  | A  | Rpm máximas | Portapinzas | kg   |
|----------------|----------|-----|----|----|-----|----|----|----|----|----|----|-------------|-------------|------|
| BT40-KAC10-220 | 1.0~10.0 | 220 | 44 | 71 | 105 | 28 | 60 | 96 | 25 | 54 | 65 | 5,000       | GER16       | 5.3  |
| BT40-KAC13-220 | 1.0~13.0 | 220 | 44 | 71 | 105 | 28 | 60 | 96 | 25 | 54 | 65 | 5,000       | GER20       | 5.5  |
| BT40-KAC20-230 | 2.0~20.0 | 230 | 44 | 71 | 115 | 50 | 72 | 96 | 30 | 60 | 65 | 3,500       | GER32       | 6.8  |
| BT50-KAC10-240 | 1.0~10.0 | 240 | 57 | 54 | 129 | 28 | 60 | 96 | 25 | 54 | 80 | 5,000       | GER16       | 10.2 |
| BT50-KAC13-240 | 1.0~13.0 | 240 | 57 | 54 | 129 | 28 | 60 | 96 | 25 | 54 | 80 | 5,000       | GER20       | 10.4 |
| BT50-KAC20-250 | 2.0~20.0 | 250 | 57 | 54 | 139 | 50 | 72 | 96 | 30 | 60 | 80 | 3,500       | GER32       | 11.7 |



Barra Mandrinado

# FBH/B

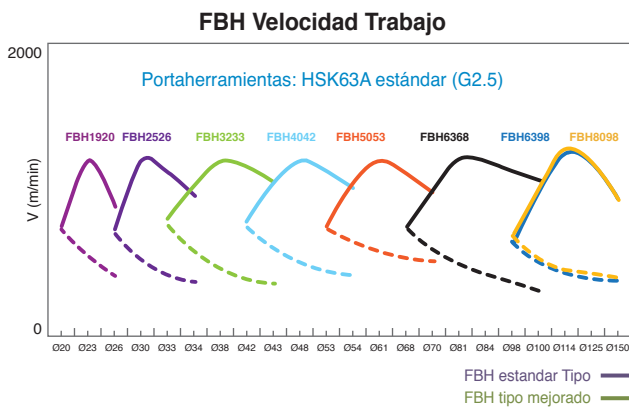
- Perforación a alta velocidad y aburrída hacia atrás
- Equilibrio de alta precisión G2.5, cabeza G6.3
- Min. rango de ajuste: 2µm



➤ Sistema de codificación



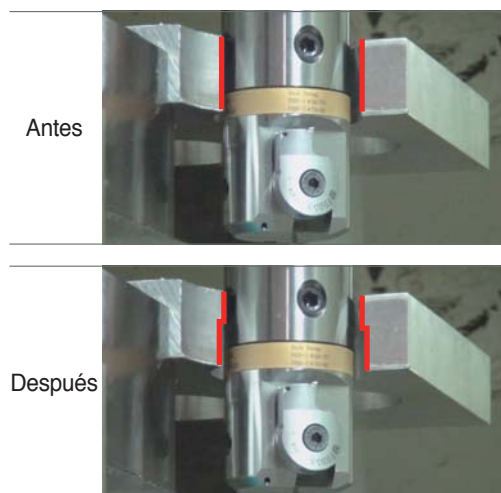
➤ Velocidad trabajo



➤ Ajuste rango mandrinado



➤ Mandrinado hacia atrás



➤ Ajuste dirección de maquinado



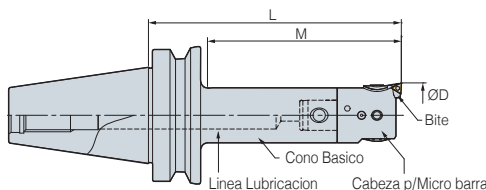
Fácil cambio de dirección de maquinado.  
solo ajustando la mordida



# BT-FBH/B



## Herramienta de micro mandrinado, tipo "balance"



(mm)

| Código              |             |                        | Rango Boreador ØD |            | L         | Profundidad Max. del Boreador M |     |      |
|---------------------|-------------|------------------------|-------------------|------------|-----------|---------------------------------|-----|------|
| Cabeza para/Boreado | Cartucho    | Cuerpo (Básico holder) | Min               | Max        |           |                                 |     |      |
| FBH1920B            | FBB20N-□-□□ | BT30 -                 | MD19F - 70R       | 20 (24)    | 26 (30)   | 103                             | 60  | 0.5  |
| FBH2526B            | FBB26N-□-□□ |                        | MD25F - 90R       | 26 (32)    | 34 (40)   | 127                             | 80  | 0.7  |
| FBH3233B            | FBB33N-□-□□ |                        | MD32F - 80R       | 33 (40)    | 43 (50)   | 121                             | 80  | 0.8  |
| FBH4042B            | FBB42N-□-□□ |                        | MD40F - 80R       | 42 (50)    | 54 (62)   | 127                             | 96  | 1.1  |
| FBH5053B            | FBB53N-□-□□ |                        | MD50F - 70        | 53 (65)    | 70 (82)   | 127                             | 97  | 1.7  |
| FBH1920B            | FBB20N-□-□□ | BT40 -                 | MD19F - 70R       | 20 (24)    | 26 (30)   | 103                             | 45  | 1.9  |
| FBH2526B            | FBB26N-□-□□ |                        | MD25F - 95R       | 26 (32)    | 34 (40)   | 133                             | 59  | 2    |
| FBH3233B            | FBB33N-□-□□ |                        | MD32F - 100R      | 33 (40)    | 43 (50)   | 141                             | 77  | 2.5  |
| FBH4042B            | FBB42N-□-□□ |                        | MD40F - 115R      | 42 (50)    | 54 (62)   | 162                             | 107 | 3.1  |
| FBH5053B            | FBB53N-□-□□ |                        | MD50F - 105       | 53 (65)    | 70 (82)   | 162                             | 135 | 3.5  |
| FBH6368B            | FBB68N-□-□□ | BT40 -                 | MD63F - 110       | 68 (90)    | 100 (122) | 181                             | 154 | 6.3  |
| FBH6398B            | FBB68N-□-□□ |                        | MD63F - 135       | 98 (120)   | 150 (172) | 206                             | 179 | 7.1  |
| FBH8098B            | FBB68N-□-□□ | BT40 -                 | MD80F - 100       | 98 (120)   | 150 (172) | 171                             | 144 | 8.3  |
| FBH1920B            | FBB20N-□-□□ |                        | BT50 -            | MD19F - 85 | 20 (24)   | 26 (30)                         | 118 | 80   |
| FBH2526B            | FBB26N-□-□□ | MD25F - 105R           |                   | 26 (32)    | 34 (40)   | 142                             | 59  | 5.8  |
| FBH3233B            | FBB33N-□-□□ | MD32F - 110R           |                   | 33 (40)    | 43 (50)   | 151                             | 77  | 6    |
| FBH4042B            | FBB42N-□-□□ | MD40F - 195R           |                   | 42 (50)    | 54 (62)   | 242                             | 130 | 6.3  |
| FBH5053B            | FBB53N-□-□□ | MD50F - 225R           |                   | 53 (65)    | 70 (82)   | 282                             | 182 | 6.6  |
| FBH6368B            | FBB68N-□-□□ | BT50 -                 | MD63F - 230R      | 68 (90)    | 100 (122) | 301                             | 220 | 7.2  |
| FBH6398B            | FBB68N-□-□□ |                        | MD63F - 195R      | 98 (120)   | 150 (172) | 266                             | 191 | 8.5  |
| FBH8098B            | FBB68N-□-□□ | BT50 -                 | MD80F - 175       | 98 (120)   | 150 (172) | 246                             | 208 | 12.8 |

Partes 160

• Sistema de lubricación interno disponible

- Los FBB se dividen en dos tipos: Tipo normal: FBB□□N, Tipo escalable: FBB□□N-1  
También están las otras opcionales para su inserción Tipo: FBB□□N-□-C09 or T11  
FBB□□N, FBB□□N-1: TPGT, TPGW0802□□L  
FBB□□N-□-C: CCMT, CCGT0602□□L  
FBB□□N-□-C09: CCMT, CCGT09T3□□L  
FBB□□N-□-T11: TPGT1103□□L

# FBH

## FBH1920B

Modelo Nuevo

## Cabeza de micro mandrinado

(mm)

| Código      | Rango Boreador ØD |           | L  | Escala del rango ajustable del anillo según revolución | MD No. |      |
|-------------|-------------------|-----------|----|--|--------|------|
|             | Min               | Max       |    |  |        |      |
| FBH - 1920B | 20                | 26 (30)   | 33 | Ø0.4 mm  | MD1911 | 0.06 |
| 2526B       | 26                | 34 (40)   | 37 | Ø0.4 mm  | MD2514 | 0.12 |
| 3233B       | 33                | 43 (50)   | 41 | Ø0.5 mm  | MD3218 | 0.24 |
| 4042B       | 42                | 54 (62)   | 47 | Ø0.5 mm  | MD4022 | 0.41 |
| 5053B       | 53                | 70 (82)   | 57 | Ø0.6 mm  | MD5028 | 0.8  |
| 6368B       | 68                | 100 (122) | 71 | Ø0.8 mm  | MD6336 | 1.7  |
| 6398B       | 98                | 150 (172) | 71 | Ø0.8 mm  | MD6336 | 2.35 |

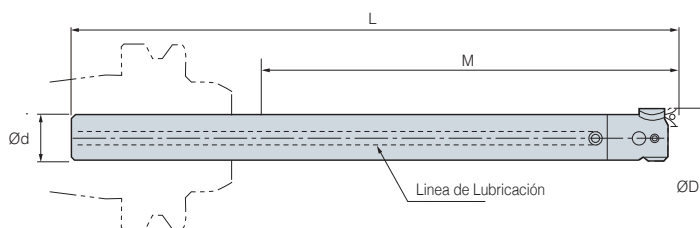
• El stock de las distintas partes de herramientas de mandrinado se gestiona por separado

• ( ): Max. Diámetro de mandrinado de herramientas con extensión



# S-FBH/B

## Cabeza de micro mandrinado pequeña

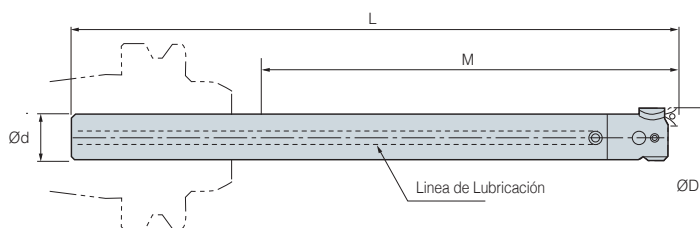


| Código | Rango Boreador<br>ØD | Diam del Zanco ød | Código |     |    |     | kg  |                  |                         |          |     |
|--------|----------------------|-------------------|--------|-----|----|-----|-----|------------------|-------------------------|----------|-----|
|        |                      |                   | Min    | Max | L  | M   |     | Zanco Básico     | Cabeza para/<br>Boreado | Cartucho |     |
|        |                      |                   |        |     |    |     |     |                  |                         |          |     |
| S19W - | FBH20B -             | 120               | 19     | 20  | 26 | 190 | 120 | S19W-MD19F-157   | FBH1920B                | FBB20N   | 0.6 |
|        |                      | 140               | 19     | 20  | 26 | 210 | 140 | S19W-MD19F-177   | FBH1920B                | FBB20N   | 0.7 |
|        |                      | 160               | 19     | 20  | 26 | 230 | 160 | S19W-MD19F-197   | FBH1920B                | FBB20N   | 0.8 |
| S25W - | FBH26B -             | 150               | 25     | 26  | 34 | 235 | 150 | S25W-MD25F-197.5 | FBH2526B                | FBB26N   | 1.4 |
|        |                      | 175               | 25     | 26  | 34 | 260 | 175 | S25W-MD25F-222.5 | FBH2526B                | FBB26N   | 1.6 |
|        |                      | 200               | 25     | 26  | 34 | 285 | 200 | S25W-MD25F-247.5 | FBH2526B                | FBB26N   | 2   |
| S32W - | FBH33B -             | 180               | 32     | 33  | 43 | 280 | 180 | S32W-MD32F-239   | FBH3233B                | FBB33N   | 2.8 |
|        |                      | 240               | 32     | 33  | 43 | 340 | 240 | S32W-MD32F-299   | FBH3233B                | FBB33N   | 3.5 |
| S19 -  | FBH20B -             | 40                | 19     | 20  | 26 | 110 | 40  | S19-MD19F-77     | FBH1920B                | FBB20N   | 0.1 |
|        |                      | 80                | 19     | 20  | 26 | 150 | 80  | S19-MD19F-117    | FBH1920B                | FBB20N   | 0.2 |
| S25 -  | FBH26B -             | 50                | 25     | 26  | 34 | 135 | 50  | S25-MD25F-97.5   | FBH2526B                | FBB26N   | 0.4 |
|        |                      | 100               | 25     | 26  | 34 | 185 | 100 | S25-MD25F-147.5  | FBH2526B                | FBB26N   | 0.6 |
| S32 -  | FBH33B -             | 90                | 32     | 33  | 43 | 190 | 90  | S32-MD32F-149    | FBH3233B                | FBB33N   | 1.1 |
|        |                      | 120               | 32     | 33  | 43 | 220 | 120 | S32-MD32F-179    | FBH3233B                | FBB33N   | 1.2 |

• Sistema de lubricación interno disponible

# S-FBH

## Cabeza de micro mandrinado "mini"



| Código | Rango Boreador<br>ØD | Diam del Zanco ød | Código |     |    |     | kg  |              |                         |          |     |
|--------|----------------------|-------------------|--------|-----|----|-----|-----|--------------|-------------------------|----------|-----|
|        |                      |                   | Min    | Max | L  | M   |     | Zanco Básico | Cabeza para/<br>Boreado | Cartucho |     |
|        |                      |                   |        |     |    |     |     |              |                         |          |     |
| S14W   | FBH15                | 85                | 14     | 15  | 18 | 155 | 85  | S14W-M6-123  | FBH15                   | FBB15-C  | 0.2 |
|        |                      | 110               | 14     | 15  | 18 | 180 | 110 | S14W-M6-148  | FBH15                   | FBB15-C  | 0.3 |
| S16W   | FBH18                | 95                | 16     | 18  | 22 | 165 | 95  | S16W-M8-128  | FBH18                   | FBB15-C  | 0.3 |
|        |                      | 125               | 16     | 18  | 22 | 195 | 120 | S16W-M8-158  | FBH18                   | FBB15-C  | 0.4 |
| S14    | FBH15                | 40                | 14     | 15  | 18 | 110 | 40  | S14-M6-78    | FBH15                   | FBB15-C  | 0.1 |
| S16    | FBH18                | 45                | 16     | 18  | 22 | 115 | 45  | S16-M8-78    | FBH18                   | FBB15-C  | 0.1 |

• Sistema de lubricación interno disponible



## Partes

| Piezas de Refacción |                    |                |
|---------------------|--------------------|----------------|
| Tipo (FBH)          | Tornillo de cierre | Tornillo Brida |
| FBH1920B            | BTF0404            | BXC0304        |
| FBH2526B            | BTF0505            | BXC0405        |
| FBH3233B            | BTF0606            | BXC0506        |
| FBH4042B            | BTF0808            | BXC0610        |
| FBH5053B            | BTF0812            | BXC0610        |
| FBH6368B            | BTF1016            | BXC0810        |
| FBH6398B            | BTF1012            | BXC0810        |
| FBH8098B            | BTF1014            | BXC0810        |

## FBB Cartucho (Modelo Nuevo)

| Código       | Rango de Boreo | Insertos               | Cabeza Micro Boreado | Perno de Sujeción |
|--------------|----------------|------------------------|----------------------|-------------------|
| FBB15C       | Ø15~Ø18 mm     | CCET0301-□□L           | FTNA01633            | BFTX02506N        |
|              | Ø18~Ø22 mm     |                        |                      |                   |
| FBB20N       | Ø20~Ø26 mm     | TPGT0802□□L/TPGW0802□□ | BFTX0204A            | BXC0304           |
| FBB20N-C     |                | CCET0401□□L            | BFTX0204N            |                   |
| FBB20N-1     | Ø24~Ø30 mm     | TPGT0802□□L/TPGW0802□□ | BFTX0204A            |                   |
| FBB20N-1-C   |                | CCET0401□□L            | BFTX0204N            |                   |
| FBB26N       | Ø26~Ø34 mm     | TPGT0802□□L/TPGW0802□□ | BFTX0204A            | BXC0405           |
| FBB26N-C     |                | CCET0401□□L            | BFTX0204N            |                   |
| FBB26N-1     | Ø32~Ø40 mm     | TPGT0802□□L/TPGW0802□□ | BFTX0204A            |                   |
| FBB26N-1-C   |                | CCET0401□□L            | BFTX0204N            |                   |
| FBB33N       | Ø33~Ø43 mm     | TPGT0802□□L/TPGW0802□□ | BFTX0204A            | BXC0506           |
| FBB33N-C     |                | CCMT0602□□/CCGT0602□□  | BFTX02506N           |                   |
| FBB33N-1     | Ø41~Ø50 mm     | TPGT0802□□L/TPGW0802□□ | BFTX0204A            |                   |
| FBB33N-1-C   |                | CCMT0602□□/CCGT0602□□L | BFTX02506N           |                   |
| FBB42N       | Ø42~Ø54 mm     | TPGT0802□□L/TPGW0802□□ | BFTX0204A            | BXC0610           |
| FBB42N-      |                | CCMT0602□□/CCGT0602□□L | BFTX02506N           |                   |
| FBB42N-11    | Ø50~Ø62 mm     | TPGT1103□□L            | BFTX0307A            |                   |
| FBB42N-1     |                | TPGT0802□□L/TPGW0802□□ | BFTX0204A            |                   |
| FBB42N-1-C   | Ø50~Ø62 mm     | CCMT0602□□/CCGT0602□□L | BFTX02506N           |                   |
| FBB42N-1-T11 |                | TPGT1103□□L            | BFTX0307A            |                   |
| FBB53N       | Ø53~Ø70 mm     | TPGT0802□□L/TPGW0802□□ | BFTX0204A            | BXC0810           |
| FBB53N-C     |                | CCMT0602□□/CCGT0602□□L | BFTX02506N           |                   |
| FBB53N-11    | Ø65~Ø82 mm     | TPGT1103□□L            | BFTX0307A            |                   |
| FBB53N-1     |                | TPGT0802□□L/TPGW0802□□ | BFTX0204A            |                   |
| FBB53N-1-C   |                | CCMT0602□□/CCGT0602□□L | BFTX02506N           |                   |
| FBB53N-1-C09 |                | CCMT09T3□□/CCGT09T3□□L | BFTX0409N            |                   |
| FBB53N-1-T11 |                | TPGT1103□□L            | BFTX0307A            |                   |
| FBB68N       | Ø68~Ø100 mm    | TPGT0802□□L/TPGW0802□□ | BFTX0204A            | BXC0810           |
| FBB68N-C     |                | CCMT09T3□□/CCGT09T3□□L | BFTX0409N            |                   |
| FBB68N-11    | Ø98~Ø150 mm    | TPGT1103□□L            | BFTX0307A            |                   |
| FBB68N-1     |                | TPGT0802□□L/TPGW0802□□ | BFTX0204A            |                   |
| FBB68N-1-C09 | Ø90~Ø122 mm    | CCMT09T3□□/CCGT09T3□□L | BFTX0409N            |                   |
| FBB68N-1-T11 |                | Ø120~Ø172 mm           | TPGT1103□□L          | BFTX0307A         |



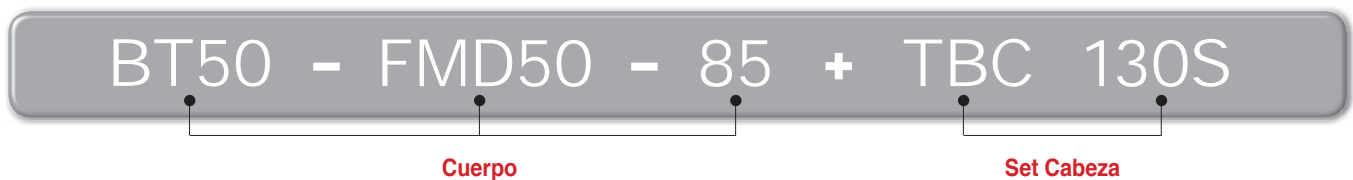
Para mandrinado en desbaste

# TBC

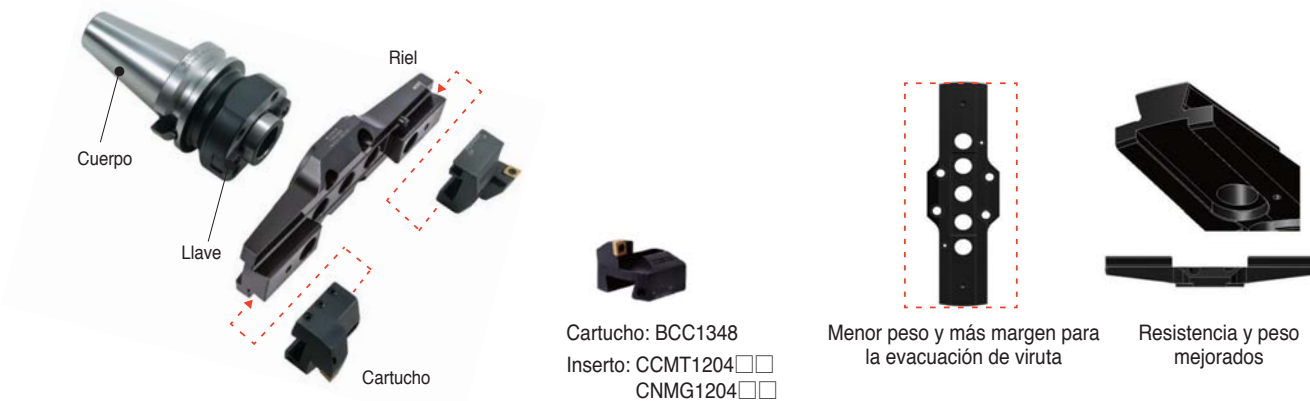
- Amplia gama para mandrinado para diámetro grande - Ø130~Ø540 mm
- Estructura estable frente a la carga de corte - Ensamblaje mediante estructura de cola de milano
- Intercambiable con FBC - Con cabeza de mandrinar y raíl común, cartucho diferente
- Peso ligero (reducido en un 5%~20%)
- Diversos ángulos de aproximación del cartucho: 15°, 45°



➤ Sistema de codificación



➤ Estructura TBC



➤ TBC condiciones de corte

| Pieza de trabajo        | Grados (HRC) | Condiciones de corte |                            |                                  |
|-------------------------|--------------|----------------------|----------------------------|----------------------------------|
|                         |              | Tipo (Grados)        | Velocidad de corte (m/min) | Avance por Revolución f (mm/rev) |
| <b>Todos</b>            | ADC12        | "N"Material          | "N"Material                | 0.1                              |
| <b>Acero suave</b>      | SS41 (HB160) | P Material           | P Material                 | 0.1                              |
| <b>Acero</b>            | S45C (H250)  | P Material           | P Material                 | 0.1                              |
| <b>Acero Inoxidable</b> | SUS304       | M Material           | M Material                 | 0.1                              |
| <b>Fundicion</b>        | FC25 (HB250) | K Material           | K Material                 | 0.1                              |

➤ Rango Mandrinado

| Grados | Dia (Ø) |     | Cuerpo | Set Cabeza | Inserto    |
|--------|---------|-----|--------|------------|------------|
|        | min     | max |        |            |            |
| TBC130 | 130     | 180 | FMD50  | TBC130S    | CCMT1204□□ |
| TBC175 | 175     | 225 | FMD50  | TBC175S    | CCMT1204□□ |
| TBC220 | 220     | 270 | FMD50  | TBC220S    | CCMT1204□□ |
| TBC265 | 265     | 315 | FMD50  | TBC265S    | CCMT1204□□ |
| TBC310 | 310     | 390 | FMD50  | TBC310S    | CCMT1204□□ |
| TBC385 | 385     | 465 | FMD50  | TBC385S    | CCMT1204□□ |
| TBC460 | 460     | 540 | FMD50  | TBC460S    | CCMT1204□□ |



## Serie FBC

### Para mandrinado de terminación

# FBC

- Amplia gama para mandrinado para diámetro grande - Ø130 ~ Ø540 mm
- Intercambiable con TBC
  - Con cabeza de mandrinar y raíl común, cartucho diferente [microcartucho + bloque de equilibrado]
- Varias placas dependiendo del bite
  - Placas aplicables: CCMT09T3/1204, TPMT1103 (Cermet, cBN, PCD)



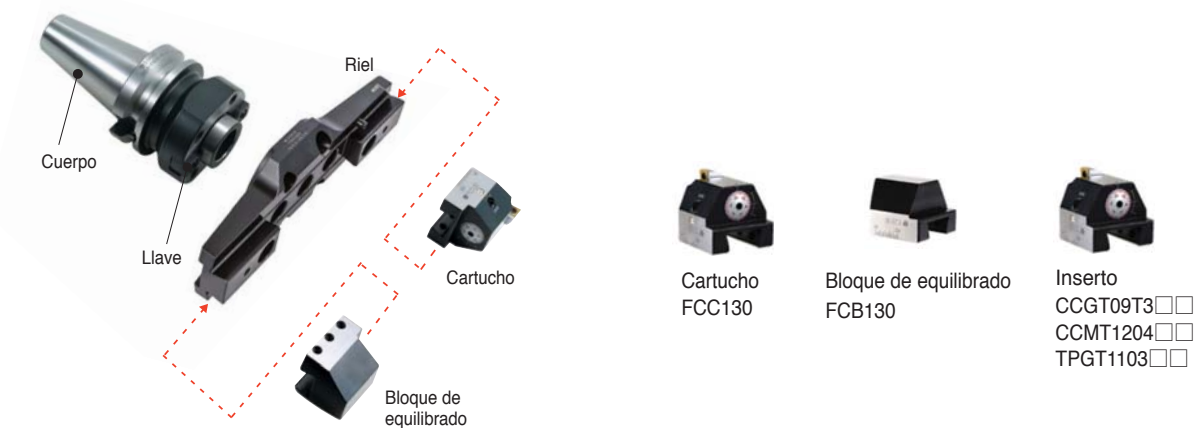
### ➤ Sistema de codificación

BT50 - FMD50 - 85 + FBC 130S

Cuerpo

Set Cabeza

### ➤ Estructura FBC



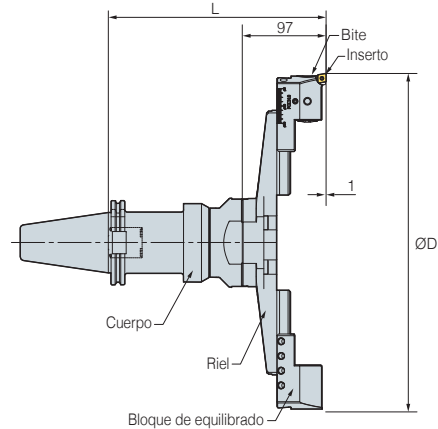
### ➤ FBC condiciones de corte

| Grados        | Dia (Ø) |     | Set Cabeza                     | Inserto                              |
|---------------|---------|-----|--------------------------------|--------------------------------------|
|               | min     | max |                                |                                      |
| <b>FBC130</b> | 130     | 180 | FBC130S (TBR130+FCC130+FCB130) |                                      |
| <b>FBC175</b> | 175     | 225 | FBC175S (TBR175+FCC130+FCB130) |                                      |
| <b>FBC220</b> | 220     | 270 | FBC220S (TBR220+FCC130+FCB130) | FBB130-C09 (CCMT09T3□□, CCGT09T3□□)  |
| <b>FBC265</b> | 265     | 315 | FBC265S (TBR265+FCC130+FCB130) | FBB130-C12 (CCMT1204□□)              |
| <b>FBC310</b> | 310     | 390 | FBC310S (TBR310+FCC310+FCB310) | FBB130-T11 (TPMT1103□□, TPGT1103□□L) |
| <b>FBC385</b> | 385     | 465 | FBC385S (TBR385+FCC310+FCB310) |                                      |
| <b>FBC460</b> | 460     | 540 | FBC460S (TBR460+FCC310+FCB310) |                                      |





# TBC, FBC



|                |      | Código                     |                          |      |  |                                |      |     |     | Rango Boreador |     |
|----------------|------|----------------------------|--------------------------|------|--|--------------------------------|------|-----|-----|----------------|-----|
| Cuerpo         | kg   | Mandrinado: desbaste (TBC) |                          |      | Mandrinado: acabado (FBC)                        |                                |      |     |     | Min            | Max |
|                |      | Set Cabeza (Riel+Cartucho) | L                        | kg   | Set Cabeza (Riel+Cartucho+Bloque de equilibrado) | L                              | kg   |     |     |                |     |
| BT50 - FMD50 - | 85   | 5.9                        | TBC130S (TBR130+BCC1348) | 175  | 3.5  | FBC130S (TBR130+FCC130+FCB130) | 182  | 3.8 | 130 | 180            |     |
|                | 155  | 7.9                        | TBC130S (TBR130+BCC1348) | 245  | 3.5  | FBC130S (TBR130+FCC130+FCB130) | 252  | 3.8 | 130 | 180            |     |
|                | 205  | 9.7                        | TBC130S (TBR130+BCC1348) | 295  | 3.5  | FBC130S (TBR130+FCC130+FCB130) | 302  | 3.8 | 130 | 180            |     |
|                | 255  | 10.4                       | TBC130S (TBR130+BCC1348) | 345  | 3.5  | FBC130S (TBR130+FCC130+FCB130) | 352  | 3.8 | 130 | 180            |     |
|                | 85   | 5.9                        | TBC175S (TBR175+BCC1348) | 175  | 3.9  | FBC175S (TBR175+FCC130+FCB130) | 182  | 4.1 | 175 | 225            |     |
|                | 155  | 7.9                        | TBC175S (TBR175+BCC1348) | 245  | 3.9  | FBC175S (TBR175+FCC130+FCB130) | 252  | 4.1 | 175 | 225            |     |
|                | 205  | 9.7                        | TBC175S (TBR175+BCC1348) | 295  | 3.9  | FBC175S (TBR175+FCC130+FCB130) | 302  | 4.1 | 175 | 225            |     |
|                | 255  | 10.4                       | TBC175S (TBR175+BCC1348) | 345  | 3.9  | FBC175S (TBR175+FCC130+FCB130) | 352  | 4.1 | 175 | 225            |     |
|                | 85   | 5.9                        | TBC220S (TBR220+BCC1348) | 175  | 4.3  | FBC220S (TBR220+FCC130+FCB130) | 182  | 4.5 | 220 | 270            |     |
|                | 155  | 7.9                        | TBC220S (TBR220+BCC1348) | 245  | 4.3  | FBC220S (TBR220+FCC130+FCB130) | 252  | 4.5 | 220 | 270            |     |
|                | 205  | 9.7                        | TBC220S (TBR220+BCC1348) | 295  | 4.3  | FBC220S (TBR220+FCC130+FCB130) | 302  | 4.5 | 220 | 270            |     |
|                | 255  | 10.4                       | TBC220S (TBR220+BCC1348) | 345  | 4.3  | FBC220S (TBR220+FCC130+FCB130) | 352  | 4.5 | 220 | 270            |     |
|                | 85   | 5.9                        | TBC265S (TBR265+BCC1348) | 175  | 4.5  | FBC265S (TBR265+FCC130+FCB130) | 182  | 4.6 | 265 | 315            |     |
|                | 155  | 7.9                        | TBC265S (TBR265+BCC1348) | 245  | 4.5  | FBC265S (TBR265+FCC130+FCB130) | 252  | 4.6 | 265 | 315            |     |
|                | 205  | 9.7                        | TBC265S (TBR265+BCC1348) | 295  | 4.5  | FBC265S (TBR265+FCC130+FCB130) | 302  | 4.6 | 265 | 315            |     |
|                | 255  | 10.4                       | TBC265S (TBR265+BCC1348) | 345  | 4.5  | FBC265S (TBR265+FCC310+FCB310) | 352  | 4.6 | 265 | 315            |     |
|                | 85   | 5.9                        | TBC310S (TBR310+BCC1354) | 175  | 5.5  | FBC310S (TBR310+FCC310+FCB310) | 182  | 5.5 | 310 | 390            |     |
|                | 155  | 7.9                        | TBC310S (TBR310+BCC1354) | 245  | 5.5  | FBC310S (TBR310+FCC310+FCB310) | 252  | 5.5 | 310 | 390            |     |
|                | 205  | 9.7                        | TBC310S (TBR310+BCC1354) | 295  | 5.5  | FBC310S (TBR310+FCC310+FCB310) | 302  | 5.5 | 310 | 390            |     |
|                | 255  | 10.4                       | TBC310S (TBR310+BCC1354) | 345  | 5.5  | FBC310S (TBR310+FCC310+FCB310) | 352  | 5.5 | 310 | 390            |     |
| 85             | 5.9  | TBC385S (TBR385+BCC1354)   | 175                      | 5.8  | FBC385S (TBR385+FCC310+FCB310)                   | 182                            | 5.8  | 385 | 465 |                |     |
| 155            | 7.9  | TBC385S (TBR385+BCC1354)   | 245                      | 5.8  | FBC385S (TBR385+FCC310+FCB310)                   | 252                            | 5.8  | 385 | 465 |                |     |
| 205            | 9.7  | TBC385S (TBR385+BCC1354)   | 295                      | 5.8  | FBC385S (TBR385+FCC310+FCB310)                   | 302                            | 5.8  | 385 | 465 |                |     |
| 255            | 10.4 | TBC385S (TBR385+BCC1354)   | 345                      | 5.8  | FBC385S (TBR385+FCC310+FCB310)                   | 352                            | 5.8  | 385 | 465 |                |     |
| 85             | 5.9  | TBC460S (TBR460+BCC1354)   | 175                      | 12.8 | FBC460S (TBR460+FCC310+FCB310)                   | 182                            | 12.8 | 460 | 540 |                |     |
| 155            | 7.9  | TBC460S (TBR460+BCC1354)   | 245                      | 12.8 | FBC460S (TBR460+FCC310+FCB310)                   | 252                            | 12.8 | 460 | 540 |                |     |
| 205            | 9.7  | TBC460S (TBR460+BCC1354)   | 295                      | 12.8 | FBC460S (TBR460+FCC310+FCB310)                   | 302                            | 12.8 | 460 | 540 |                |     |
| 255            | 10.4 | TBC460S (TBR460+BCC1354)   | 345                      | 12.8 | FBC460S (TBR460+FCC310+FCB310)                   | 352                            | 12.8 | 460 | 540 |                |     |

• Cartuchos de mandrinar a encarar por separado



# FBB Cartuchos (Para FBC)



(mm)

| Código   | Inserto |                        |
|----------|---------|------------------------|
| FBB130 - | C09     | CCMT09T3□□, CCGT09T3□□ |
|          | C12     | CCMT1204□□             |
|          | T11     | TPMT1103□□, TPGT1103□□ |

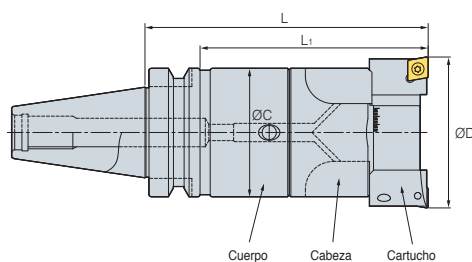
• Los cartuchos TBC y DBC con ángulo de punta de 15°/45° se pueden comprar por pedido (base de 45°)

## Partes

| División | Piezas de Refacción |                      |          |                   |                   |                  |       |                   |       |
|----------|---------------------|----------------------|----------|-------------------|-------------------|------------------|-------|-------------------|-------|
|          | Básico              |                      |          |                   |                   |                  |       |                   |       |
|          | Riel                | Cartucho             | Cartucho | Tornillo Sujeción | Tornillo Sujeción | Block de Balance | Llave | Tornillo Sujeción | Llave |
| Tipo     |                     |                      |          |                   |                   |                  |       |                   |       |
| TBC130S  | TBR130              | BCC1348              | -        | BX0820            | BT0645            | -                | LW-3  | BFTX0511N         | TW20  |
| TBC175S  | TBR175              |                      |          |                   |                   |                  |       |                   |       |
| TBC220S  | TBR220              |                      |          |                   |                   |                  |       |                   |       |
| TBC265S  | TBR265              |                      |          |                   |                   |                  |       |                   |       |
| TBC310S  | TBR310              | BCC1354<br>(BCN1354) | FCC130   | BT0660            | FCB130            | LW-3             | -     | -                 | -     |
| TBC385S  | TBR385              |                      |          |                   |                   |                  |       |                   |       |
| TBC460S  | TBR460              | -                    | FCC310   | BT0660            | FCB310            | LW-3             | -     | -                 | -     |
| FBC130S  | TBR130              |                      |          |                   |                   |                  |       |                   |       |
| FBC175S  | TBR175              |                      |          |                   |                   |                  |       |                   |       |
| FBC220S  | TBR220              |                      |          |                   |                   |                  |       |                   |       |
| FBC265S  | TBR265              | -                    | FCC310   | BT0660            | FCB310            | LW-3             | -     | -                 | -     |
| FBC310S  | TBR310              |                      |          |                   |                   |                  |       |                   |       |
| FBC385S  | TBR385              |                      |          |                   |                   |                  |       |                   |       |
| FBC460S  | TBR460              |                      |          |                   |                   |                  |       |                   |       |



# BT-DBC



(mm)

| Set Cabeza<br>(Cabeza, riel & cartucho) | Código | Cuerpo<br>(Cono Básico) | Rango Boreador ØD |     | L   | Profundidad máxima<br>de boreado |     |
|---|--------|-------------------------|-------------------|-----|-----|----------------------------------|-----|
|   |        |                         | Min               | Max |     |                                  |     |
| DBC2528S                                | 0.3    | BT30-MD25F-90R          | 0.4               | 28  | 35  | 140                              | 93  |
| DBC3235S                                | 0.4    | BT30-MD32F-80R          | 0.4               | 35  | 46  | 145                              | 114 |
| DBC4046S                                | 0.6    | BT30-MD40F-80R          | 0.5               | 46  | 58  | 150                              | 119 |
| DBC5058S                                | 1.1    | BT30-MD50F-70           | 0.8               | 58  | 74  | 150                              | 128 |
| DBC2528S                                | 0.3    | BT40-MD25F-105R         | 1.9               | 28  | 35  | 165                              | 100 |
| DBC3235S                                | 0.4    | BT40-MD32F-115R         | 2.4               | 35  | 46  | 180                              | 110 |
| DBC4046S                                | 0.6    | BT40-MD40F-110R         | 2.7               | 46  | 58  | 180                              | 130 |
| DBC5058S                                | 1.1    | BT40-MD50F-100R         | 2.7               | 58  | 74  | 180                              | 130 |
| DBC6374S                                | 2.0    | BT40-MD63F-90           | 3.6               | 74  | 94  | 180                              | 150 |
| DBC8094S                                | 3.5    | BT40-MD80F-100          | 4.8               | 94  | 120 | 200                              | 173 |
| DBC2528S                                | 0.3    | BT50-MD25F-120R         | 4.7               | 28  | 35  | 180                              | 100 |
| DBC3235S                                | 0.4    | BT50-MD32F-235R         | 5.3               | 35  | 46  | 300                              | 180 |
| DBC4046S                                | 0.6    | BT50-MD40F-230R         | 5.6               | 46  | 58  | 300                              | 250 |
| DBC5058S                                | 1.1    | BT50-MD50F-250R         | 6.5               | 58  | 74  | 330                              | 280 |
| DBC6374S                                | 2.0    | BT50-MD63F-240R         | 8.4               | 74  | 94  | 330                              | 280 |
| DBC8094S                                | 3.5    | BT50-MD80F-175          | 9.5               | 94  | 120 | 275                              | 225 |
| DBC120S                                 | 5.3    | BT50-MD80F-175          | 9.5               | 120 | 175 | 275                              | 235 |

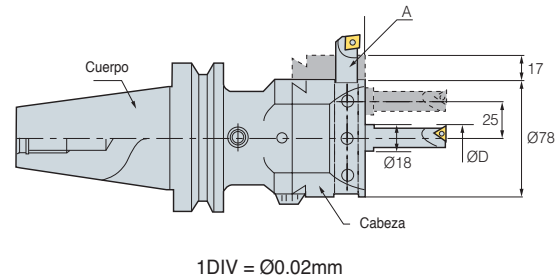
## Partes

| División | Piezas de Refacción |         |                   |        |          |              |        |                   |       |
|----------|---------------------|---------|-------------------|--------|----------|--------------|--------|-------------------|-------|
|          | Básico              |         |                   |        |          |              |        |                   |       |
|          | Cabeza              | Pasador | Perno de Sujeción | Llave  | Cartucho | Set Tornillo | Llave  | Tornillo Sujeción | Llave |
| Tipo     |                     |         |                   |        |          |              |        |                   |       |
| DBC2528S | DBC2528             | SP0308  | BX0415            | LW-3   | BCC28    | BT0306       | LW-1.5 | FTKA02565         | TRX7  |
| DBC3235S | DBC3235             | SP0410  | BX0515            | LW-4   | BCC35    | BT0308       |        |                   |       |
| DBC4046S | DBC4046             | SP0516  | BX0620            | LW-5   | BCC46    | BT0410       | LW-2   | FTNA0408          | TRX15 |
| DBC5058S | DBC5058             | SP0616  |                   |        | BCC58    | BT0412       |        |                   |       |
| DBC6374S | DBC6374             | SP1018  | BX0830            | LW-6   | BCC74    | BT0516       | LW-2.5 | BFTX0511N         | TRX20 |
| DBC8094S | DBC8094             | SP1020  | BX1035            | LW-8   | BCC94    | BT0620       | LW-3   |                   |       |
| DBC120S  | DBC120N             | SP1020  | BX0830            | LW-6.0 | BCC120   | BT0830       | LW-4.0 | BFTX0511N         | TRX20 |



# BT-KMB

## Micro Boreado



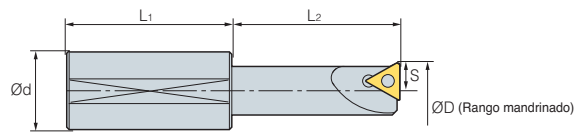
(mm)

| Código            | Cabeza (Modular) | Barra de mandrinado | L   | L <sub>1</sub> |     |
|-------------------|------------------|---------------------|-----|----------------|-----|
| BT40 - MD63F - 64 | KMB6336          | BB18-□(S)           | 141 | 64             | 5.5 |
| BT50 - MD63F - 75 | KMB6336          | BB18-□(S)           | 152 | 75             | 7.0 |

| Cabeza  | Cartucho  | MD NO.     | L  |     |
|---------|-----------|------------|----|-----|
| KMB6336 | BB18-□(S) | BT□□-MD63F | 77 | 2.2 |

• Sistema de lubricación interno es opcional

### Barra de mandrinado: Tipo BB (Para KMB)



(mm)

| Código | Rango mandrinado (Centro) |     | Rango mandrinado (Lado) |     | S   | L <sub>1</sub> | L <sub>2</sub> | Insertoso | Tornillo Insertoso |           |
|--------|---------------------------|-----|-------------------------|-----|-----|----------------|----------------|-----------|--------------------|-----------|
|        | Min                       | Max | Min                     | Max |     |                |                |           |                    |           |
| BB     | 18-7(S)                   | 7   | 40                      | 43  | 91  | 3.5            | 30             | 30        | TBGT0601□□L        | BFTX0204A |
|        | 18-9(S)                   | 9   | 42                      | 45  | 93  | 4.5            | 30             | 40        | TPGT0802□□L        | BFTX0204A |
|        | 18-11(S)                  | 11  | 44                      | 47  | 95  | 5.5            | 30             | 45        | TPGT1103□□L        | BFTX0307A |
|        | 18-13(S)                  | 13  | 46                      | 49  | 97  | 6.5            | 40             | 45        | TPGT1103□□L        | BFTX0307A |
|        | 18-15(S)                  | 15  | 48                      | 51  | 99  | 7.5            | 40             | 50        | TPGT1103□□L        | BFTX0307A |
|        | 18-17(S)                  | 17  | 50                      | 53  | 101 | 8.5            | 40             | 50        | TPGT1103□□L        | BFTX0307A |

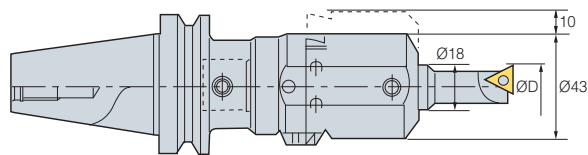
### Partes

| División | Piezas de Refacción    |                      |       |               |             |
|----------|------------------------|----------------------|-------|---------------|-------------|
|          | Básico                 |                      |       | Opcional      |             |
|          | Cabeza para mandrinado | Tornillo de Sujecion | Llave | Barra Boreado | Cono Básico |
| Tipo     |                        |                      |       |               |             |
| KMB      | KMB6336                | BTT1620F             | LW-8  | BB18          | MD63F       |



## BT-SMB

## Cabeza de mandrinado "micro"



1DIV = Ø0.02mm

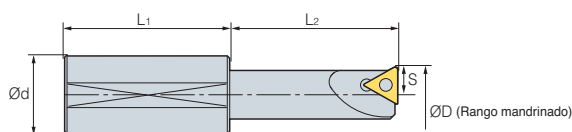
| Código |         |    | Cabeza (Modular) | Barra de mandrinado | L     | L <sub>1</sub> | kg  |
|--------|---------|----|------------------|---------------------|-------|----------------|-----|
| BT40 - | MD40F - | 60 | SMB4022          | BB18-O(S)           | 122.5 | 60             | 2.8 |
| BT50 - | MD40F - | 60 | SMB4022          | BB18-O(S)           | 122.5 | 60             | 5.4 |

(mm)

| Cabeza  | Cartucho  | MD NO.     | L    | kg  |
|---------|-----------|------------|------|-----|
| SMB4022 | BB18-O(S) | BTOO-MD40T | 62.5 | 0.6 |

• Sistema de lubricación interno no disponible

## Barra de mandrinado: Tipo BB (Para SMB)



| Código | Rango Boreador |     | S  | L <sub>1</sub> | L <sub>2</sub> | Insertoso | Tornillo Insertoso |           |
|--------|----------------|-----|----|----------------|----------------|-----------|--------------------|-----------|
|        | Min            | Max |    |                |                |           |                    |           |
| BB     | 18-7(S)        | 7   | 27 | 3.5            | 30             | 30        | TBGT0601□□L        | BFTX0204A |
|        | 18-9(S)        | 9   | 29 | 4.5            | 30             | 40        | TPGT0802□□L        | BFTX0204A |
|        | 18-11(S)       | 11  | 31 | 5.5            | 30             | 45        | TPGT1103□□L        | BFTX0307A |
|        | 18-13(S)       | 13  | 33 | 6.5            | 40             | 45        | TPGT1103□□L        | BFTX0307A |
|        | 18-15(S)       | 15  | 35 | 7.5            | 40             | 50        | TPGT1103□□L        | BFTX0307A |
|        | 18-17(S)       | 17  | 37 | 8.5            | 40             | 50        | TPGT1103□□L        | BFTX0307A |

(mm)

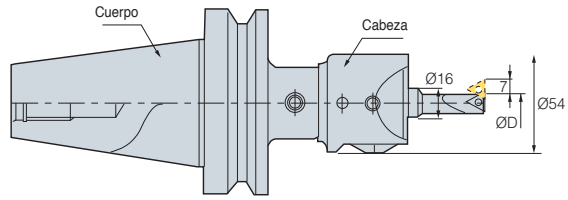
## Partes

| División | Piezas de Refacción    |                      |       |               |             |
|----------|------------------------|----------------------|-------|---------------|-------------|
|          | Básico                 |                      |       | Opcional      |             |
|          | Cabeza para mandrinado | Tornillo de Sujecion | Llave | Barra Boreado | Cono Básico |
| Tipo     |                        |                      |       |               |             |
| SMB      | SMB4022                | BTT1013F             | LW-5  | BB18          | MD40F       |



# BT-SMH

## Cabeza de mandrinado "micro" (de alta precisión)



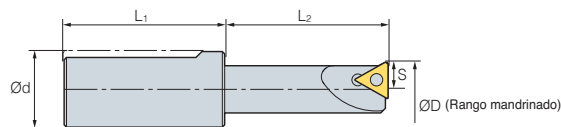
(mm)

| Código            | Cabeza (Modular) | Barra de mandrinado | L   | L <sub>1</sub> |     |
|-------------------|------------------|---------------------|-----|----------------|-----|
| BT40 - MD40F - 60 | SMH4022          | BB16-O(S)           | 109 | 60             | 3.0 |
| BT50 - MD40F - 60 | SMH4022          | BB16-O(S)           | 109 | 60             | 6.0 |

| Cabeza  | Cartucho  | MD NO.     | L  |     |
|---------|-----------|------------|----|-----|
| SMH4022 | BB18-O(S) | BTOO-MD40F | 49 | 2.7 |

• Sistema de lubricación interno no disponible

### Barra de mandrinado: Tipo BB (Para SMH)



(mm)

| Código | Rango Boreador $\varnothing D$ |     | S  | L <sub>1</sub> | L <sub>2</sub> | Insertoso | Tornillo Insertoso | Llave     |       |
|--------|--------------------------------|-----|----|----------------|----------------|-----------|--------------------|-----------|-------|
|        | Min                            | Max |    |                |                |           |                    |           |       |
| BB     | 16-5(S)                        | 5.5 | 19 | 2.75           | 34             | 20        | WBG0601□□L         | BFTX0203A | TRX06 |
|        | 16-7(S)                        | 7   | 21 | 3.5            | 34             | 30        | TBGT0601□□L        | BFTX0204A | TRX06 |
|        | 16-9(S)                        | 9   | 23 | 4.5            | 34             | 40        | TPGT0802□□L        | BFTX0204A | TRX06 |
|        | 16-11(S)                       | 11  | 25 | 5.5            | 34             | 45        | TPGT1103□□L        | BFTX0307A | TRX10 |
|        | 16-15(S)                       | 15  | 29 | 7.5            | 34             | 50        | TPGT1604□□L        | BFTX0307A | TRX10 |
|        | 16-19(S)                       | 19  | 33 | 9.5            | 34             | 60        | TPGT1103□□L        | BFTX0410A | TRX15 |

### Partes

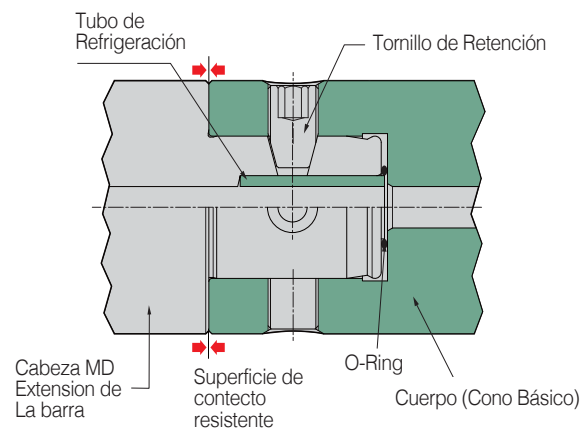
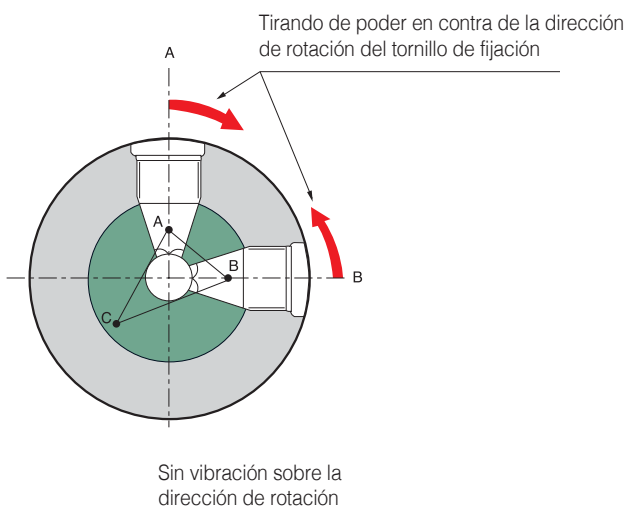
| División | Piezas de Refacción    |                      |       |                     |             |
|----------|------------------------|----------------------|-------|---------------------|-------------|
|          | Básico                 |                      |       | Opcional            |             |
|          | Cabeza para mandrinado | Tornillo de Sujecion | Llave | Barra de mandrinado | Cono Básico |
| Tipo     |                        |                      |       |                     |             |
| SMH      | SMH4022                | BTT1013F             | LW-5  | BB16                | MD40F       |



Versátil sistema de herramientas de conforme a las especificaciones FMS

# Sistema Modular

- Sistema de herramientas versátil que cumple con la especificación FMS
- Combinación flexible de unidades de herramientas según condiciones del sujeto
- Unirse con un tornillo especialmente diseñado proporciona una alta precisión (error inferior a 5  $\mu\text{m}$ ) y una fácil separación para un solo paso
- Borde de corte del sistema de perforación alineado con la ranura de la llave de transmisión
- Precisión y rigidez correspondientes en comparación con el tipo de cuerpo único



## BT-MD

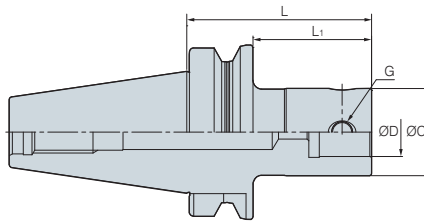


Fig. 1

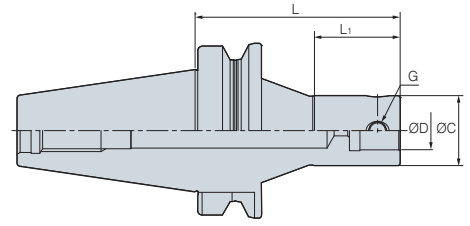



Fig. 2

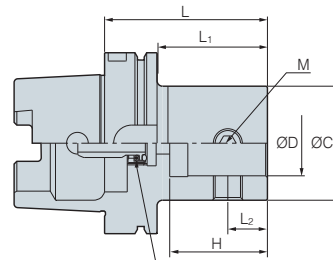
(mm)

| Código        | ØC           | ØD | L   | L <sub>1</sub> | G   |  | Fig. |   |
|---------------|--------------|----|-----|----------------|-----|---|------|---|
| <b>BT30 -</b> | MD19F - 70   | 19 | 11  | 70             | 45  | M5  | 0.4  | 1 |
|               | MD25F - 90   | 25 | 14  | 90             | 63  | M6  | 0.3  | 1 |
|               | MD32F - 80   | 32 | 18  | 80             | 55  | M8  | 0.4  | 1 |
|               | MD40F - 45   | 40 | 22  | 45             | 22  | M8  | 0.4  | 1 |
|               | MD40F - 60   | 40 | 22  | 60             | 36  | M10   | 0.5  | 1 |
|               | MD40F - 80   | 40 | 22  | 80             | 56  | M10   | 0.5  | 1 |
|               | MD50F - 70   | 50 | 28  | 70             | 48  | M12   | 0.8  | 3 |
| <b>BT40 -</b> | MD19F - 70   | 19 | 11  | 70             | 40  | M5  | 1.8  | 1 |
|               | MD25F - 95   | 25 | 14  | 95             | 63  | M6  | 1.9  | 1 |
|               | MD25F - 105R | 25 | 14  | 105            | 40  | M6  | 1.9  | 2 |
|               | MD32F - 100  | 32 | 18  | 100            | 70  | M8  | 2.3  | 1 |
|               | MD32F - 115R | 32 | 18  | 115            | 45  | M8  | 2.4  | 2 |
|               | MD40F - 60   | 40 | 22  | 60             | 31  | M10   | 2.7  | 1 |
|               | MD40F - 110R | 40 | 22  | 110            | 60  | M10   | 2.7  | 2 |
|               | MD40F - 115  | 40 | 22  | 115            | 83  | M10   | 2.7  | 1 |
|               | MD50F - 105  | 50 | 28  | 105            | 73  | M12   | 2.7  | 1 |
|               | MD63F - 64   | 63 | 36  | 64             | 37  | M16   | 3.3  | 1 |
|               | MD63F - 110  | 63 | 36  | 110            | 83  | M16   | 3.6  | 1 |
|               | MD63F - 135  | 63 | 36  | 135            | 108 | M16   | 4.6  | 1 |
|               | MD80F - 100  | 80 | 45  | 100            | 73  | M16   | 4.8  | 3 |
| <b>BT50 -</b> | MD19F - 85   | 19 | 11  | 85             | 44  | M5  | 4.3  | 1 |
|               | MD25F - 105  | 25 | 14  | 105            | 62  | M6  | 4.5  | 1 |
|               | MD25F - 120R | 25 | 14  | 120            | 40  | M6  | 4.7  | 2 |
|               | MD32F - 110  | 32 | 18  | 110            | 67  | M8  | 5.1  | 1 |
|               | MD32F - 115R | 32 | 18  | 115            | 45  | M8  | 5.1  | 2 |
|               | MD32F - 235R | 32 | 18  | 235            | 115 | M8  | 5.3  | 2 |
|               | MD40F - 60   | 40 | 22  | 60             | 22  | M10   | 5.0  | 1 |
|               | MD40F - 195  | 40 | 22  | 195            | 152 | M10   | 5.4  | 1 |
|               | MD40F - 230R | 40 | 22  | 230            | 180 | M10   | 5.6  | 2 |
|               | MD50F - 125  | 50 | 28  | 125            | 82  | M12   | 6.0  | 1 |
|               | MD50F - 225  | 50 | 28  | 225            | 182 | M12   | 6.4  | 1 |
|               | MD50F - 250R | 50 | 28  | 250            | 81  | M12   | 6.5  | 2 |
|               | MD63F - 75   | 63 | 36  | 75             | 35  | M16   | 6.0  | 1 |
|               | MD63F - 130  | 63 | 36  | 130            | 87  | M16   | 6.8  | 1 |
|               | MD63F - 195  | 63 | 36  | 195            | 152 | M16   | 8.0  | 1 |
|               | MD63F - 230  | 63 | 36  | 230            | 187 | M16   | 8.4  | 1 |
|               | MD80F - 75   | 80 | 45  | 75             | 36  | M16   | 9.1  | 1 |
|               | MD80F - 110  | 80 | 45  | 110            | 69  | M16   | 9.4  | 1 |
|               | MD80F - 175  | 80 | 45  | 175            | 134 | M16   | 9.5  | 1 |
|               | MD90F - 75   | 90 | 45  | 75             | 34  | M16   | 9.3  | 1 |
|               | MD90F - 145  | 90 | 45  | 145            | 104 | M16   | 9.9  | 1 |
| MD90F - 195   | 90           | 45 | 195 | 154            | M16 | 10.2  | 1    |   |





# HSK-MD



Tubo de Refrigeración (Opcional)

(mm)

| Código    | ØC         | ØD | L  | L <sub>1</sub> | L <sub>2</sub> | H   | M    |     |
|-----------|------------|----|----|----------------|----------------|-----|------|-----|
| HSK 63A - | MD19F - 60 | 19 | 11 | 60             | 34             | 6.5 | 15.5 | M5  |
|           | MD25F - 60 | 25 | 14 | 60             | 31             | 8   | 18.5 | M6  |
|           | MD32F - 65 | 32 | 18 | 65             | 31             | 11  | 23.5 | M8  |
|           | MD40F - 70 | 40 | 22 | 70             | 41             | 13  | 29   | M10 |
|           | MD50F - 85 | 50 | 28 | 85             | 58             | 17  | 36   | M12 |
|           | MD63F - 95 | 63 | 36 | 95             | 69             | 22  | 54   | M16 |

• Sistema de lubricación interno disponible

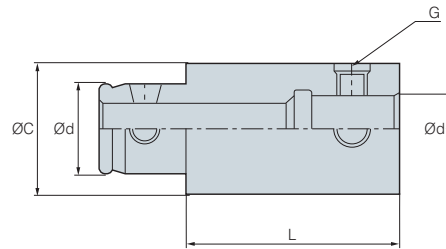
## Partes

| División | Piezas de Refacción  |          |
|----------|----------------------|----------|
|          | Básico               | Opcional |
|          | Tornillo de Sujecion | Llave    |
| Tipo     |                      |          |
| MD19F    | BTT0506F             | LW-2.5   |
| MD25F    | BTT0608F             | LW-3     |
| MD32F    | BTT0810F             | LW-4     |
| MD40F    | BTT1013F             | LW-5     |
| MD50F    | BTT1215F             | LW-6     |
| MD63F    | BTT1620F             | LW-8     |
| MD80F    | BTT1626F             | LW-8     |
| MD90F    | BTT1631F             | LW-8     |



EXT

Barra extensión



(mm)

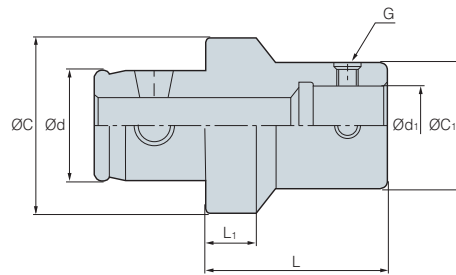
| Código      | ØC | Ød | L   | Ød <sub>1</sub> | G   |
|-------------|----|----|-----|-----------------|-----|
| EXT - 1930F | 19 | 11 | 30  | 11              | M5  |
| 1950F       | 19 | 11 | 50  | 11              | M5  |
| 2530F       | 25 | 14 | 30  | 14              | M6  |
| 2550F       | 25 | 14 | 50  | 14              | M6  |
| 3235F       | 32 | 18 | 35  | 18              | M8  |
| 3260F       | 32 | 18 | 60  | 18              | M8  |
| 4040F       | 40 | 22 | 40  | 22              | M10 |
| 4090F       | 40 | 22 | 90  | 22              | M12 |
| 5050F       | 50 | 28 | 50  | 28              | M12 |
| 50100F      | 50 | 28 | 100 | 28              | M12 |
| 6360F       | 63 | 36 | 60  | 36              | M16 |
| 63120F      | 63 | 36 | 120 | 36              | M16 |
| 8070F       | 80 | 45 | 70  | 45              | M16 |
| 80120F      | 80 | 45 | 120 | 45              | M16 |
| 9080F       | 90 | 45 | 80  | 45              | M16 |
| 90130F      | 90 | 45 | 130 | 45              | M16 |

• Sistema de lubricación interno disponible



# RDC

# Barra de reducción



(mm)

| Código      | Ød | ØC1 | Ød1 | ØC | L  | L1 | G   |
|-------------|----|-----|-----|----|----|----|-----|
| RDC - 3225F | 18 | 25  | 14  | 32 | 30 | 9  | M6  |
| 4025F       | 22 | 25  | 14  | 40 | 30 | 9  | M6  |
| 4032F       | 22 | 32  | 18  | 40 | 30 | 9  | M8  |
| 5025F       | 28 | 25  | 14  | 50 | 30 | 9  | M6  |
| 5032F       | 28 | 32  | 18  | 50 | 30 | 9  | M8  |
| 5040F       | 28 | 40  | 22  | 50 | 40 | 10 | M10 |
| 6325F       | 36 | 25  | 14  | 63 | 30 | 9  | M6  |
| 6332F       | 36 | 32  | 18  | 63 | 30 | 9  | M8  |
| 6340F       | 36 | 40  | 22  | 63 | 40 | 10 | M10 |
| 6350F       | 36 | 50  | 28  | 63 | 45 | 10 | M12 |
| 8032F       | 45 | 32  | 18  | 80 | 30 | 9  | M6  |
| 8040F       | 45 | 40  | 22  | 80 | 40 | 10 | M10 |
| 8050F       | 45 | 50  | 28  | 80 | 45 | 10 | M12 |
| 8063F       | 45 | 63  | 36  | 80 | 50 | 13 | M16 |

• Sistema de lubricación interno disponible

## Partes

| División | Piezas de Refacción   |   |   |
|----------|---|---|---|
|          | Básico  |   | Opcional  |
|          | Tornillo de Sujeción  | Pasador   | Llave   |
| Tipo     |  |  |  |
| MD19F    | BTT0506F  | -   | LW-2.5  |
| MD25F    | BTT0608F  | SP0308  | LW-3  |
| MD32F    | BTT0810F  | SP0410  | LW-4  |
| MD40F    | BTT1013F  | SP0516  | LW-5  |
| MD50F    | BTT1215F  | SP0616  | LW-6  |
| MD63F    | BTT1620F  | SP0818  | LW-8  |
| MD80F    | BTT1626F  | SP1020  | LW-8  |
| MD90F    | BTT1631F  | SP1020  | LW-8  |





## KORLOY Herramienta antivibración

# KORLOY DAMPING PRO

- Diseño especial que proporciona un excelente efecto antivibración y está optimizado para el trabajo en voladizos
- Capaz de aumentar el avance en comparación con el eje estándar con un mecanizado estable
- Mayor vida útil de la herramienta y menos ruido
- Proporciona una solución para moldes, mecanizado de cavidades profundas y trabajo de servicio pesado

### ➤ Sistema de codificación

|                           |   |  |   |   |   |                                  |
|---------------------------|---|--|---|---|---|----------------------------------|
| KDP                       | - | BT50   | - | FMA25.4   | - | 260                              |
| <b>KORLOY DAMPING PRO</b> |   | <b>Conicidad del eje</b><br>BT Tipo<br>HSK Tipo<br>SK Tipo |   | <b>FMA:</b> JIS B4113 Fresa de planeado<br><b>FMB:</b> T-MAX Fresa de planeado/<br>Fresa de escuadrado<br><b>FMC:</b> T-MAX Fresa de planeado/<br>Fresa de escuadrado |   | <b>Largo de línea de calibre</b> |

### ➤ Características



- Antivibración: Estructura antivibraciones de diseño exclusivo
- Material: Aleaciones de acero especiales
- Cuerpo antivibraciones: Con amortiguador de alta densidad
- Voladizo: Apto para 2D~5D
- Refrigeración: Dispone de refrigeración interna



BT Tipo



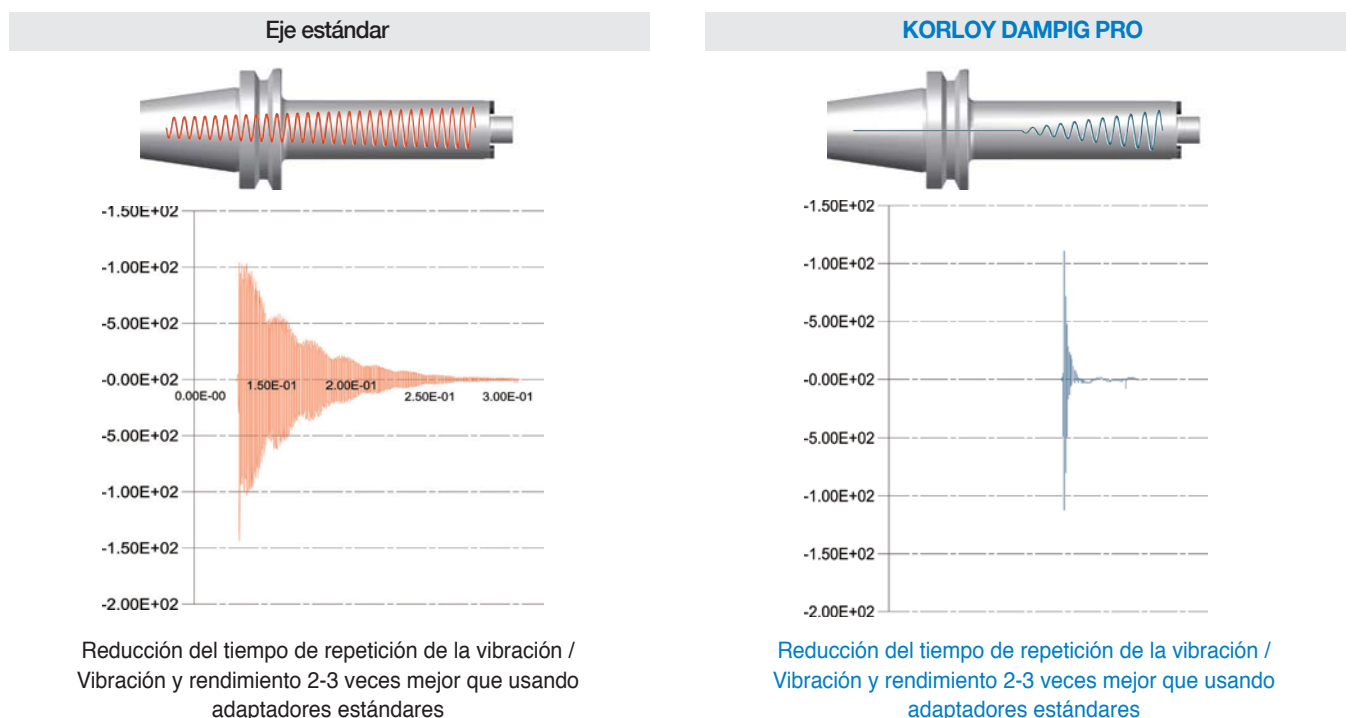
HSK Tipo



SK Tipo

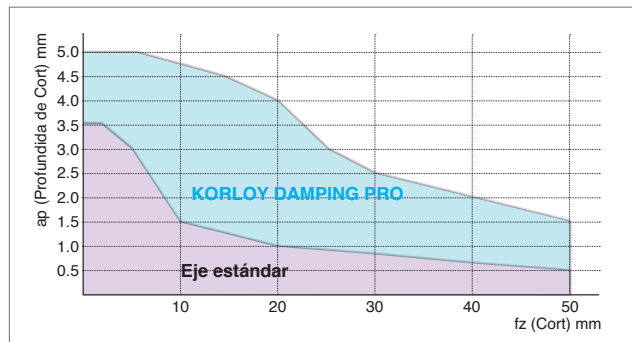
Tamaño: Varios tipos y tamaños disponibles

### ➤ Comparación del tiempo de amortiguación de la vibración

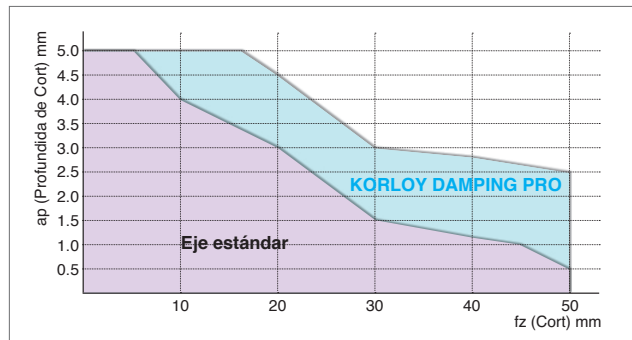


## Evaluación del rendimiento

- **Condiciones de Corte:**  $f_z$  (mm/t) = 0.1  
 $vc$  (m/min) = 100
- **FRESA:** AMC4063HS 6 canales
- **Eje:** BT50-FMC22-210 Eje estándar  
KDP-BT50-FMC22-210 Damping pro



- **Condiciones de Corte:**  $f_z$  (mm/t) = 0.1  
 $vc$  (m/min) = 100
- **FRESA:** FMRC3063HRD-H 6 canales
- **Eje:** BT50-FMC22-210 Eje estándar  
KDP-BT50-FMC22-210 Damping pro



## Ejemplo de aplicación

| Mecanizado de moldes                        | Mecanizado con fresa de corte lateral         | Refrentado de alta profundidad                                      | Mecanizado por mandrinado de orificios profundos                      |
|---|---|---|---|
|   |   |   |   |
| Mejor productividad que con el eje estándar | Excelente rendimiento en el ranurado profundo | Mejor productividad y rugosidad superficial que con el eje estándar | Mejor rugosidad superficial y mecanizabilidad que con el eje estándar |

### Ejemplo de mecanizado con fresa de corte lateral

- Fallos en el tamaño y la rugosidad superficial debido a la vibración cuando se utiliza el eje estándar
- **Buen tamaño y rugosidad superficial usando DAMPING PRO**



- **Eje estándar**  
Condiciones de Corte:  
 $vc$  (m/min) = 50  
 $f_z$  (mm/t) = 0.1  
 $ae$  (mm) = 20
- **DAMPING PRO**  
Condiciones de Corte:  
 $vc$  (m/min) = 100  
 $f_z$  (mm/t) = 0.1  
 $ae$  (mm) = 20

### Ejemplo de mecanizado de cigüeñal de tamaño grande

- Eje estándar:  $ap = 2$  mm
- KORLOY DAMPING PRO:  $ap = 4$  mm disponible
- **2 veces mejor productividad**



- **Eje estándar**  
Condiciones de Corte:  
 $vc$  (m/min) = 100  
 $f_z$  (mm/t) = 0.15  
 $ap$  (mm) = 2
- **DAMPING PRO**  
Condiciones de Corte:  
 $vc$  (m/min) = 100  
 $f_z$  (mm/t) = 0.15  
 $ap$  (mm) = 4

# BT-FMA

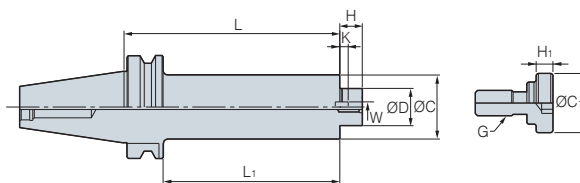


Fig. 1

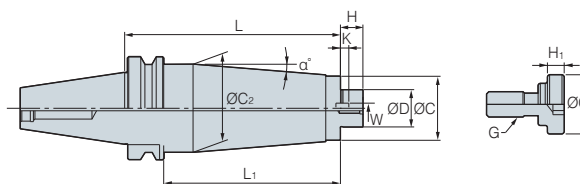


Fig. 2

(mm)

| Código     | Diámetro del Cortador | ØD  | L     | L <sub>1</sub> | ØC  | ØC <sub>2</sub> | H  | W  | K    | G | ØC <sub>1</sub> | H <sub>1</sub> | kg | Fig. | α° |     |
|------------|-----------------------|-----|-------|----------------|-----|-----------------|----|----|------|---|-----------------|----------------|----|------|----|-----|
| KDP-BT40 - | FMA25.4 - 210         | 80  | 25.4  | 210            | 183 | 50              | 60 | 22 | 9.5  | 5 | M12             | 33             | 10 | 5.42 | 2  | 1   |
|            | FMA25.4 - 260         | 80  | 25.4  | 260            | 233 | 50              | 60 | 22 | 9.5  | 5 | M12             | 33             | 10 | 6.5  | 2  | 1.1 |
|            | FMA31.75 -210         | 100 | 31.75 | 210            | 183 | 60              | -  | 30 | 12.7 | 7 | M16             | 40             | 10 | 5.94 | 1  | -   |
|            | FMA31.75 -260         | 100 | 31.75 | 260            | 233 | 60              | -  | 30 | 12.7 | 7 | M16             | 40             | 10 | 7.25 | 1  | -   |
| KDP-BT50 - | FMA25.4 - 210         | 80  | 25.4  | 210            | 172 | 50              | 78 | 22 | 9.5  | 5 | M12             | 33             | 10 | 9.63 | 2  | 4   |
|            | FMA25.4 - 260         | 80  | 25.4  | 260            | 222 | 50              | 78 | 22 | 9.5  | 5 | M12             | 33             | 10 | 11.8 | 2  | 3   |
|            | FMA31.75 -210         | 100 | 31.75 | 210            | 172 | 60              | 85 | 30 | 12.7 | 7 | M16             | 40             | 10 | 11.8 | 2  | 3   |
|            | FMA31.75 -260         | 100 | 31.75 | 260            | 222 | 60              | 85 | 30 | 12.7 | 7 | M16             | 40             | 10 | 13.6 | 2  | 2.5 |

- El tipo A se usa para la fresa de planeado JIS B4113
- Los tipos B y C son ejes para la fresa de planeado y escuadrado T-MAX
- El peso (kg) que se muestra en el gráfico no incluye el peso de la fresa de planeado
  - La llave y el tornillo van juntos
  - La llave de tuercas se vende por separado

## Partes

| División | Piezas de Refacción |                   |                |                |          |
|----------|---------------------|-------------------|----------------|----------------|----------|
|          | Básico              |                   |                |                | Opcional |
|          | Cuña                | Tornillo Sujeción | Tornillo Llave | Tornillo Llave | Llave    |
| Tipo     |                     |                   |                |                |          |
| FMA25.4  | K9.5(B)             | MBA-M12           | BX0412         | BX1225         | LW-10    |
| FMA31.75 | K12.7(D)            | MBA-M16           | BX0515         | -              | LW-14    |



# BT-FMC

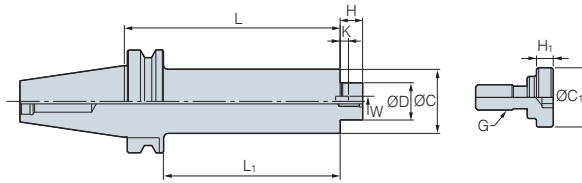


Fig. 1

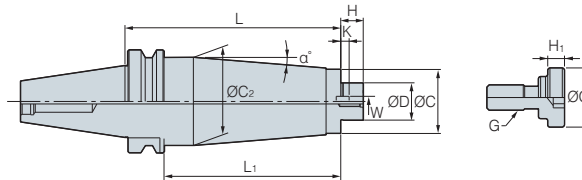


Fig. 2

| Código     | Diámetro del Cortador | ØD    | L  | L <sub>1</sub> | ØC  | ØC <sub>2</sub> | H    | W  | K  | G   | kg  | Fig. | α° |     |
|------------|-----------------------|-------|----|----------------|-----|-----------------|------|----|----|-----|-----|------|----|-----|
| KDP-BT40 - | FMC16 - 160           | 40    | 16 | 160            | 133 | 38              | -    | 17 | 8  | 5   | M8  | 2.45 | 1  | -   |
|            | FMC22 - 210           | 50/63 | 22 | 210            | 183 | 48              | 4.95 | 19 | 10 | 5.6 | M10 | 4.37 | 2  | 0.1 |
|            | FMC22 - 260           | 50/63 | 22 | 260            | 233 | 48              | 60   | 19 | 10 | 5.6 | M10 | 6.3  | 2  | 1.5 |
|            | FMC27 - 210           | 80    | 27 | 210            | 183 | 60              | -    | 21 | 12 | 6.3 | M12 | 6    | 1  | -   |
|            | FMC27 - 260           | 80    | 27 | 260            | 233 | 60              | -    | 21 | 12 | 6.3 | M12 | 7.25 | 1  | -   |
| KDP-BT50 - | FMC16 - 171           | 40    | 16 | 171            | 133 | 38              | -    | 17 | 8  | 5   | M8  | 5.1  | 1  | -   |
|            | FMC22 - 210           | 50/63 | 22 | 210            | 172 | 48              | 49.5 | 19 | 10 | 5.6 | M10 | 7.3  | 2  | 0.1 |
|            | FMC22 - 260           | 50/63 | 22 | 260            | 222 | 48              | 62   | 19 | 10 | 5.6 | M10 | 10   | 2  | 1   |
|            | FMC27 - 210           | 80    | 27 | 210            | 172 | 60              | 78   | 21 | 12 | 6.3 | M12 | 10.6 | 2  | 2.5 |
|            | FMC27 - 260           | 80    | 27 | 260            | 222 | 60              | 78   | 21 | 12 | 6.3 | M12 | 12.6 | 2  | 2   |
|            | FMC27 - 320           | 80    | 27 | 320            | 282 | 60              | 78   | 21 | 12 | 6.3 | M12 | 14.8 | 2  | 1   |
|            | FMC32 - 210           | 100   | 32 | 210            | 172 | 78              | -    | 24 | 14 | 7   | M16 | 11.7 | 1  | -   |
|            | FMC32 - 260           | 100   | 32 | 260            | 222 | 78              | -    | 24 | 14 | 7   | M16 | 14.2 | 1  | -   |
|            | FMC32 - 330           | 100   | 32 | 330            | 292 | 78              | -    | 24 | 14 | 7   | M16 | 16.6 | 1  | -   |

- El tipo A se usa para la fresa de planeado JIS B4113
- Los tipos B y C son ejes para la fresa de planeado y escuadrado T-MAX
- El peso (kg) que se muestra en el gráfico no incluye el peso de la fresa de planeado
  - La llave y el tornillo van juntos
  - La llave de tuercas se vende por separado

## Partes

| División | Piezas de Refacción |                   |                |                |          |
|----------|---------------------|-------------------|----------------|----------------|----------|
|          | Básico              |                   |                |                | Opcional |
|          | Cuña                | Tornillo Sujeción | Tornillo Llave | Tornillo Llave | Llave    |
| Tipo     |                     |                   |                |                |          |
| FMC16    | K8.0(A)             | -                 | BX0310         | BX0820         | LW-6     |
| FMC22    | K10.0(C)            | -                 | BX0412         | BX1030         | LW-8     |
| FMC27    | K12.0               | MBA-M12           | BX0616         | -              | LW-10    |
| FMC32    | K14.0               | MBA-M16           | BX0820         | -              | LW-14    |



# HSK-FMA

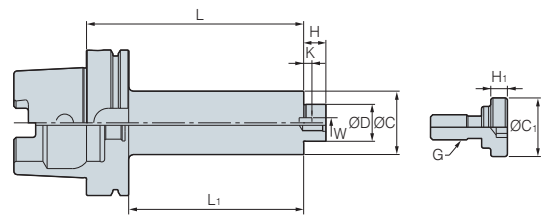


Fig. 1

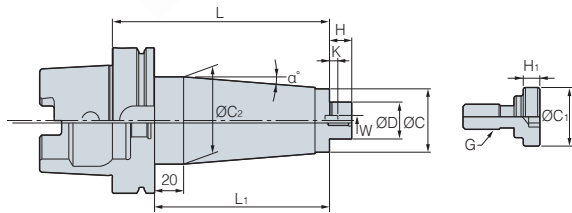


Fig. 2

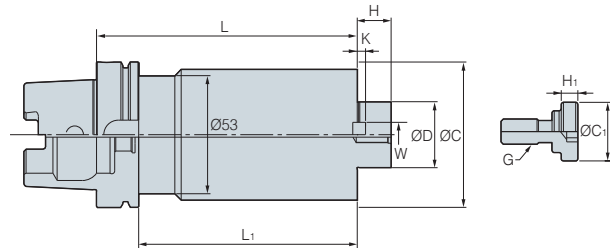


Fig. 3

(mm)

| Código       | Diámetro del Cortador | ØD  | L     | L <sub>1</sub> | ØC  | ØC <sub>2</sub> | H  | W  | K    | G | ØC <sub>1</sub> | H <sub>1</sub> | kg | Fig. | α° |     |
|--------------|-----------------------|-----|-------|----------------|-----|-----------------|----|----|------|---|-----------------|----------------|----|------|----|-----|
| KDP-HSK63 -  | FMA25.4 - 210         | 80  | 25.4  | 210            | 184 | 50              | 53 | 22 | 9.5  | 5 | M12             | 33             | 10 | 4.55 | 3  | 0.1 |
|              | FMA25.4 - 260         | 80  | 25.4  | 260            | 234 | 50              | 53 | 22 | 9.5  | 5 | M12             | 33             | 10 | 5.6  | 3  | 0.1 |
|              | FMA31.75 - 210        | 100 | 31.75 | 210            | 184 | 60              | -  | 30 | 12.7 | 7 | M16             | 40             | 10 | 5.52 | 2  | -   |
|              | FMA31.75 - 260        | 100 | 31.75 | 260            | 234 | 60              | -  | 30 | 12.7 | 7 | M16             | 40             | 10 | 6.9  | 2  | -   |
| KDP-HSK100 - | FMA25.4 - 210         | 80  | 25.4  | 210            | 181 | 50              | 78 | 22 | 9.5  | 5 | M12             | 33             | 10 | 8.32 | 3  | 4   |
|              | FMA25.4 - 260         | 80  | 25.4  | 260            | 231 | 50              | 78 | 22 | 9.5  | 5 | M12             | 33             | 10 | 10.5 | 3  | 3   |
|              | FMA31.75 - 210        | 100 | 31.75 | 210            | 181 | 60              | 85 | 30 | 12.7 | 7 | M16             | 40             | 10 | 10.9 | 3  | 3   |
|              | FMA31.75 - 260        | 100 | 31.75 | 260            | 231 | 60              | 85 | 30 | 12.7 | 7 | M16             | 40             | 10 | 12.8 | 3  | 2.5 |

- El tipo A se usa para la fresa de planeado JIS B4113
- Los tipos B y C son ejes para la fresa de planeado y escuadrado T-MAX
- El peso (kg) que se muestra en el gráfico no incluye el peso de la fresa de planeado
  - La llave y el tornillo van juntos
  - La llave de tuercas se vende por separado

## Partes

| División | Piezas de Refacción |                   |                |                |          |
|----------|---------------------|-------------------|----------------|----------------|----------|
|          | Básico              |                   |                |                | Opcional |
|          | Cuña                | Tornillo Sujeción | Tornillo Llave | Tornillo Llave | Llave    |
| Tipo     |                     |                   |                |                |          |
| FMA25.4  | K9.5(B)             | MBA-M12           | BX0412         | BX1230         | LW-10    |
| FMA31.75 | K12.7(D)            | MBA-M16           | BX0515         | -              | LW-14    |





# HSK-FMC

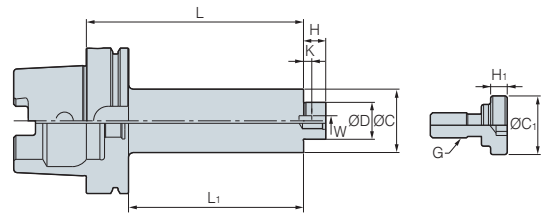


Fig. 1

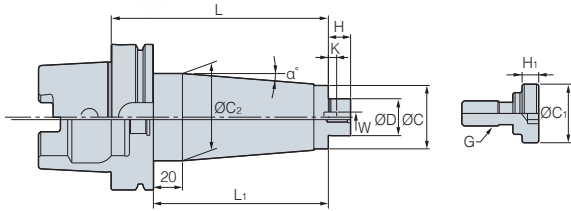


Fig. 2

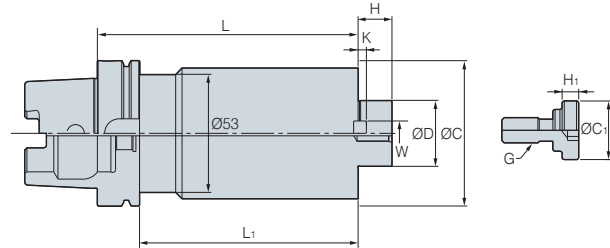


Fig. 3

| Código       |             | Diámetro del Cortador | ØD  | L   | L <sub>1</sub> | ØC | ØC <sub>2</sub> | H  | W  | K   | G     | kg    | Fig. | α°  |
|--------------|-------------|-----------------------|-----|-----|----------------|----|-----------------|----|----|-----|-------|-------|------|-----|
| KDP-HSK63 -  | FMC16 - 160 | 40                    | 16  | 160 | 134            | 38 | -               | 17 | 8  | 5   | M8    | 2.10  | 1    | -   |
|              | FMC22 - 210 | 50/63                 | 22  | 210 | 184            | 48 | 4.95            | 19 | 10 | 5.6 | M10   | 3.82  | 1    | 0.1 |
|              | FMC22 - 260 | 50/63                 | 22  | 260 | 234            | 48 | 62              | 19 | 10 | 5.6 | M10   | 6.14  | 3    | 1.6 |
|              | FMC27 - 210 | 80                    | 27  | 210 | 184            | 60 | -               | 21 | 12 | 6.3 | M12   | 5.53  | 2    | -   |
|              | FMC27 - 260 | 80                    | 27  | 260 | 234            | 60 | -               | 21 | 12 | 6.3 | M12   | 6.83  | 2    | -   |
| KDP-HSK100 - | FMC16 - 160 | 40                    | 16  | 160 | 131            | 38 | -               | 17 | 8  | 5   | M8    | 3.45  | 1    | -   |
|              | FMC22 - 210 | 50/63                 | 22  | 210 | 181            | 48 | 49.5            | 19 | 10 | 5.6 | M10   | 4.60  | 3    | 0.1 |
|              | FMC22 - 260 | 50/63                 | 22  | 260 | 231            | 48 | 62              | 19 | 10 | 5.6 | M10   | 8.10  | 3    | 1   |
|              | FMC27 - 210 | 80                    | 27  | 210 | 181            | 60 | 78              | 21 | 12 | 6.3 | M12   | 8.44  | 3    | 2.5 |
|              | FMC27 - 260 | 80                    | 27  | 260 | 231            | 60 | 78              | 21 | 12 | 6.3 | M12   | 10.40 | 3    | 2   |
|              | FMC27 - 320 | 80                    | 27  | 320 | 291            | 60 | 78              | 21 | 12 | 6.3 | M12   | 13.60 | 3    | 1   |
|              | FMC32 - 210 | 100                   | 32  | 210 | 181            | 78 | -               | 24 | 14 | 7   | M16   | 10.20 | 1    | -   |
|              | FMC32 - 260 | 100                   | 32  | 260 | 231            | 78 | -               | 24 | 14 | 7   | M16   | 13.00 | 1    | -   |
| FMC32 - 330  | 100         | 32                    | 330 | 301 | 78             | -  | 24              | 14 | 7  | M16 | 15.43 | 1     | -    |     |

- El tipo A se usa para la fresa de planeado JIS B4113
- Los tipos B y C son ejes para la fresa de planeado y escuadrado T-MAX
- El peso (kg) que se muestra en el gráfico no incluye el peso de la fresa de planeado
  - La llave y el tornillo van juntos
  - La llave de tuercas se vende por separado

## Partes

| División | Piezas de Refacción |                   |                |                |          |
|----------|---------------------|-------------------|----------------|----------------|----------|
|          | Básico              |                   |                |                | Opcional |
|          | Cuña                | Tornillo Sujeción | Tornillo Llave | Tornillo Llave | Llave    |
| Tipo     |                     |                   |                |                |          |
| FMC16    | K8.0(A)             | -                 | BX0310         | BX0820         | LW-6     |
| FMC22    | K10.0(C)            | -                 | BX0412         | BX1030         | LW-8     |
| FMC27    | K12.0               | MBA-M12           | BX0616         | -              | LW-10    |
| FMC32    | K14.0               | MBA-M16           | BX0820         | -              | LW-14    |



# SK-FMC

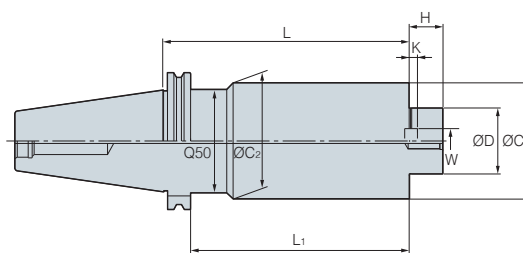


Fig. 1

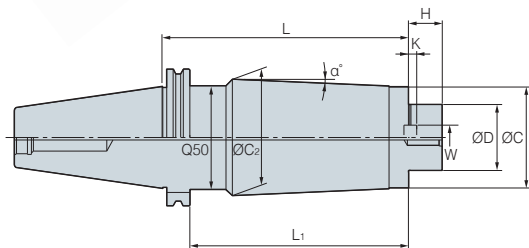


Fig. 2

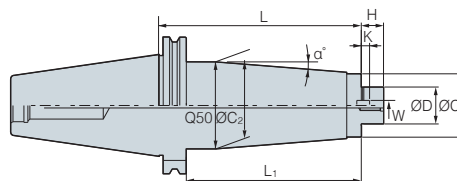


Fig. 3

(mm)

| Código             | Diámetro del Cortador | ØD    | L     | L <sub>1</sub> | ØC    | ØC <sub>2</sub> | H    | W  | K  | G   | kg  | Fig. | α°   |     |     |
|--------------------|-----------------------|-------|-------|----------------|-------|-----------------|------|----|----|-----|-----|------|------|-----|-----|
| KDP-SK40 - FMC22 - | 210                   | 50/63 | 22    | 210            | 183.0 | 48              | 49.5 | 19 | 10 | 4.4 | M10 | 4.4  | 3    | 0.1 |     |
|                    | 260                   | 50/63 | 22    | 260            | 233.0 | 48              | 60   | 19 | 10 | 5.6 | M10 | 6.2  | 2    | 1.4 |     |
|                    | FMC27 -               | 210   | 80    | 27             | 210   | 183.0           | 60   | 60 | 21 | 12  | 6.3 | M12  | 5.9  | 1   | -   |
|                    | FMC27 -               | 260   | 80    | 27             | 260   | 233.0           | 60   | 60 | 21 | 12  | 6.3 | M12  | 7.2  | 1   | -   |
| KDP-SK50 - FMC22 - | 210                   | 50/63 | 22    | 210            | 190.9 | 48              | 49.5 | 19 | 10 | 5.6 | M10 | 6.4  | 3    | 0.1 |     |
|                    | FMC22 -               | 260   | 50/63 | 22             | 260   | 240.9           | 48   | 62 | 19 | 10  | 5.6 | M10  | 9.1  | 3   | 1   |
|                    | FMC27 -               | 210   | 80    | 27             | 210   | 190.9           | 60   | 78 | 21 | 12  | 6.3 | M12  | 9.8  | 3   | 2.5 |
|                    | FMC27 -               | 260   | 80    | 27             | 260   | 240.9           | 60   | 78 | 21 | 12  | 6.3 | M12  | 12.4 | 3   | 1.8 |
|                    | FMC27 -               | 320   | 80    | 27             | 320   | 300.9           | 60   | 78 | 21 | 12  | 6.3 | M12  | 14.5 | 3   | 1.2 |
|                    | FMC32 -               | 210   | 100   | 32             | 210   | 190.9           | 78   | -  | 24 | 14  | 7   | M16  | 11.5 | 1   | -   |
|                    | FMC32 -               | 260   | 100   | 32             | 260   | 240.9           | 78   | -  | 24 | 14  | 7   | M16  | 14   | 1   | -   |
|                    | FMC32 -               | 330   | 100   | 32             | 330   | 310.9           | 78   | -  | 24 | 14  | 7   | M16  | 16.4 | 1   | -   |

- El tipo A se usa para la fresa de planeado JIS B4113
- Los tipos B y C son ejes para la fresa de planeado y escuadrado T-MAX
- El peso (kg) que se muestra en el gráfico no incluye el peso de la fresa de planeado
  - La llave y el tornillo van juntos
  - La llave de tuercas se vende por separado

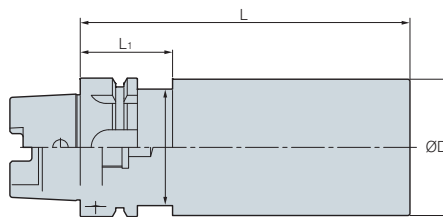
## Partes

| División | Piezas de Refacción |                   |                |                |          |
|----------|---------------------|-------------------|----------------|----------------|----------|
|          | Básico              |                   |                |                | Opcional |
|          | Cuña                | Tornillo Sujeción | Tornillo Llave | Tornillo Llave | Llave    |
| Tipo     |                     |                   |                |                |          |
| FMC16    | K8.0(A)             | -                 | BX0310         | BX0820         | LW-6     |
| FMC22    | K10.0(C)            | -                 | BX0412         | BX1030         | LW-8     |
| FMC27    | K12.0               | MBA-M12           | BX0616         | -              | LW-10    |
| FMC32    | K14.0               | MBA-M16           | BX0820         | -              | LW-14    |



## BLK

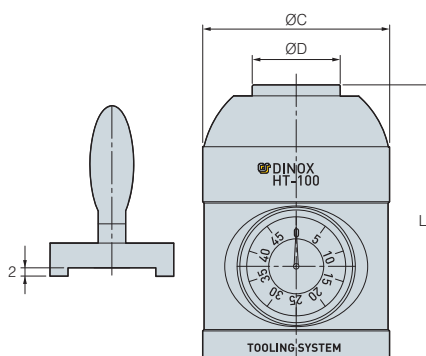
## Blank Tool



(mm)

| Código               | Ød           | ØC  | L   | L <sub>1</sub> |
|----------------------|--------------|-----|-----|----------------|
| HSK40A - BLK42 - 180 | 42           | 34  | 180 | 35             |
| HSK50A - BLK52 - 200 | 52           | 42  | 200 | 42             |
| HSK63A -             | BLK63 - 150  | 63  | 150 | 42             |
|                      | BLK63 - 250  | 63  | 250 | 42             |
|                      | BLK82 - 200  | 82  | 200 | 42             |
| HSK100A -            | BLK102 - 150 | 102 | 150 | 45             |
|                      | BLK102 - 250 | 102 | 250 | 45             |
|                      | BLK126 - 200 | 126 | 200 | 45             |
| BT30 - BLK48 - 180   | 48           | 44  | 180 | 30             |
| BT40 -               | BLK63 - 150  | 63  | 150 | 35             |
|                      | BLK63 - 250  | 63  | 250 | 35             |
|                      | BLK82 - 200  | 82  | 200 | 35             |
| BT50 -               | BLK102 - 150 | 102 | 150 | 48             |
|                      | BLK102 - 250 | 102 | 250 | 48             |
|                      | BLK126 - 200 | 126 | 200 | 48             |

## HT



(mm)

| Código | ØD | ØC | L   |
|--------|----|----|-----|
| HT-100 | 32 | 68 | 100 |

- Buena para establecer la longitud de herramientas al CNC
- No se interfiere entre setter altura táctil y la herramienta hace el trabajo seguro
- Precisión Localización: ± 0.003mm



## SC Limpiador de husillo



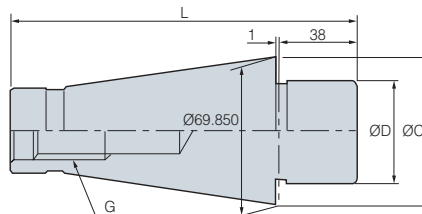
(mm)

| Código    | Cónico | N.W.   | G.W.   |
|-----------|--------|--------|--------|
| SC - BT30 | BT30   | 0.06kg | 0.08kg |
| BT40      | BT40   | 0.07kg | 0.1kg  |
| BT50      | BT50   | 0.16kg | 0.2kg  |
| HSK50     | HSK50  | 0.08kg | 0.12kg |
| HSK63     | HSK63  | 0.1kg  | 0.13kg |
| HSK100    | HSK100 | 0.5kg  | 0.7kg  |

### Características

- Las tiras de limpieza del limpiador cónico están hechas de piel de cordero
- Se usa para limpiar el interior del husillo para evitar la electricidad estática y ampliar la vida útil del husillo y el cono

## KCP

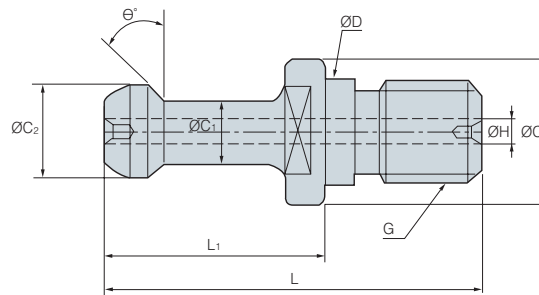


(mm)

| Código             | Cónico | Diámetro del Cortador | ØD     | ØC    | L      | G          |
|--------------------|--------|-----------------------|--------|-------|--------|------------|
| NTN 50 - KCP47.625 | NT50   | 200(8")               | 47.625 | 69.55 | 164.00 | U1"-8(M24) |
| KCP60              | NT50   | 200(8")               | 60     | 69.55 | 164.00 | M24        |



# Pernos de Retención



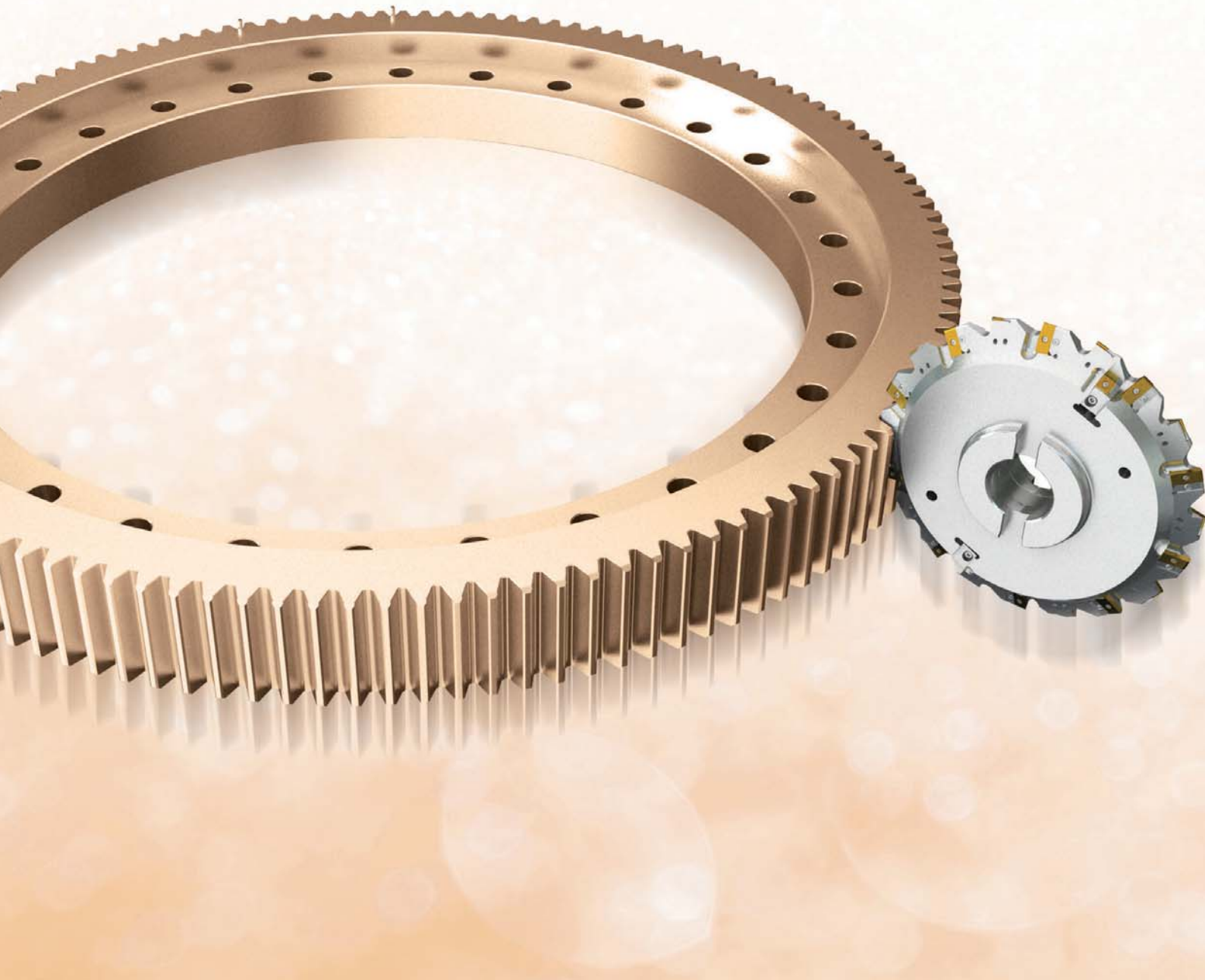
(mm)

| Código               | ØD   | ØC   | ØC <sub>1</sub> | ØC <sub>2</sub> | L <sub>1</sub> | L     | θ   | G   | ØH    |
|----------------------|------|------|-----------------|-----------------|----------------|-------|-----|-----|-------|
| P20T-1               | 8.5  | 12   | 6               | 8.5             | 17.5           | 31.5  | 15° | M8  |       |
| P30T-1               | 12.5 | 16.5 | 7               | 11              | 23             | 43    | 45° | M12 |       |
| P30T-1(Ø2.5)         | 12.5 | 16.5 | 7               | 11              | 23             | 43    | 45° | M12 | Ø2.5  |
| P30T-2               | 12.5 | 16.5 | 7               | 11              | 23             | 43    | 30° | M12 |       |
| P30T-2(Ø2.5)         | 12.5 | 16.5 | 7               | 11              | 23             | 43    | 30° | M12 | Ø2.5  |
| P40T-1               | 17   | 23   | 10              | 15              | 35             | 60    | 45° | M16 |       |
| P40T-1(3)            | 17   | 23   | 10              | 15              | 35             | 60    | 45° | M16 | Ø3    |
| P40T-2               | 17   | 23   | 10              | 15              | 35             | 60    | 30° | M16 |       |
| PS40-3F              | 17   | 23   | 10              | 15              | 35             | 60    | 0°  | M16 |       |
| PS-G51               | 17   | 22   | 12.45           | 18.8            | 19.11          | 44.11 | 45° | M16 | Ø7    |
| DIN69872-A40         | 17   | 23   | 14              | 19              | 26             | 54    | 15° | M16 | Ø7    |
| DIN69872-B40         | 17   | 23   | 14              | 19              | 26             | 54    | 15° | M16 |       |
| JISB6339-A40(PS-806) | 17   | 23   | 14              | 19              | 29             | 54    | 15° | M16 | Ø7    |
| JISB6339-B40(PS-805) | 17   | 23   | 14              | 19              | 29             | 54    | 15° | M16 |       |
| P50T-1               | 25   | 38   | 17              | 23              | 45             | 85    | 45° | M24 |       |
| P50T-1(7)            | 25   | 38   | 17              | 23              | 45             | 85    | 45° | M24 | Ø7    |
| P50T-2               | 25   | 38   | 17              | 23              | 45             | 85    | 30° | M24 |       |
| PS50-1F              | 25   | 38   | 17              | 23              | 45             | 85    | 0°  | M24 |       |
| PS50-1FH             | 25   | 38   | 17              | 23              | 45             | 85    | 0°  | M24 | Ø8    |
| PS-G41               | 25   | 37   | 20.83           | 28.96           | 25.2           | 65.2  | 45° | M24 | Ø10   |
| DIN69872-A50         | 25   | 36   | 21              | 28              | 34             | 74    | 15° | M24 | Ø11.5 |
| P50T-1HS             | 25   | 38   | 17              | 23              | 45             | 85    | 45° | M24 | Ø5.7  |



# J

## Ejemplos de Maquinados

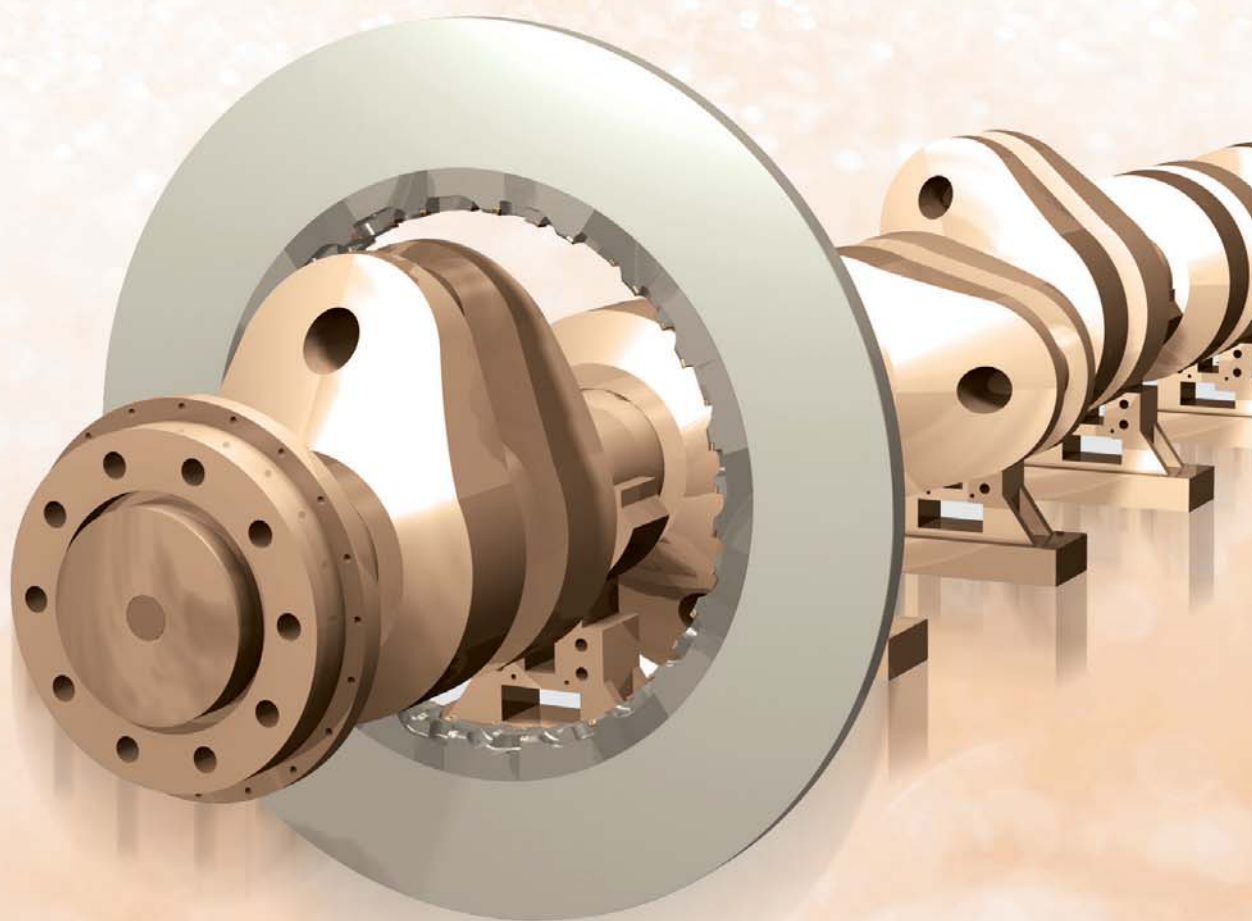


### **Ej. de Maquinados Industriales**

- J02 Solución en Maquinado de Engranajes
- J04 Solución Industria Marítima
- J07 Solución Maquinado de Rodillos
- J08 Solución Industria Ferroviaria
- J10 Solución Tubería Industrial
- J12 Solución Maquinado de Rodamientos
- J13 Solución para el Desarrollo Industrial
- J14 Solución Industria Aeronáutica
- J18 Cuchillas

### **Ej. Maq. Industria Automotriz**

- J19 Cigüeñal
- J20 Sist. de Frenos
- J22 Bielas
- J24 Connecting Rod
- J26 Monoblock
- J28 Cabezas



## Maquinado de engranajes (Exterior)

### ➤ Cortador Para Desbaste



- Diametro Cortador: Ø300
- Numero de Insertos: 60
- Disponible para la alta velocidad de trabajo, los bordes en forma de V sirven para reducir la fuerza de corte



### ➤ Cortador Para Corte Medio



- Diametro Cortador: Ø280
- Numero de Insertos: 48
- Disponible para alta eficiencia, larga vida y alta productividad a través de la forma de inserto propia KORLOY
- Los Insertos deberan ir con el cortador del mismo lado, no pueden ser intercambiados



### ➤ Cortador para Acabado



- Diametro Cortador: Ø400
- Numero de Insertos: 20
- Los cortadores son realizados con un grado de precision 4.( KS, JS)
- Sistema de Chaflan esta disponible para un mejor maquinado.



### ➤ Hob



- Diametro Cortador: Ø350
- Numero de Insertos: 100
- Hob Indexable para desbaste
- Disponibles para personalizar la producción por el usuario

### ➤ King Drill



#### Diseño óptimo de broca indexable

- La forma de la broca y el rompeviruta han sido optimizados en la posición de los insertos central y periférico para un mejor control de viruta y acabado de superficie
- Grados, optimizados en la posición de los insertos central y periférico con el fin de maximizar la vida de la herramienta de corte
- Grado: PC3500, PC5300

### ➤ Rompeviruta VH



- Rompeviruta innovadora para corte medio
- Rendimiento mejorado en corte continuo
- Disponible en SNMM/CNMM

### ➤ TPDB



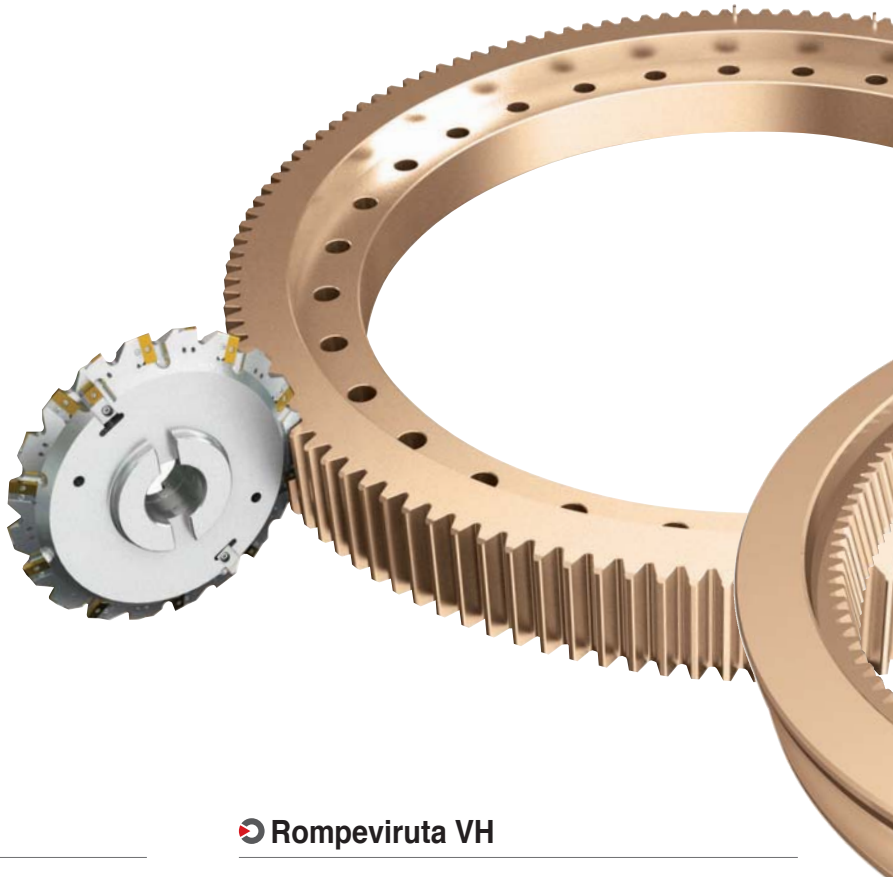
#### Broca indexable de alta precisión y alta eficiencia

- Broca altamente eficiente en alta velocidad y maquinado de alta avance
- Excelente rugosidad de la superficie

### ➤ Rompeviruta VT



- Excelente rigidez en maquinado de altoavance y profundidad
- Excelente resistencia al impacto y larga vida gracias a su estable estructura y rigidez
- Disponibles en: SNMM/CNMM





# Maquinado de Engranajes (interno)

## ↻ Cortador para Desbastes



- Diametro Cortador: Ø560
- Numero de Insertos: 140
- Disponible para todo el funcionamiento del engranaje del módulo, debido a los bordes diseñados en forma de escalera



## ↻ Cortador para Corte Medio



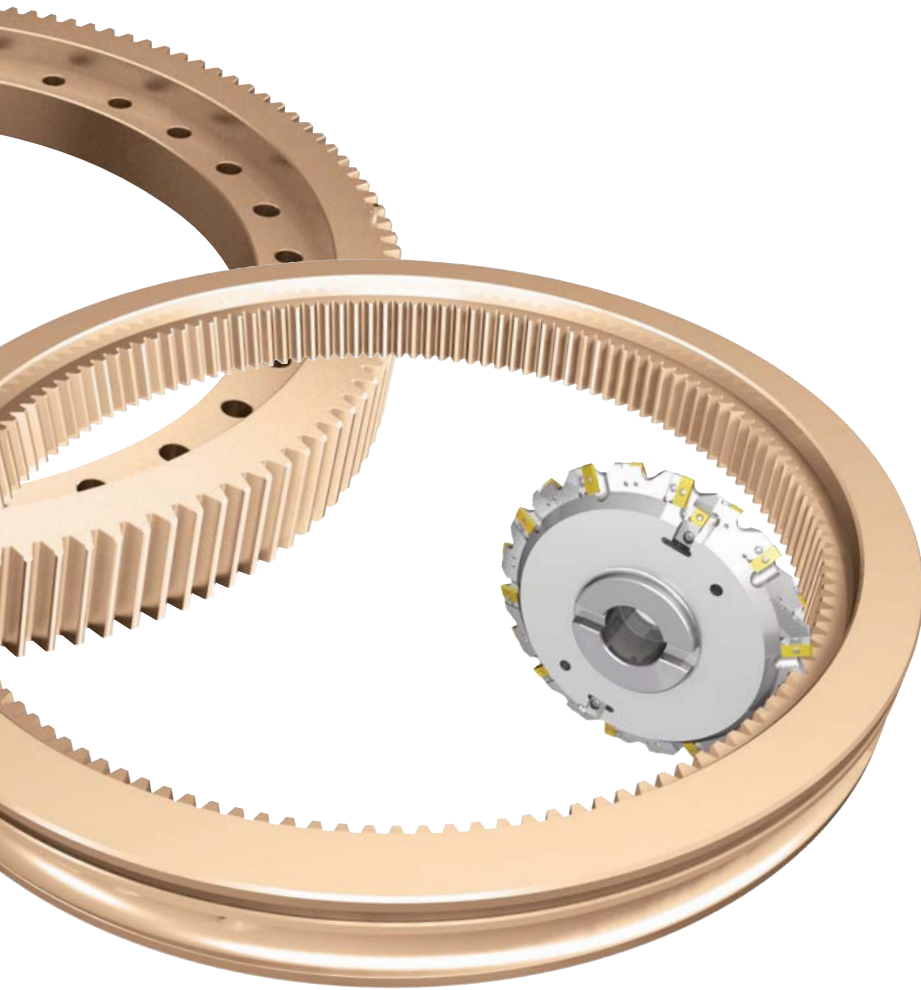
- Diametro Cortador: Ø400
- Numero de Insertos: 48
- Disponible para latoma de forma de la curva involuta de engranajes internos



## ↻ Cortador para Acabado



- Diametro Cortador: Ø400
- Numero de Insertos: 20
- Cortador para el acabado disponible para 4 gado de precisión de engranajes internos
- Insertoo para Chafan disponible para el cortador, eita evita hacer otra funcion



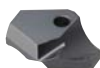
## ↻ King Drill



### Diseño óptimo de broca indexable

- La forma de la broca y el rompeviruta han sido optimizados en la posición de los insertos central y periférico para un mejor control de viruta y acabado de superficie
- Grados, optimizados en la posición de los insertos central y periférico con el fin de maximizar la vida de la herramienta de corte
- Grado: PC3500, PC5300

## ↻ TPDB



### Broca indexable de alta precisión y alta eficiencia

- Broca altamente eficiente en alta velocidad y maquinado de alta avance
- Excelente rugosidad de la superficie

## Industria Maritima

### ➤ Cortador para desbaste en bloque de cilindros



- Diametro Cortador:  $\varnothing 200$
- Insertos: SNCF1507ANN-MF
- Concepto de Economía: Insertos de 8 Filos, para herramienta de alto avance
- Exclusivo sistema de sujeción de KORLOY que proporciona un cambio rápido de inserción

### ➤ TPDB



#### Broca indexable de alta precisión y alta eficiencia

- Broca altamente eficiente en alta velocidad y maquinado de alta avance
- Excelente rugosidad de la superficie

### ➤ King Drill



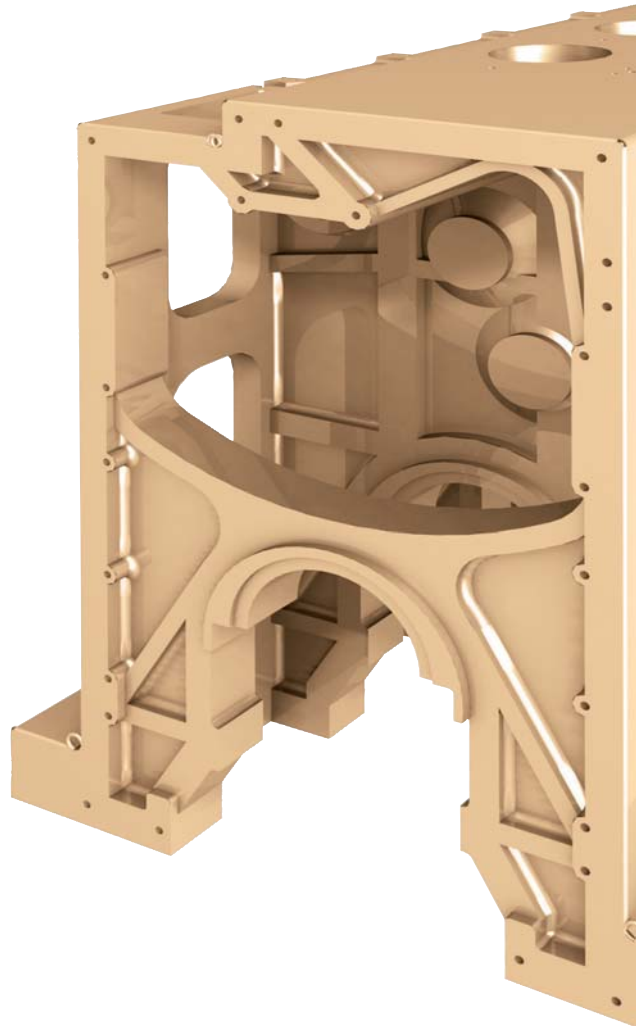
#### Diseño óptimo de broca indexable

- La forma de la broca y el rompeviruta han sido optimizados en la posición de los insertos central y periférico para un mejor control de viruta y acabado de superficie
- Grados, optimizados en la posición de los insertos central y periférico con el fin de maximizar la vida de la herramienta de corte
- Grado: PC3500, PC5300

### ➤ Boreador de Bloque de Cilindros, Arbol de Levas(Cortador de Aluminio)



- Diametro Cortador:  $\varnothing 270$
- Insertos: LNE434/SDKX1506
- Cortador de aluminio de rotación derecha, Fácil de manejar, boreador de alta precisión.



**↻ Cortador para cilindros del motor (Ambos)**



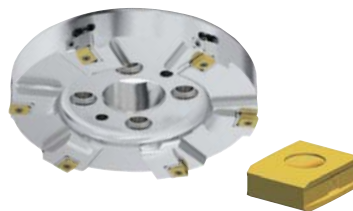
- Diametro Cortador: Ø200
- Inserto: LNE434/LNCS1907-R3.0-WC
- Diseñados para aplicaciones de desbaste y corte medio
- Para alta eficiencia en el maquinado utilice el Insertoo LNE 434 grado para desbaste y alta rentabilidad
- Una buena superficie en el maquinado utilice el LNCS1907-R3.0-WC Insertoo Wiper para corte medio

**↻ Cortador para desbaste en Cilindros del Motor**



- Diametro Cortador: Ø250
- Inserto: SECN2606AFN
- Cortador de alta incidencia, especial para aplicaciones de maquinado que tienen tendencia a hacer rechinidos (las evita)

**↻ Cortador Ajustable paramaquinado medio**



- Diametro Cortador: Ø250
- Inserto: LNCS1907-C1.5-WC
- Dispositivo de corte regulable en altura brinda un excelente superfi cie de acabado

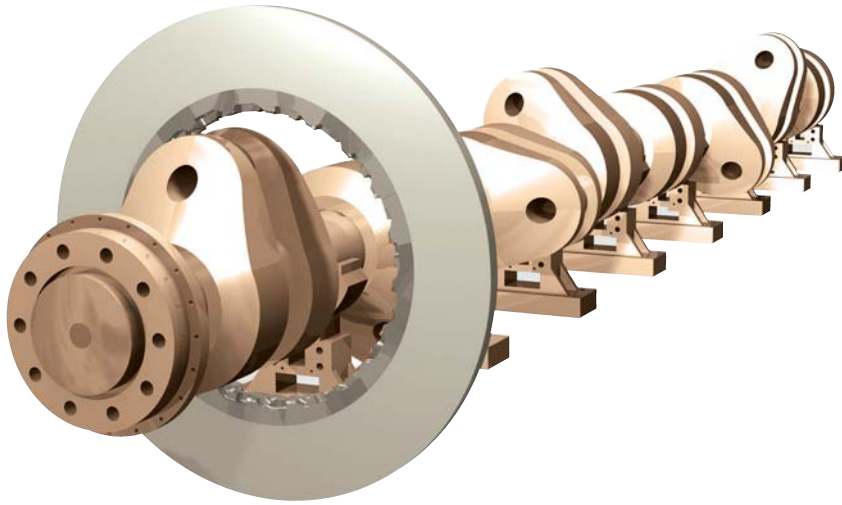
**↻ Cortador para cilindros del motor**



- Diametro Cortador: Ø250
- Inserto: RDKT2006M0
- Varios tamaños de Insertoos estan disponibles para el requerimiento de la pieza que este maquinando
- Inserto rígidos para un excelente maquinado



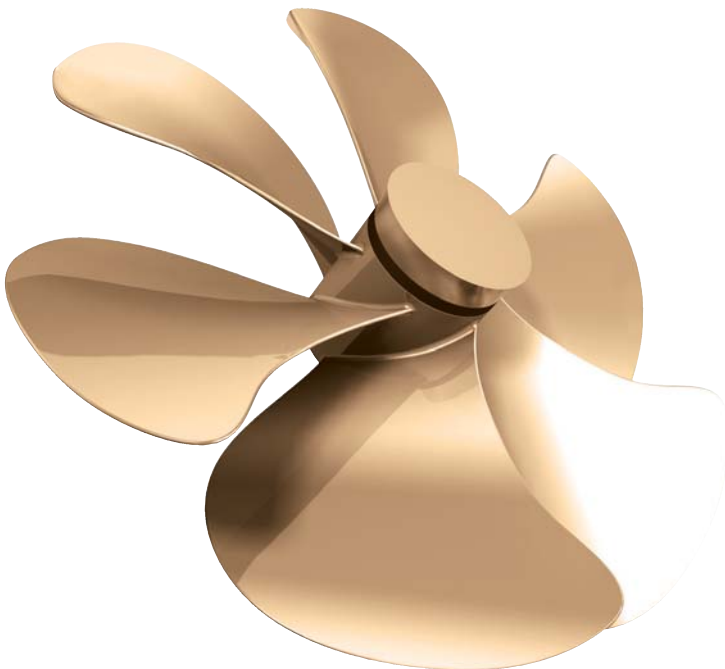
**Ind. Maritima (Cigüeñal/Propelas)**



➤ **Exclusivo sistema interno de KORLOY Pin miller**



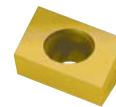
- Diametro Cortador: Over Ø2000
- Peso: 1.5 tons
- Pin molinero para eje del cigüeñal del motor de barco con el tamaño mediano
- Fase especial con sistema de montaje desarrollado por KORLOY hace que sea fácil de manejar y proporciona excelente rendimiento de corte con la formación de viruta



➤ **La cara superior de la herramienta de mecanizado**



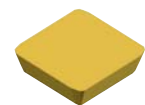
- Diametro Cortador: Ø150
- Inserto: CDEW170708R
- Insertos con angulo de alivio positivos son aplicados para obtener un corte uniforme sin fluctuaciones



➤ **La cara superior de la hélice herramienta de mecanizado**



- Diametro Cortador: Ø250
- Inserto: SECN1904EER
- El inserto de doble capa proporciona gran profundidad de corte



## Maquinado de Rodillos (cuerpo/forma/tronzado)

### ➤ Maquinado de Rodillos (cuerpo/forma/tronzado)



Competencia



NC6315

- Rompevirutas mas cercas del borde de corte proporciona un mejor control de la viruta, incluso en ranurado profundo
- El alto grado de dureza del recubrimiento tiene excelente resistencia al desgaste y previene grandes daños por la carga de corte (la foto muestra los daños despues del borde, mismo Tiempo de maquinado en mismas condiciones)

### ➤ Ej. de Aplicacion



Competencia



NC6315

- Equipado con un interruptor de viruta ancho suficiente para evitar el desgaste del cráter
- Mejor control de viruta desde el inicio del mecanizado, junto con el grado de recubrimiento de alta dureza proporciona una vida útil de la herramienta 3 veces mayor que Herramienta convencional (especialmente en el acabado).

La combinación del grado de recubrimiento de alta dureza (NC6315) y el rompevirutas muestra un mejor rendimiento.

Rompevirutas mas cercas del borde de corte proporciona un mejor control de la viruta, incluso en ranurado profundo

### ➤ Tronzado de Rodillos

- inserto de diseño especial que provee un mejor control de viruta en ranurado profundo
- El alto grado del recubrimiento proporciona una excelente resistencia al desgaste.

Para tronzado

Para desbaste y corte medio en Torneado exterior

Para formar y maquinado de juntas

### ➤ Torneado externo de rodillos

- La combinación de alta dureza del recubrimiento NC6110 con rompeviruta proporciona mayor vida útil con el control suave para virutas
- varios diseños de filos de corte son aplicables de acuerdo a material de pieza de trabajo y condición de corte

### ➤ Formado y ranurado de Rodillos

- Rompeviruta especial adecuada para el formado (ingeniería de rompevirutas ancho y profundidad)
- Filo de corte especialmente tratado que previene fracturas.

**Industria ferroviaria (Raíl)**

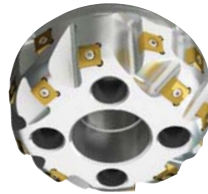
➤ **Fresa para perfil del raíl**



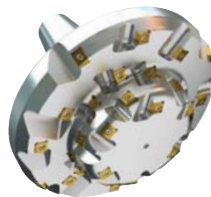
- Diametro Cortador: Ø160
- Numero de Insertos: 54
- Diseños especiales se pueden realizar acorde a las necesidades y especificaciones del cliente



➤ **Fresa para parte superior de raíl**



- Diametro Cortador: Ø160
- Numero de Insertos: 16
- Formado preciso del raíl es posible



- Diametro Cortador: Ø300
- Numero de Insertos: 33
- Un diseño de cuerpo y árbol de fresado proporciona una alta rigidez

➤ **Fresa para el rebajado superior del raíl**



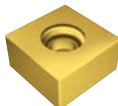
- Diametro Cortador: Ø200
- Numero de Insertos: 24
- Inserto economico de 8 filos
- Diseños especiales se pueden realizar acorde a las necesidades y especificaciones del cliente



➤ **Fresa para el perfil superior de los raíles**



- Diametro Cortador: Ø240
- Numero de Insertos: 25



➤ **Fresa para reparación de raíles**

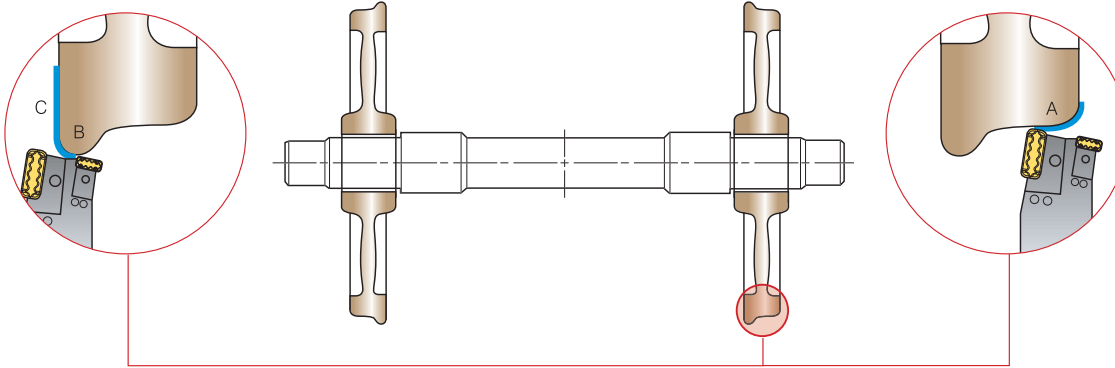
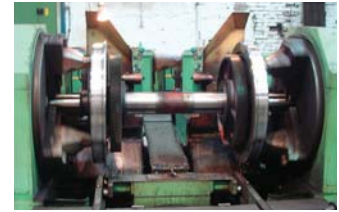


- Diametro Cortador: Ø600
- Numero de Insertos: 198
- Cortador que realiza reparaciones en partes en partes específicas del raíl

# Industria Ferroviaria (Rueda)

## ➤ Inserto LNUX para trabajo en ruedas (Reperación)

- Material: SSW2. Ø920~1000
- Condiciones de Corte:  $vc = 78\text{m/min}$  ( $13\sim 18\text{min}^{-1}$ )  $fn = 1.0\text{mm/rev}$   $ap = 3\sim 4\text{mm}$
- Inserto: LNUX301940-TM Grado: NC3215
- Resultado: Excelente evacuación de virutas, estructura estable y larga vida de la herramienta



**LNUX301940-TF**



- Para corte ligero, genera una carga de corte bajo

**LNUX301940-TM**

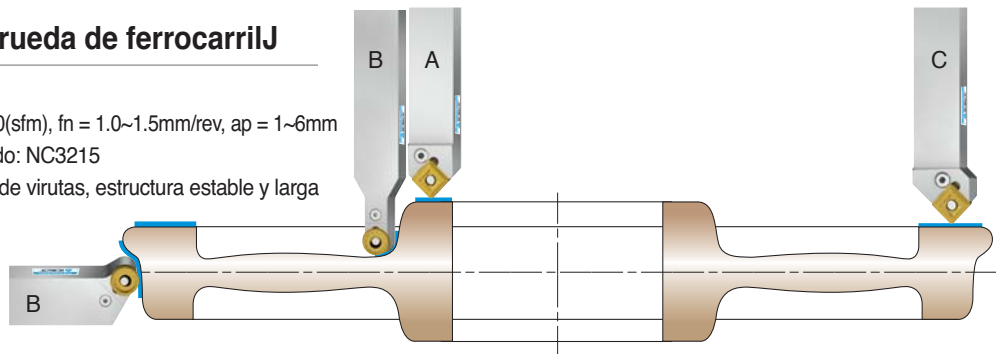


- Diseño integral para uso en general, filo de corte fuerte con buen flujo de viruta y formación (Primera recomendación)


| Rocedimiento de Traba | A  | B  | C |
|-----------------------|--|--|---|
| Inserto               | LNUX301940-TF/TM                                   | LNUX191940-25/22   |   |
| Grado                 | NC3215   | NC3215   |   |
| Condicion de Corte    | Redusca la velocidad en la parte mas profunda de A | Incremente la velocidad para tener una buena evacuación de virutas |   |

## ➤ RCMX Inserto para rueda de ferrocarrilJ

- Material: SSW2. Ø840
- Condiciones de Corte:  $vc = 55\sim 100(\text{sfm})$ ,  $fn = 1.0\sim 1.5\text{mm/rev}$ ,  $ap = 1\sim 6\text{mm}$
- Inserto: RCMX3209MO-SL Grado: NC3215
- Resultado: Excelente evacuación de virutas, estructura estable y larga vida de la herramienta



**Rompeviruta VT**



- Resistente lo de corte para maquinados de alto avance y profundidades de corte
- El diseño de la rompeviruta provee una excelente resistencia al impacto
- Tipo SNMM

**Rompeviruta SL**



- rompevirutas que cubren una amplia gama de aplicaciones
- Un mejor control de viruta extiendela vida util de la herramienta

**Rompeviruta B**



- Diseño integral para desbaste que brinda una excelente fuerza en el borde con vida larga de la herramienta

**Rompeviruta SB**






- Mejor control de viruta con baja carga de corte en el maquinado

**Rompeviruta TM**



- Rompeviruta para corte Medio a Acabado, acabado de la superficie adrcuada, superior resistencia al desgaste

| Rocedimiento de Traba | A  | B   | C   |
|-----------------------|--|---|---|
| Insertos Disponibles  |  |  |  |
| Portainsero           | PSDNN5050-U25  | PRDCN5050-U32<br>PRGCN5050-U32  | PSSNR5050-S25   |
| Inserto               | SNMM250724-GH  | RCMX3209MO-SL   | SNMM250724-VT   |
| Grado                 | NC3215   | NC3215  | NC3215  |

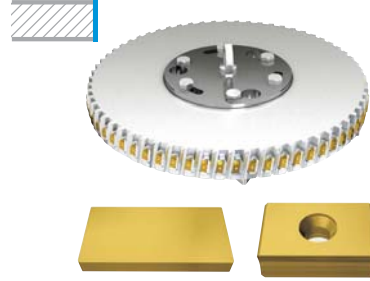
**Tuberías (Fresado de borde)**

➤ **Maquinado de Forma "X"**

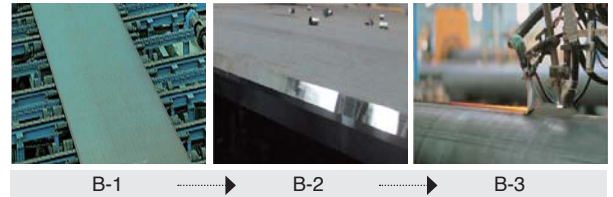
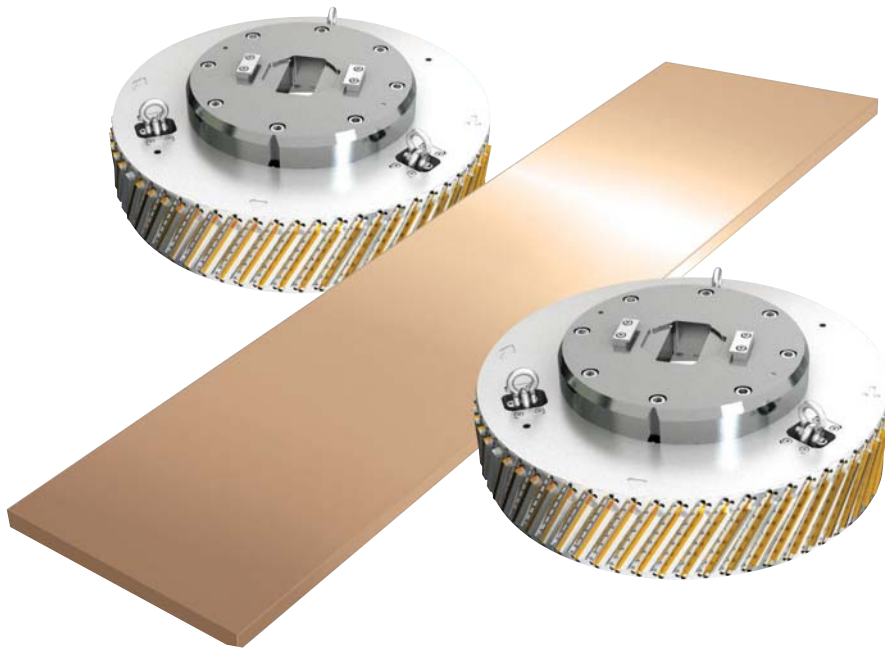


- Maquinado de forma "X" en el lado extremo de la placa de acero, para hacer la soldadura de bisel
- Localizador de tipo cuña apriete sistema aplicado para el cortador proporciona durabilidad del corte, así como un fuerte poder de fijación
- Grado: NC5340

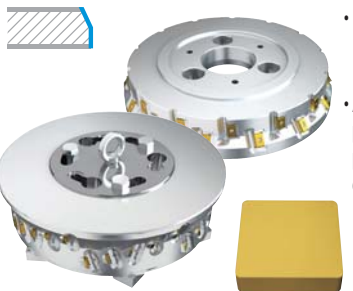
➤ **Maquinado de Forma "I"**



- Un maquinado en forma "I" en ambos lados del extremo de la placa de acero, para hacer bisel o soldadura plano de fondo
- Variedad de Insertos (con rompevirutas o sin rompevirutas) están disponibles de acuerdo a sus condiciones de corte
- Grado: NC5340



➤ **Maquinado de Forma "Y"**



- Un maquinado en forma "Y" tanto en el lado extremo de la placa de acero, para hacer la soldadura de bisel
- Amplio bolsillo chip de corte proporciona durabilidad de la misma por reducir el contacto de la viruta con el cuerpo de la fresa

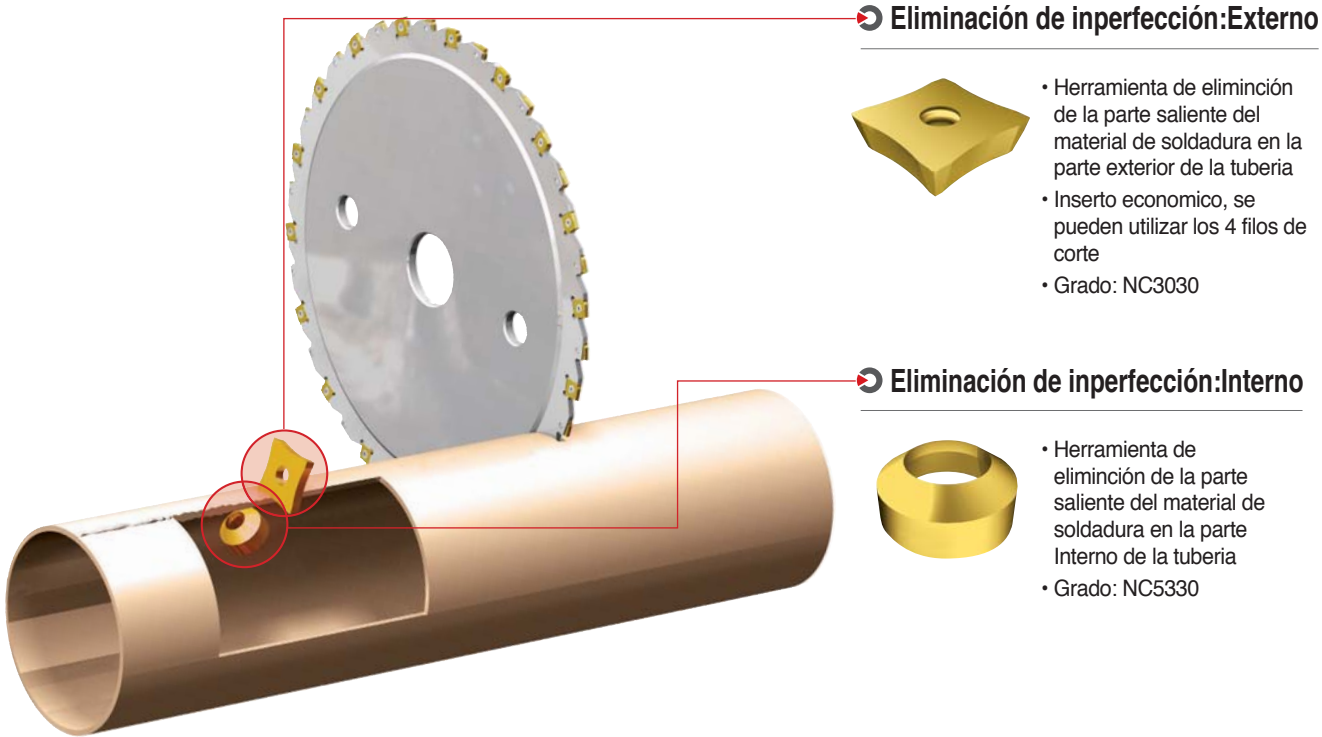
➤ **Maquinado Especial**



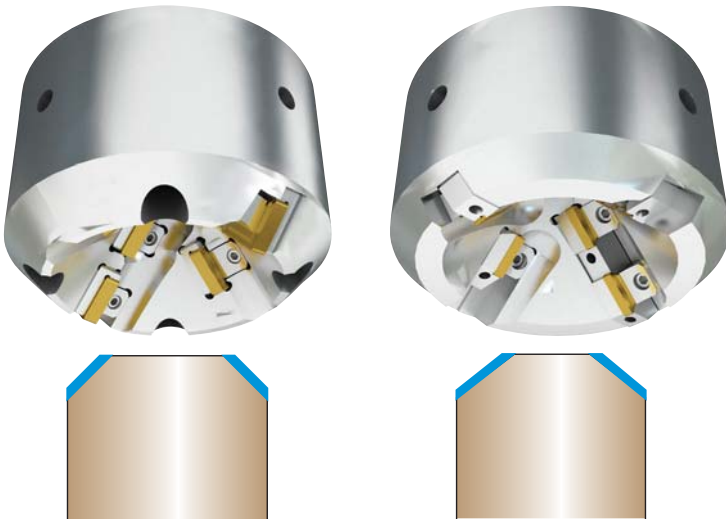
- El diseño de cortadores especiales para el corte lateral en placas de acero, esta disponible segun las especificaciones y requerimientos del cliente



**Tuberia (Eliminación de imperfección/Tronzado/Biselado)**



| Metodo de Trabajo | Rangode Aplicación                                      | Insertos Disponibles  | Cortador |
|-------------------|---|---|----------|
|                   | Para Eliminación de imperfecciones en la parte exterior | SDMX80-R□□/SEGW54-R□□<br>SNMG150708-R□□/SNMN1207(SNU452)-□□R<br>SNMN1507(SNU552)-□□R/SOET1906-254<br>SEGX2509-R□□ | Especial |
|                   | Para Eliminación de imperfecciones en la parte interior | AR□□(AC)/SF□□R-□□   |          |



**Cortador de chaflán**

- Herramienta para maquinado de chaflán en la cara de la tubería
- El diseño del angulo del chaflán es personalizado segun los requerimirtos del cliente
- Costo efectivo: Insertos cuadrados y triangulares de doble lado, que provee 8~6 filos respectivos efectivos de corte
- Grado: NCM325, PC3500

Rodamientos

➤ Para careado y trabajo exterior

Para Careado

Inserto: SRGP R/L



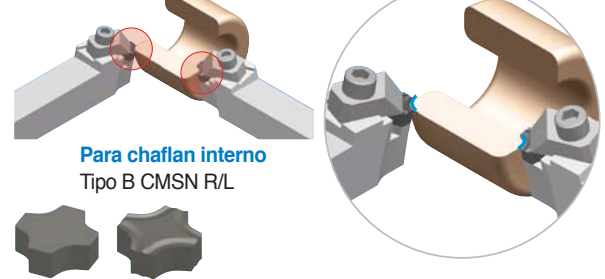
For external working  
Inserto: SRGP R/L E

- Para aplicaciones de trabajo interno, externo y careado

➤ Para Interior y R-chaflan externo

Para chaflan externo

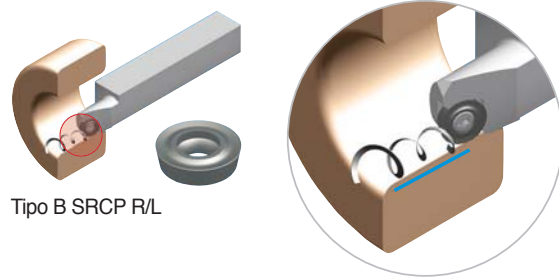
Tipo F CMSN R/L



Para chaflan interno  
Tipo B CMSN R/L

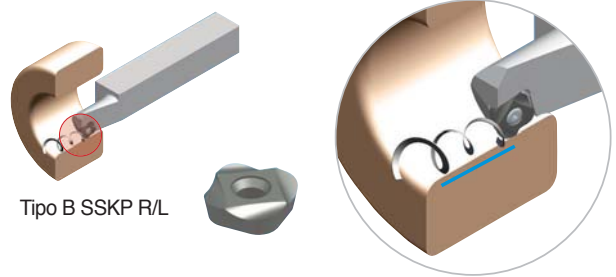
- Inserto de 8 filos
- Inserto de forma R realiza corte en la esquina tanto interno como externo

➤ Parta Trabajo Interno



Tipo B SRCP R/L

- Aplicable sobre Ø12

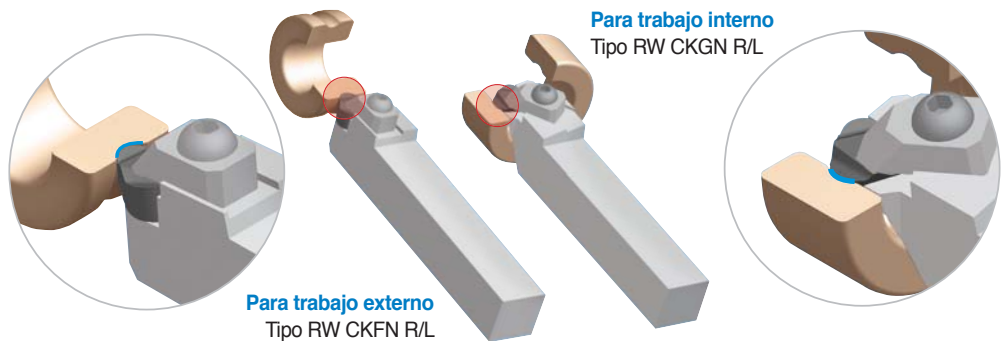


Tipo B SSKP R/L

- Aplicable sobre Ø11.5 con inserto de 4 filos para trabajo lento e interno

➤ Para Vias de Rodamiento

- Para vías de rodamiento internas y externas
- Inserto con 3 filos de corte
- Es capaz de personalizarse

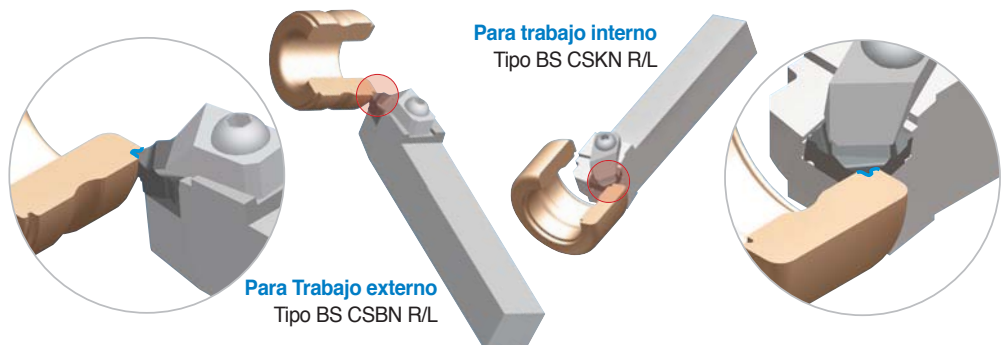
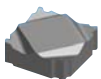


Para trabajo externo  
Tipo RW CKFN R/L

Para trabajo interno  
Tipo RW CKGN R/L

➤ Para Cubiertas

- Para proteger de trabajo en el rodamiento interno y externo
- Inserto con 3 filos de corte
- Es capaz de personalizarse



Para Trabajo externo  
Tipo BS CSBN R/L

Para trabajo interno  
Tipo BS CSKN R/L

## Generación de energía (Eje de generación de energía eolica)

### ➤ Rompeviruta VH



- Buen control de viruta en maquinado pesado
- Excelente rendimiento para el maquinado de bordes
- Recomendado para corte continuo
- Tipo SNMM/CNMM

### ➤ Rompeviruta VT



- Rompevirutas Resistentes lo de corte para aplicaciones de alto avance y profundidad de corte
- El rompevirutas proporciona excelente resistencia al impacto
- Tipo SNMM/CNMM



### ➤ TM (Roscado milimetrico)



- Herramienta de roscado milimetrico
- Varios tipos de holder e insertos (standard, largo, conico)
- Diametro del tornillo: Ø9~Ø46mm

### ➤ H Endmill



#### Endmill para mecanizado de acero de alto endurecimiento. a altas velocidades

- Nuevo grado (PC303S, PC310U), ultra fino Sustrato y garantía de recubrimiento AlTiSiN. excelente resistencia al desgaste
- Tratamiento de filo especial, filo especial. El diseño fue aplicado por menos astillado y más largo. herramienta de vida

### ➤ RCMX



- Alta calidad en maquinado
- Inserto rígido que provee una excelente superficie en el acabado, prolongando así la vida de la herramienta
- Tipo RCMX

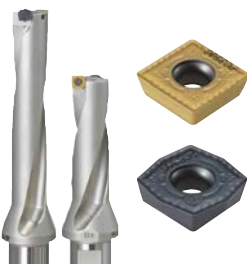


### ➤ Vulcan Drills (VZD)



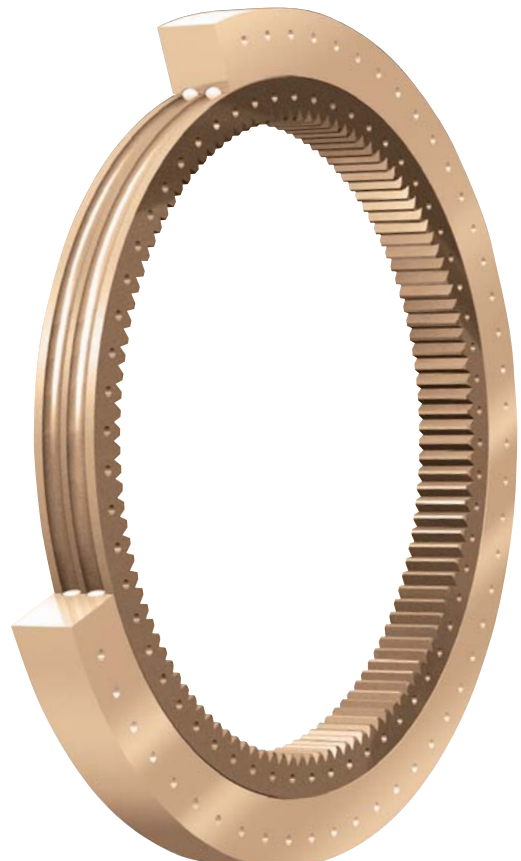
- Cuerpo rígido para alto avance y mecanizado de precisión.
- Mejor evacuación de viruta de rompevirutas mejorado
- Aplicable para el taladrado bajo mal corte. condiciones

### ➤ King Drill



#### Diseño óptimo de broca indexable

- La forma de la broca y el rompeviruta han sido optimizados en la posición de los insertos central y periférico para un mejor control de viruta y acabado de superficie
- Grados, optimizados en la posición de los insertos central y periférico con el fin de maximizar la vida de la herramienta de corte
- Grado: PC3500, PC5300



## Industria Aeronautica (Motor/Turbina)

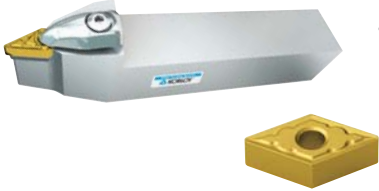
### TPDB



#### Rendimiento mejorado en la broca indexable

- Alto rendimiento de la broca a alta velocidad y con alto avance
- Broca indexable avanzada la cual ofrece orificios precisos con excelente acabado

### Torneado ISO



- Disponible para personalizar los elementos de su conjunto y especial para la forma complicada y varios



### Bar de Interior



#### Torneado interno

- Barra interior ISO para el mecanizado interior



**Rich Mill**



- Incrementa el número de filos y excelente vida de la herramienta debido a los 8 filos del inserto
- Suave corte con baja carga de corte debido a la geometría única y al alto ángulo de incidencia del inserto, esta combinación proporciona un excelente vida de la herramienta

**MSD**



**Larga vida de la herramienta debido a su recubrimiento**

- Buen control de viruta
- Disminución de astillamiento y aumento de la capacidad de corte, debido a la forma aerodinámica
- Resistencia al impacto incrementada debido al recubrimiento sub-micron de PVD K Black

**Laser Mill**



**Endmill indexable multifuncional**

- Grados extremadamente duros que proveen una larga vida a la herramienta
- Fácil y simple sistema de sujeción usando solo un tornillo
- Excelente calidad para acabado fino debido a su precisión



**H Endmill**



**Endmill para mecanizado de acero de alto endurecimiento a altas velocidades**

- Nuevo grado (PC303S, PC310U): sustrato ultra fino y El revestimiento AlTiSiN garantiza una excelente resistencia al desgaste.
- Tratamiento de filo especial: diseño de filo de corte especial. Aplicado por menos astillado y mayor vida útil de la herramienta.

**Industria Aeronautica (tren de aterrizaje/Accesorios)**

**HRMDouble**



**Alta eficiencia y costo efectivo utilizando el inserto de doble filo**

- Ahorro efectivo en costo-inserto al utilizar insertos con 6 filos de corte
- Corte liso utilizando un alto angulo de incidencia en el filo del inserto



**MGT**



**Para Ranurado, Torneado, Perfilado, Tronzado**

- Herramienta de ranurado multifuncional debido a la variedad de maquinados que realiza



**Pro-X Mill**



**Herramienta Fresado para alta velocidad en Aluminio**

- El sistema único de montaje del inserto proporciona una sujeción firme del inserto
- La superficie del espejo y el alto ángulo de inclinación del inserto proporcionan una superficie mecanizada excelente al reducir la carga de corte y filo de adicción
- Grado: H01

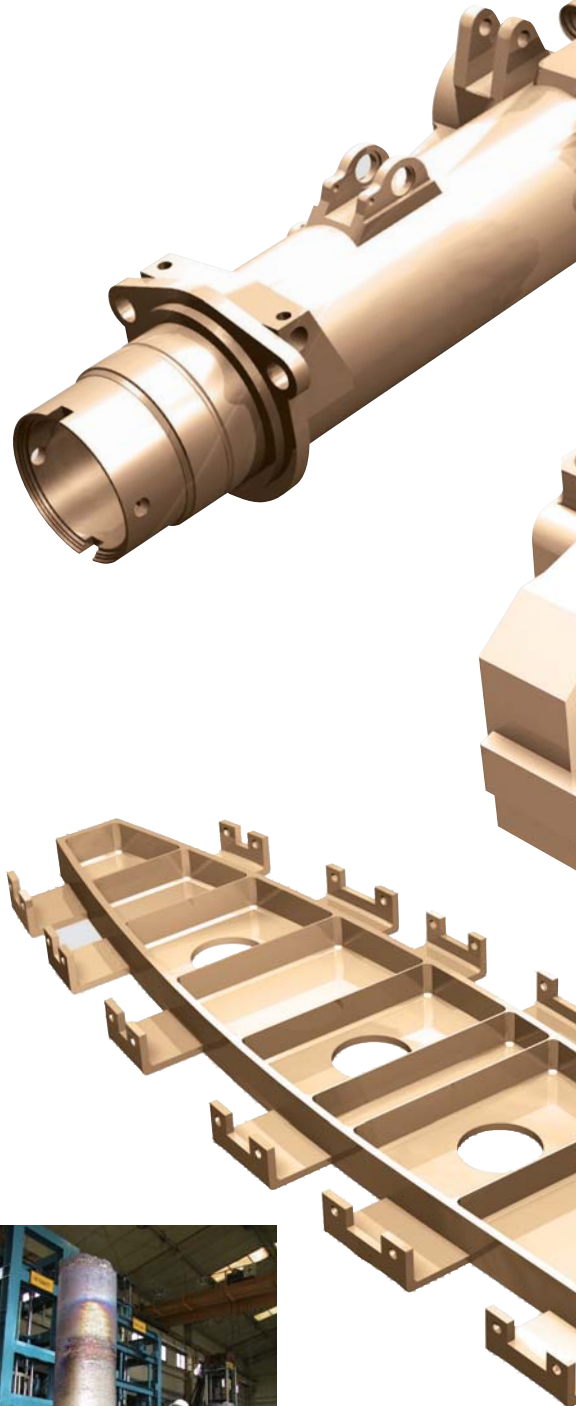


**SSEA**

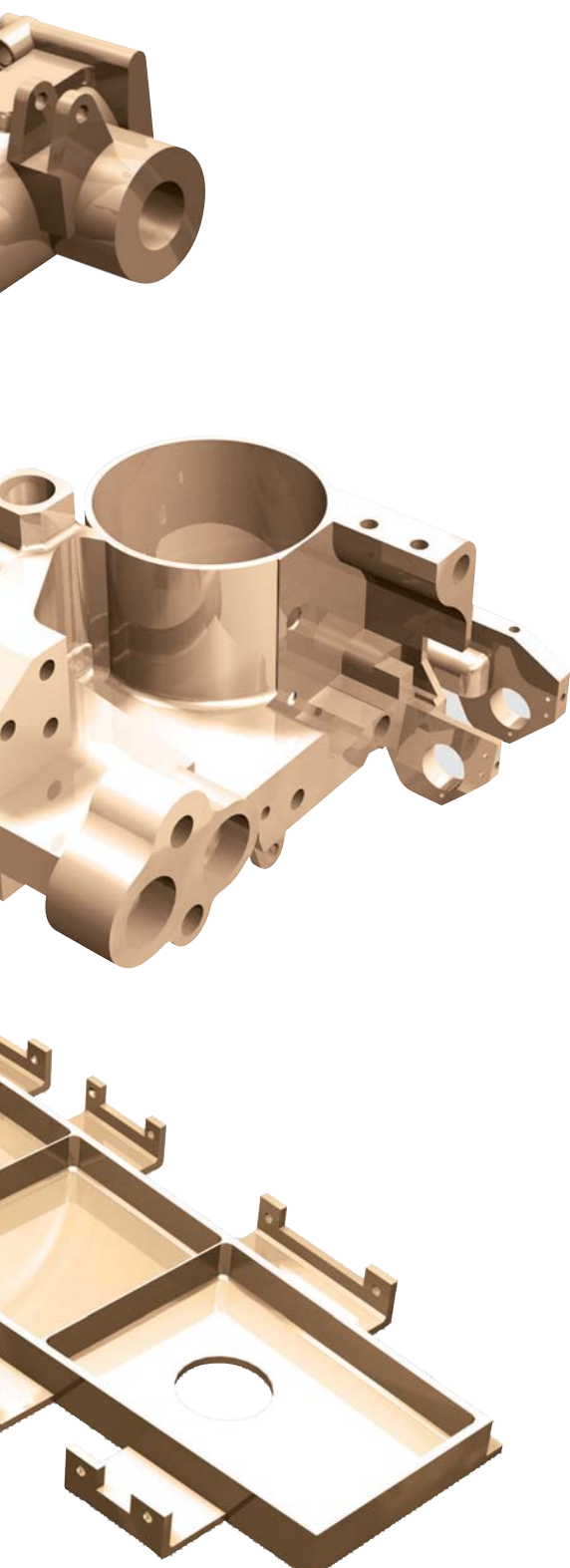


**Endmill de carburo sólido para el maquinado de aluminio**

- Endmill de geometría y diseño avanzada que evita la adherencia de material al filo de corte
- Superficie de maquinado superior
- Endmill con recubrimiento DLC esta disponible



Titanio  
Imagen proveida por: KPC Inc

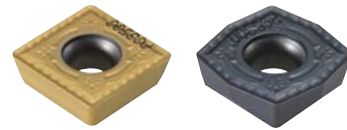


### King Drill



#### Diseño óptimo de broca indexable

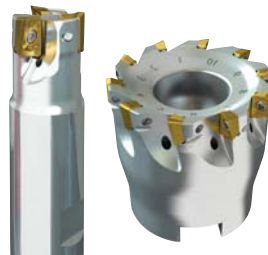
- La forma de la broca y el rompeviruta han sido optimizados en la posición de los insertos central y periférico para un mejor control de viruta y acabado de superficie
- Grados, optimizados en la posición de los insertos central y periférico con el fin de maximizar la vida de la herramienta de corte
- Grado: PC3500, PC5300



### MLD (Mach Long Drill)

- Perforación directa sin operación separada(perforación de paso) sobre 20 x D
- Mayor espacio a lo largo de la flauta en la broca ofrece un control e caz de viruta
- El diseño especial para el cuerpo rígido proporciona perforación lisa sin flexión de perforación

### Alpha Mill



#### Herramienta de fresado multifuncional

- Amplia cobertura de la operación de fresado debido a su variedad de cortadores e insertos
- El diseño de rompevirutas tridimensional proporciona corte suave



### Fresas enterizas cementadas



- Ángulo espiral positivo (más de 40 grados) capaz de obtener un buen corte
- Fresado de alta velocidad disponible debido a que reduce la temperatura de trabajo
- Se espera una larga vida útil de la herramienta aplicando material de carburo endurecido
- Herramienta soldada económica debido al reabastecimiento de 2 o 3 veces disponible

## Cuchillas

### Aplicación

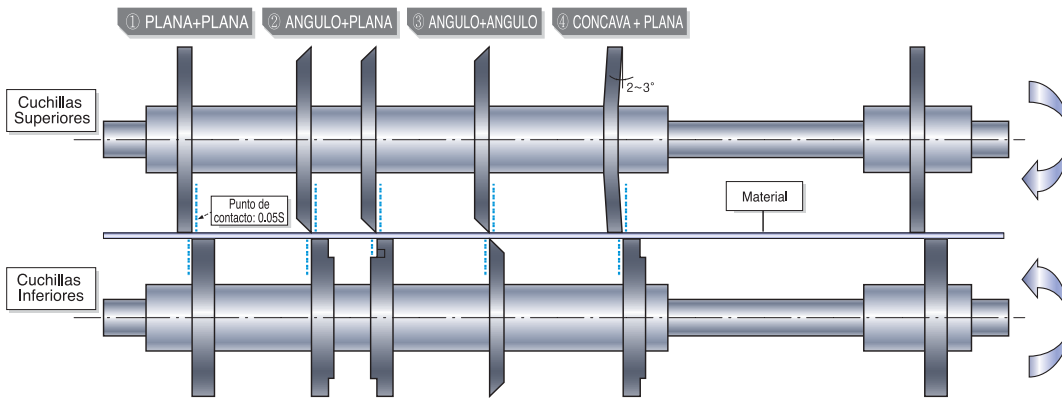
- Para cinta de video/Para cinta de audio
- Para cinta magnetica/Para placa de laton, Baterias moviles

### Selección de Grados

- Cuchilla superior: Espesor:  $\pm 0.01 \sim 0.02 \text{mm}$
- Cuchilla inferior: Espesor:  $\pm 0.001 \text{mm}$  / Plano: menor  $0.0005 \text{mm}$   
Superficie pulida, rugosidad: menor  $0.05 \text{S}$



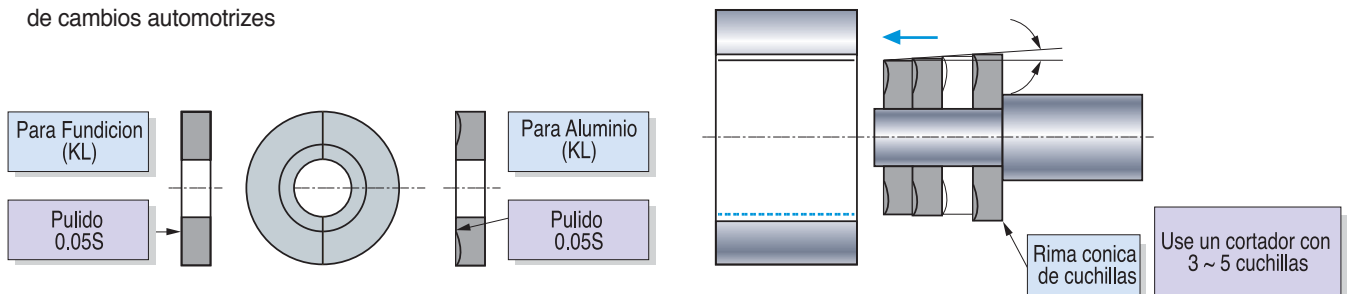
### Ej. de Maquinado



## Rima de Cuchillas (Rectificadoras)

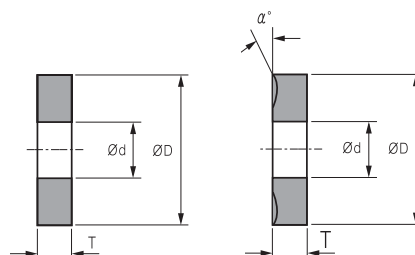
### Aplicación

- Los cortadores brochas (Rectificadoras) se utilizan para el maquinado interior de cojinetes en cajas de cambios automotrices



### Orden

- Codigo para hierro forjado: KL  $\text{Ød} \times \text{ØD} \times \text{T}$
- Codigo para Aluminio: AL  $\text{Ød} \times \text{ØD} \times \text{T}$   
: AL  $\text{Ød} \times \text{ØD} \times \text{T} \times \alpha^\circ$   
(Si no se menciona ningun angulo,  $\alpha = 30^\circ$ )





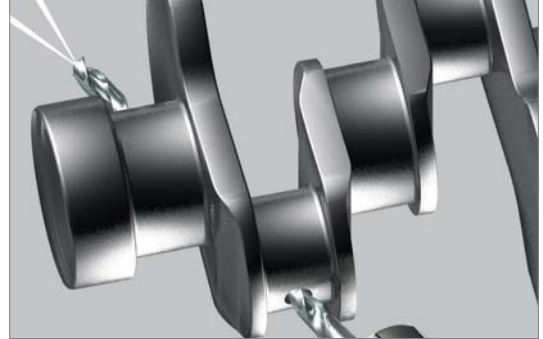
**Ejemplo de herramienta de motor de automóvil (Cigüeñal Shaft)**

**Perforación de petróleo**



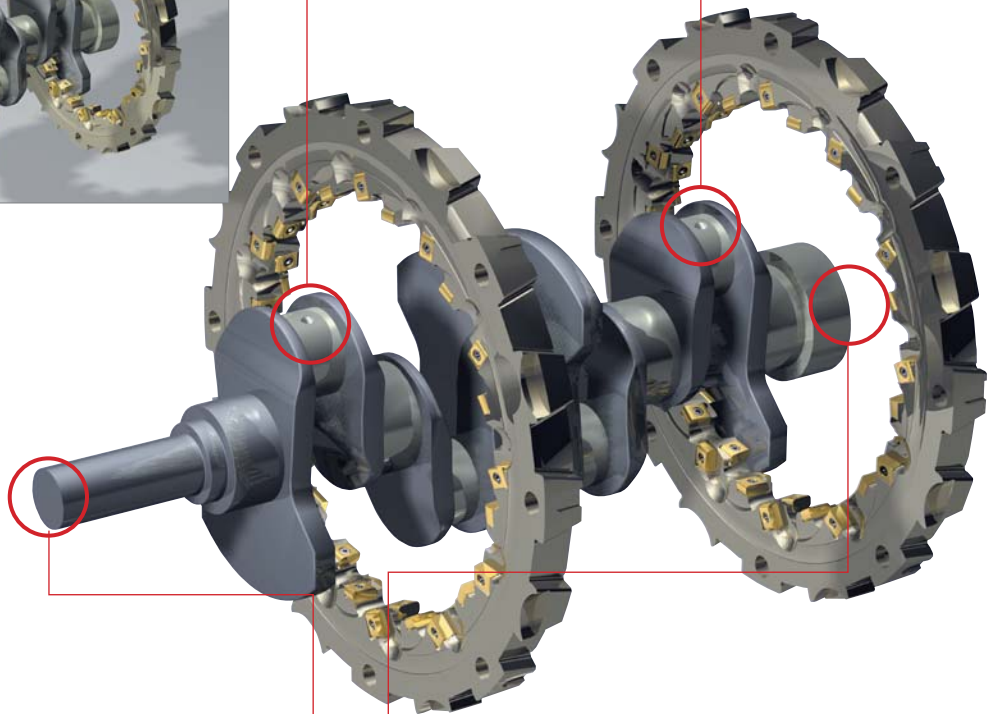
Estructura de Taper Spline  
(Rigidez mejorada por el área de contacto aumentado)

**Linea de Lubricacion - Mach Long Drill (MLD)**

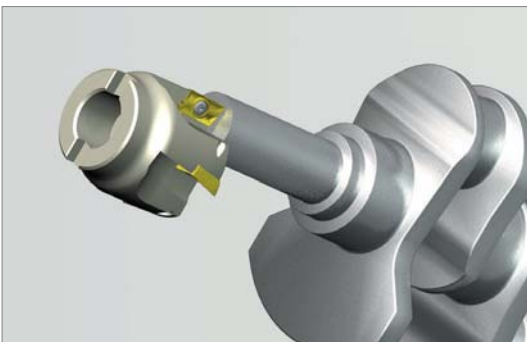


- Mecanizado sin operación de avance de paso para el taladro de agujero profundo como 20D
- El rendimiento óptimo con el sistema MQL

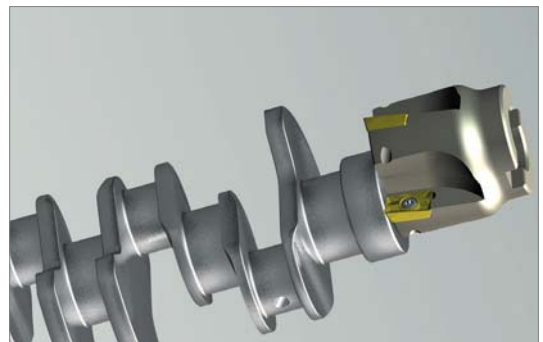
**Cortador del Cigüeñal (Interno y Externo)**



**Extremo posterior - Alpha Mill**



**Brida final - Alpha Mill**



Ej de Maquinado (Portamasas Sist. de Frenos)

Barras para Interior



Mach Drill



Barras para Interior



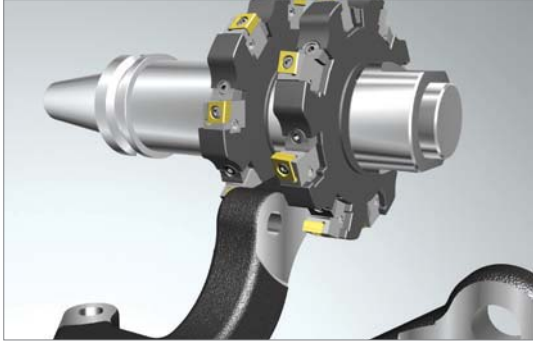
Cortador Lateral (SPB)



Future Mill (FMP)



Cortador Lateral (Tipo Tangencial)



Cortador Lateral (tipo Tangencial)



Future Mill (FMP)



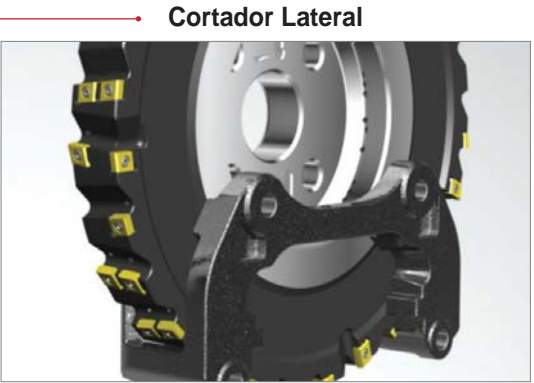
Broca Paso



Barrenado (King Drill)

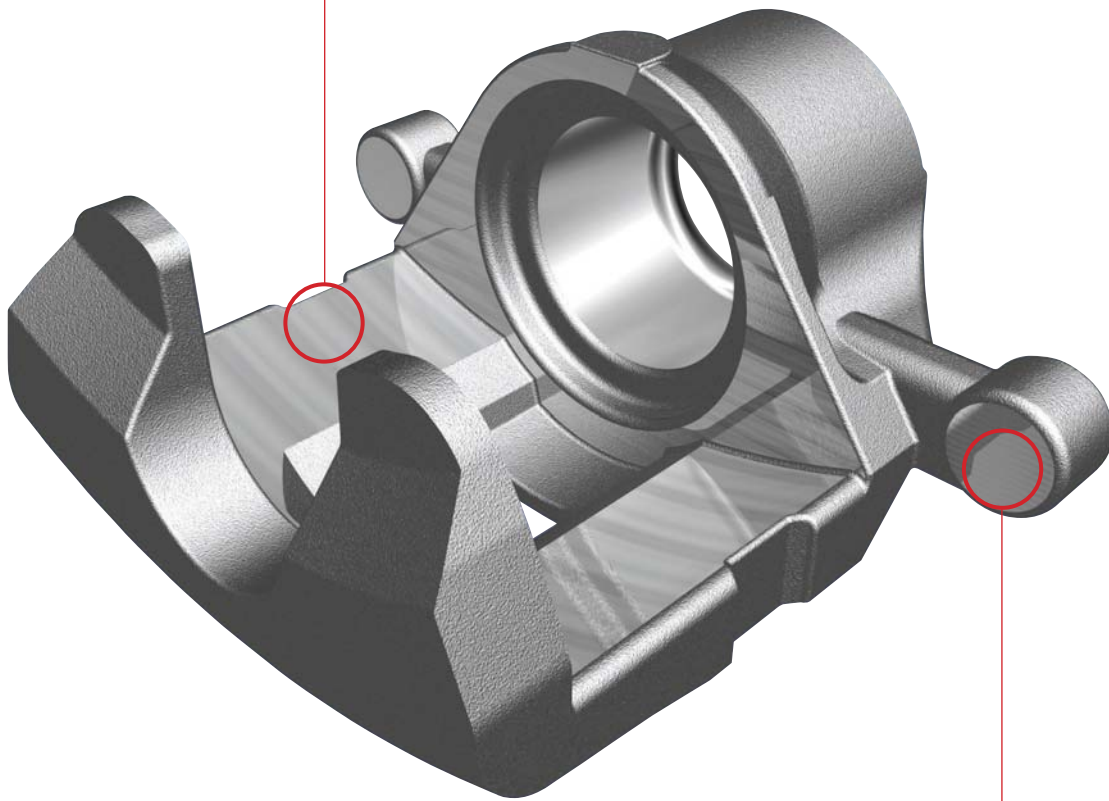
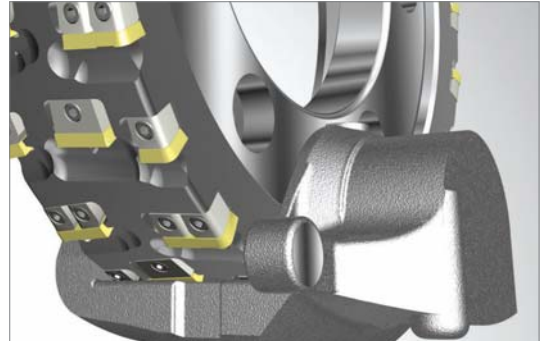


Ej. Maquinado (Portabalatas)

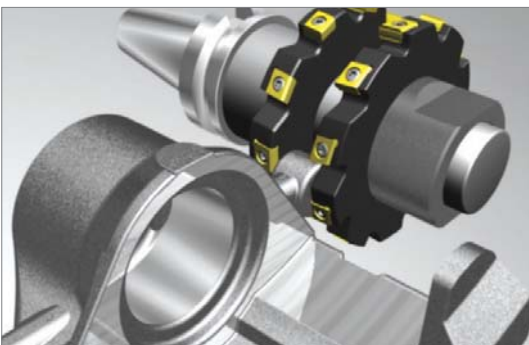


Ej. de Maquinado (Calipers)

Cortador lateral



Cortador lateral

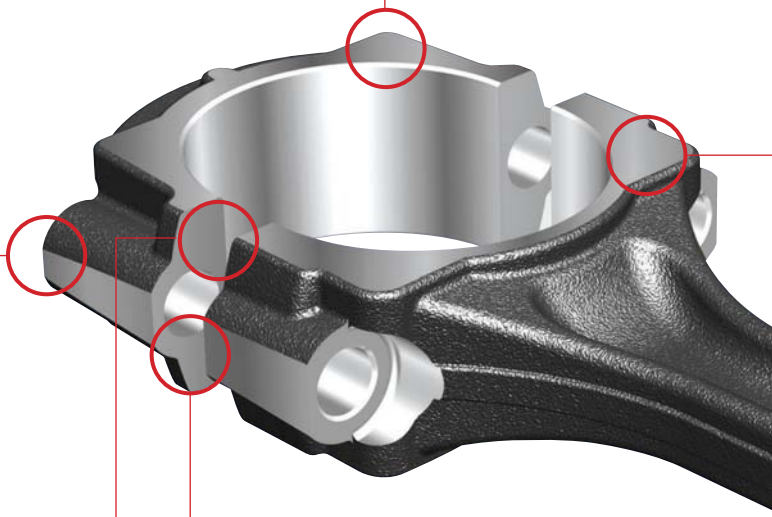


Ej. Maquinado Automotriz (Bielas)

Barrenado



Rich Mill (RM4)



Cortador Lateral



Cortador Lateral



Rich Mill (RM4)



Rich Mill (RM8)



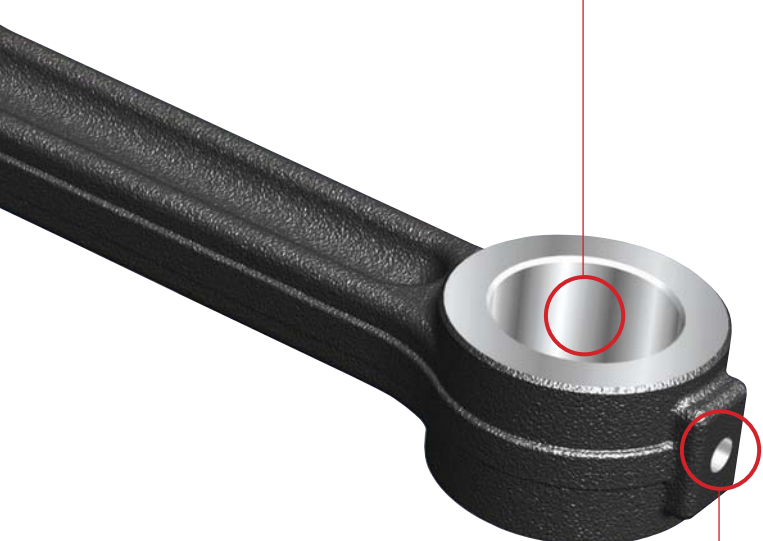
Barrenado (King Drill)



Broca Paso

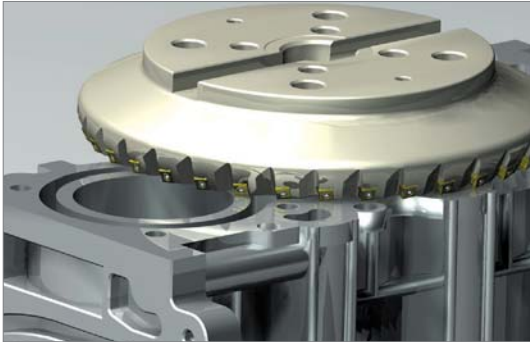


Barrenado



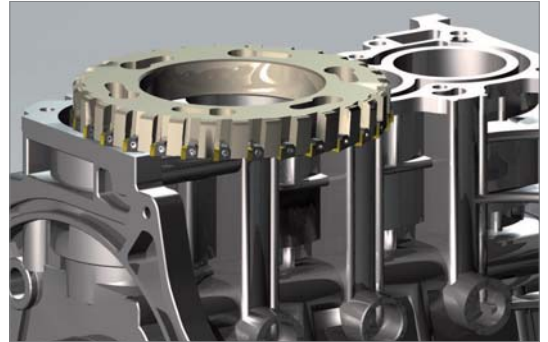
**Ej. Maquinado Automotriz (Monoblock)**

**Cara Superior (Desbaste)**



• Insertos con 8 filos de corte

**Cara Superior (Acabado) - Fresas de gran avance**



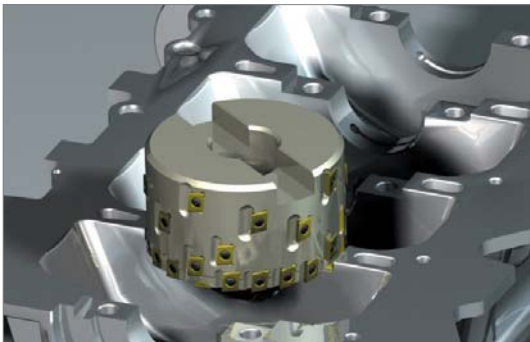
**Sellos - Alpha Mill**



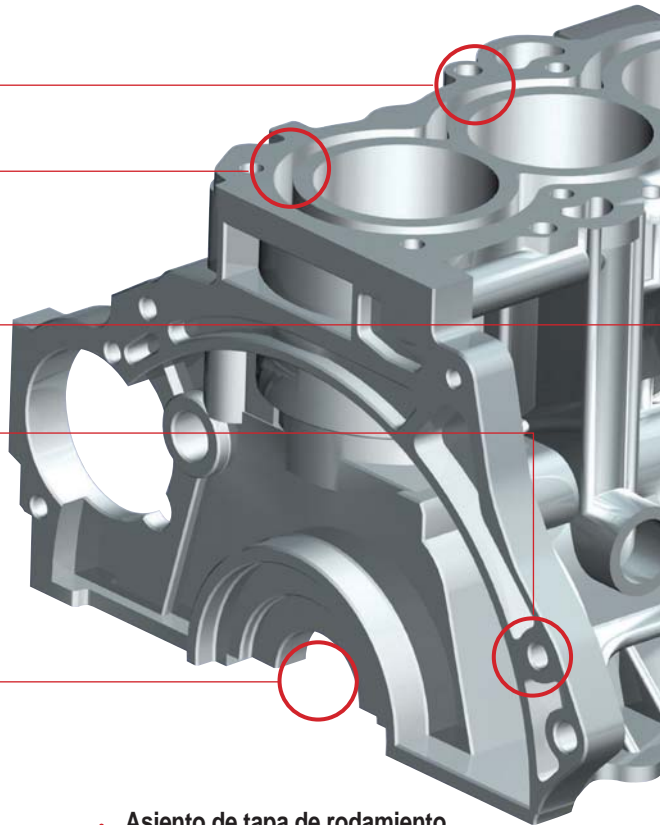
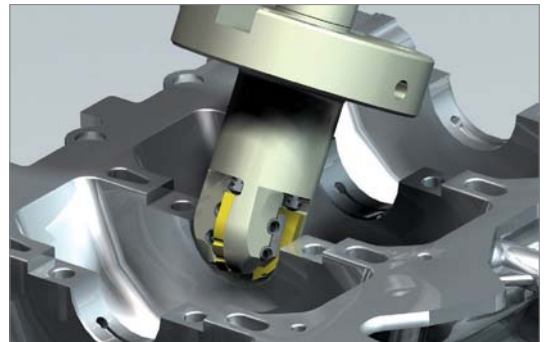
**Rima**



**Asiento de tapa de rodamiento - Forma de cortador**



**Asiento de tapa de rodamiento - Forma de cortador**

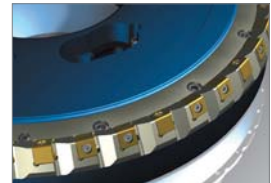
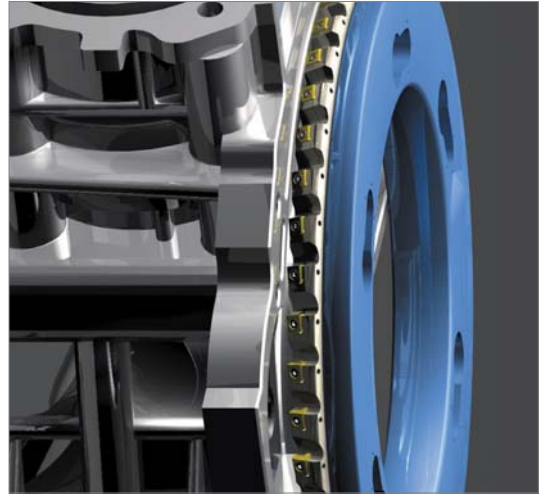




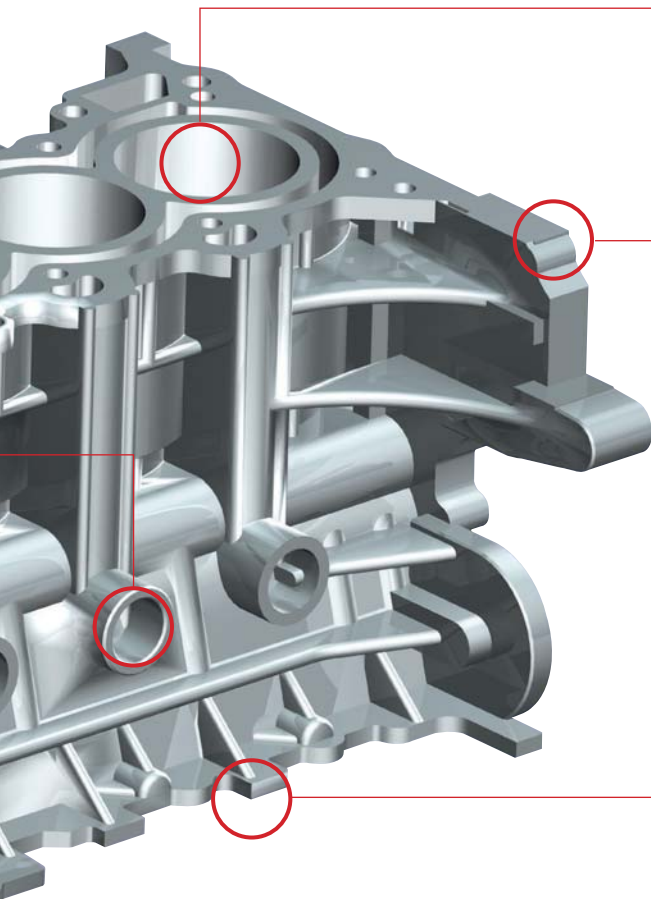
**Perforación de cilindro(Desbaste)**  
- Cortador de barrenar



**Fresado trasero y delantero**  
- cube couple mill



- Cortador de alto avance hecho de Aluminio
- Debido al peso ligero es Fácil de dirigir y evitar accidentes



**Corte base de cojinetes -**  
**Cortador de Cuadrilla**

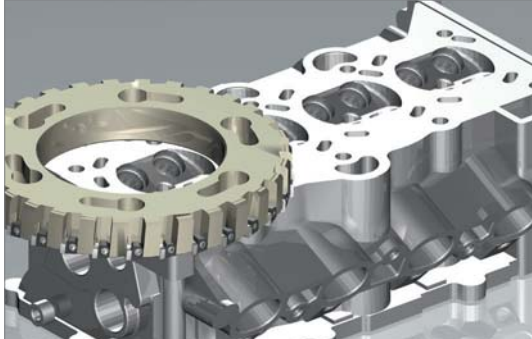


**Corte base de cojinetes -**  
**Cortador de Cuadrilla**



Ej. Maquinado (Cabeza)

**Cara Superior (Desbaste y Acabado)**  
- Fresas de gran avance



• Insertos de Carburo, Insertos PCV

**Cara Superior (Desbaste y Acabado)**  
- Aero Mill



• Debido al peso ligero del cortador 50% menor en comparación con el de acero, tiene un funcionamiento excelente de corte a altas velocidades de maquinado

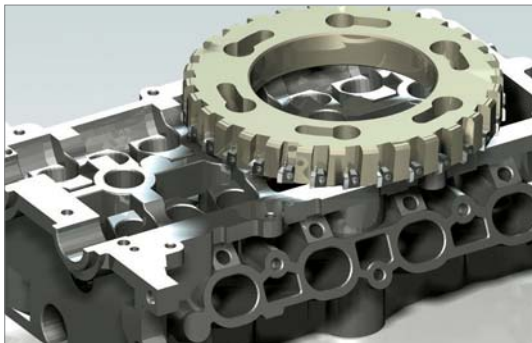
**Rima de Paso**



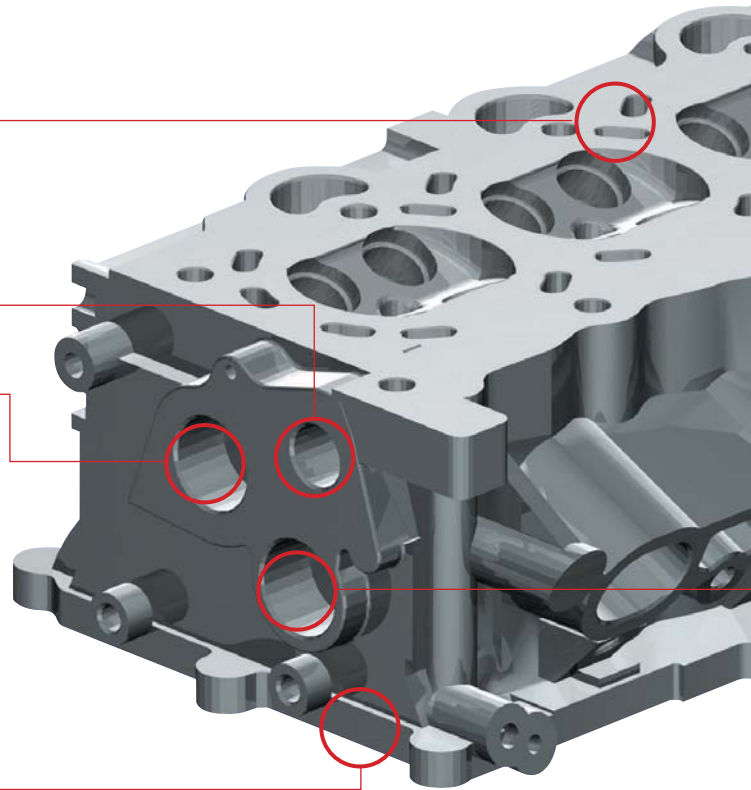
**Rima Recta**



**Cara Inferior (Desbaste y Acabado)**  
- Fresas de gran avance



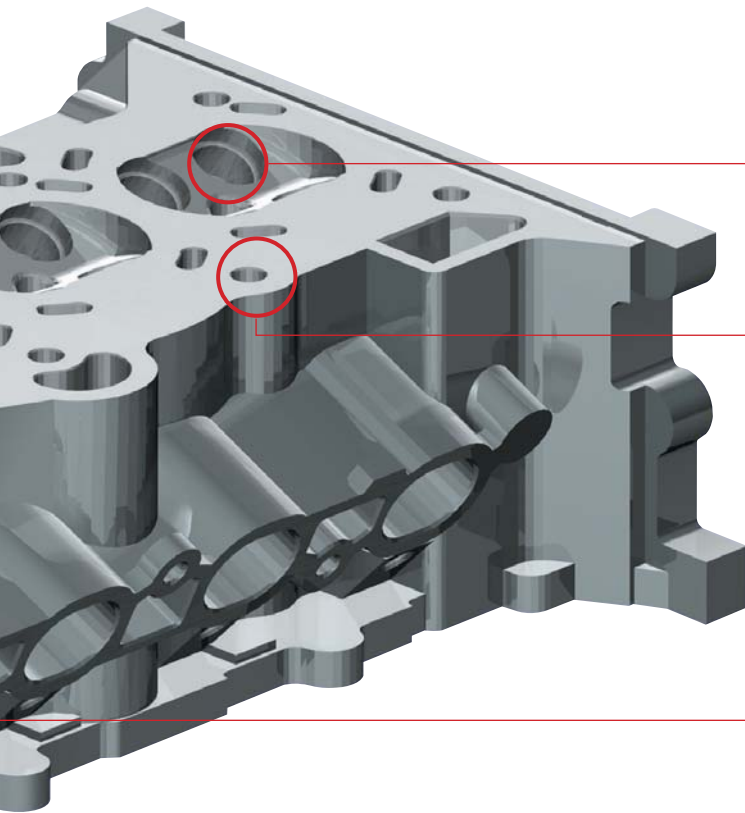
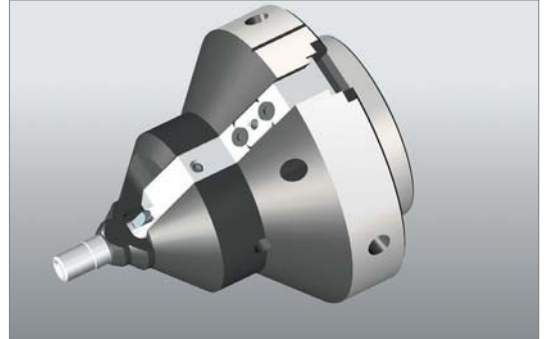
• Insertos de Carburo, Insertos PCV



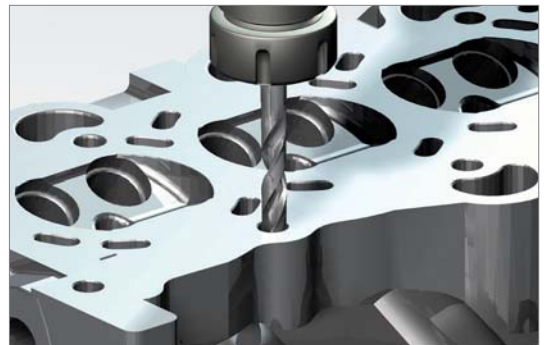
**Boreador Asiento de Valvulas**



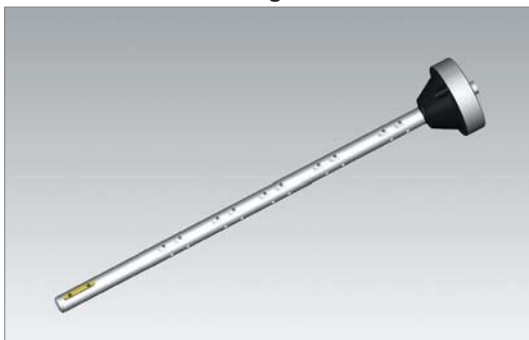
**Asiento de válvula - Apolo cutter**



**Cara Superior (Barrenado) - Mach Drill**



**Asiento de Cojinetes arbol de levas - Boring Lineal**



**Camara de Arbol de levas - Rima de Alta Velocidad**



- Trabaja velocidades estables sin vibraciones

- Disponible para mecanizado de alta velocidad
- Excelente acabado superficial rugosidad



## Partes

K02 Placa de apoyo  
K03 Cartucho  
K03 Rompe viruta  
K03 Cubierta rompeviruta  
K03 Brida  
K04 Perno refrigerante  
K04 Llave perno  
K04 Palanca

## Partes

K05 Cartucho  
K05 Tuerca  
K05 Perno  
K05 Tornillo  
K06 Perno placa  
K07 Muelle  
K07 Llave  
K07 Candado  
K07 Washer  
K07 Stopper  
K07 Boquilla

**Partes**

**K**

## Placa de apoyo

| Geometria | Codigo | Dimensiones |      |      |       |        |
|-----------|--------|-------------|------|------|-------|--------|
|           |        | a           | b    | c    | d     | angulo |
|           | SC32   | 8.5         | 3.18 |      | 4.9   |        |
|           | SC32N  | 8.5         | 3.18 |      | 4.88  |        |
|           | SC42   | 12.5        | 3.18 |      | 6.9   |        |
|           | SC42N  | 11.6        | 3.18 |      | 6.5   |        |
|           | SC53   | 15.7        | 4.76 |      | 7.9   |        |
|           | SC53N  | 14.6        | 4.76 |      | 8.11  |        |
|           | SC63   | 18.85       | 4.76 |      | 10    |        |
|           | SC63N  | 17.8        | 4.76 |      | 9.6   |        |
|           | SC83   | 24.4        | 4.76 |      | 12.8  |        |
|           | SC84N  | 24.2        | 6.35 |      | 13    |        |
| SC42B     | 12.5   | 3.18        |      | 6.9  |       |        |
|           | SC42CC | 12.5        | 3.18 |      | 3.5   |        |
|           | SC32D  | 9.27        | 3.18 |      | 6.48  |        |
|           | SC43D  | 12.45       | 4.76 |      | 7.34  |        |
|           | SC53D  | 15.62       | 4.76 |      | 9.65  |        |
|           | SC63D  | 18.8        | 4.76 |      | 11.25 |        |
|           | SC84D  | 25.08       | 6.35 |      | 14.85 |        |
|           | SC42S  | 11.5        | 3.18 |      | 6.4   |        |
|           | SC32S  | 8.3         | 3.18 |      | 5.4   |        |
|           | SC63V  | 18.35       | 4.76 |      | 5.5   |        |
|           | SC83V  | 25.3        | 4.76 |      | 6.55  |        |
| SC84V     | 25.3   | 6.35        |      | 6.35 |       |        |
| SC32V     | 9.12   | 3.18        |      | 3.4  |       |        |
| SC42V     | 12.6   | 3.18        |      | 4.5  |       |        |
| SC44V     | 12.6   | 6.35        |      | 4.5  |       |        |
| SC54V     | 15.75  | 6.35        |      | 5.5  |       |        |
| SS32V     | 9.12   | 3.18        |      | 3.4  |       |        |
| SS42V     | 12.6   | 3.18        |      | 4.5  |       |        |
| SS54V     | 15.75  | 6.35        |      | 5.5  |       |        |
| SS64V     | 18.9   | 6.35        |      | 5.5  |       |        |
|           | SD317  | 9.35        | 2.7  |      | 5.2   |        |
|           | SD32N  | 8.5         | 3.18 |      | 4.88  |        |
|           | SD42   | 12.5        | 3.18 |      | 6.9   |        |
|           | SD42N  | 11.6        | 3.18 |      | 6.5   |        |
|           | SD43N  | 11.6        | 4.75 |      | 6.5   |        |
|           | SD32D  | 9.2         | 3.18 |      | 5.8   |        |
|           | SD43D  | 12.45       | 4.76 |      | 7.34  |        |
|           | SD32S  | 8.5         | 3.18 |      | 5.4   |        |
|           | SD42S  | 11.5        | 3.18 |      | 6.4   |        |
|           | SD32V  | 9.12        | 3.18 |      | 3.4   |        |
|           | SD43V  | 12.6        | 4.76 |      | 4.5   |        |
| SD44V     | 12.6   | 6.35        |      | 4.5  |       |        |

| Geometria | Codigo  | Dimensiones |      |      |       |        |
|-----------|---------|-------------|------|------|-------|--------|
|           |         | a           | b    | c    | d     | angulo |
|           | SES33C  | 9.1         | 12   | 4.76 | 3.5   |        |
|           | SK33C   | 9.33        | 14.7 | 4.8  | 3.5   |        |
|           | SK33CL  | 9.33        | 14.7 | 4.8  | 3.5   |        |
|           | SR10    | 8.4         | 3.18 |      | 4.7   |        |
|           | SR12    | 10          | 3.18 |      | 4.7   |        |
|           | SR16    | 13.55       | 4.76 |      | 6.9   |        |
|           | SR20    | 17.1        | 4.85 |      | 7.9   |        |
|           | SR25    | 22          | 6.35 |      | 9.6   |        |
|           | SR32    | 27.8        | 6.35 |      | 13    |        |
|           | SR42CC  | 12.575      | 3.18 |      | 3.5   |        |
|           | SR10S   | 8.8         | 3.18 |      | 5.4   |        |
| SR12S     | 10.55   | 3.18        |      | 5.4  |       |        |
|           | SS32    | 8.5         | 3.18 |      | 4.9   |        |
|           | SS32N   | 8.5         | 3.18 |      | 4.88  |        |
|           | SS42    | 12.5        | 3.18 |      | 6.9   |        |
|           | SS42B   | 12.5        | 3.18 |      | 6.9   |        |
|           | SS42N   | 11.6        | 3.18 |      | 6.5   |        |
|           | SS53    | 15.7        | 4.76 |      | 7.9   |        |
|           | SS53N   | 14.6        | 4.76 |      | 8.11  |        |
|           | SS63    | 18.85       | 4.76 |      | 10    |        |
|           | SS63N   | 17.8        | 4.76 |      | 9.6   |        |
|           | SS84    | 24.4        | 6.35 |      | 12.8  |        |
|           | SS84N   | 24.2        | 6.35 |      | 13    |        |
|           | SS42CC  | 12.5        | 3.18 |      | 3.5   |        |
|           | SS32CC  | 9.3         | 3.18 |      | 3.5   |        |
|           | SS32D   | 9.27        | 3.18 |      | 5.77  |        |
|           | SS43D   | 12.45       | 4.76 |      | 7.34  |        |
|           | SS53D   | 15.62       | 4.76 |      | 9.65  |        |
|           | SS63D   | 18.8        | 4.76 |      | 11.25 |        |
|           | SS84D   | 25.15       | 6.35 |      | 14.43 |        |
|           | SS32S   | 8.3         | 3.18 |      | 5.4   |        |
|           | SS42S   | 11.5        | 3.18 |      | 6.4   |        |
|           | SS42SAF | 11.2        | 3    |      | 5.5   |        |
|           | ST317   | 9.35        | 2.7  |      | 5     |        |
|           | ST317B  | 9.35        | 2.7  |      | 5     |        |
|           | ST317N  | 8.5         | 2.7  |      | 4.88  |        |
|           | ST42    | 12.5        | 3.18 |      | 6.9   |        |
|           | ST42N   | 11.6        | 3.18 |      | 6.5   |        |
|           | ST53    | 15.7        | 4.76 |      | 7.9   |        |



**Placa de apoyo**

| Geometria | Codigo        | Dimensiones |      |   |       |        |
|-----------|---------------|-------------|------|---|-------|--------|
|           |               | a           | b    | c | d     | angulo |
|           | <b>ST32CC</b> | 9.35        | 3.18 |   | 3.5   |        |
|           | <b>ST32C1</b> | 9.13        | 3.18 |   | 4.95  |        |
|           | <b>ST42C1</b> | 12.3        | 3.18 |   | 4.95  |        |
|           | <b>ST32D</b>  | 9.35        | 3.18 |   | 5.77  |        |
|           | <b>ST43D</b>  | 12.52       | 4.76 |   | 7.34  |        |
|           | <b>ST53D</b>  | 15.7        | 4.76 |   | 9.65  |        |
|           | <b>ST63D</b>  | 18.87       | 4.76 |   | 11.25 |        |
|           | <b>ST32M</b>  | 8.7         | 3.18 |   | 4.7   |        |
|           | <b>ST43M</b>  | 12.5        | 4.76 |   | 6.3   |        |
|           | <b>ST32S</b>  | 8.5         | 3.18 |   | 5.4   |        |
|           | <b>ST32V</b>  | 9.12        | 3.18 |   | 3.4   |        |
|           | <b>ST44V</b>  | 12.6        | 6.35 |   | 4.5   |        |
|           | <b>SV32D</b>  | 9.2         | 3.18 |   | 5.8   |        |
|           | <b>SV43D</b>  | 12.29       | 4.76 |   | 7.34  |        |
|           | <b>SV32D2</b> | 9.2         | 3.18 |   | 5.8   |        |
|           | <b>SV32S</b>  | 8.4         | 3.18 |   | 5.4   |        |
|           | <b>SW317</b>  | 9.35        | 2.7  |   | 5     |        |
|           | <b>SW317N</b> | 8.5         | 2.7  |   | 4.88  |        |
|           | <b>SW42</b>   | 12.5        | 3.18 |   | 6.9   |        |
|           | <b>SW42N</b>  | 11.6        | 3.18 |   | 6.5   |        |
|           | <b>SW32D</b>  | 9.25        | 3.18 |   | 5.8   |        |
|           | <b>SW43D</b>  | 12.45       | 4.76 |   | 7.34  |        |
|           | <b>SW53D</b>  | 15.62       | 4.76 |   | 9.65  |        |
|           | <b>SW63D</b>  | 18.8        | 4.76 |   | 11.25 |        |
|           | <b>SW84D</b>  | 24.89       | 6.35 |   | 14.43 |        |
|           | <b>SW43M</b>  | 12.5        | 4.76 |   | 6.2   |        |
|           | <b>SW32M</b>  | 8.52        | 3.18 |   | 5.2   |        |
|           | <b>SW32V</b>  | 9.12        | 3.18 |   | 3.4   |        |
|           | <b>SW44V</b>  | 12.6        | 6.35 |   | 4.5   |        |
|           | <b>SW54V</b>  | 15.75       | 4.76 |   | 5.5   |        |

**Cartucho**

| Geometria | Codigo          | Dimensiones |    |    |    |        |
|-----------|-----------------|-------------|----|----|----|--------|
|           |                 | a           | b  | c  | d  | angulo |
|           | <b>LAPDR-AJ</b> | M4x0.7      | 30 | 15 | 10 |        |

**Rompe viruta**

| Geometria | Codigo      | Dimensiones |     |    |   |        |
|-----------|-------------|-------------|-----|----|---|--------|
|           |             | a           | b   | c  | d | angulo |
|           | <b>CB20</b> | 8.5         | 3.4 | 20 |   |        |

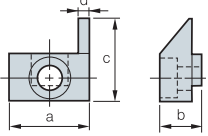
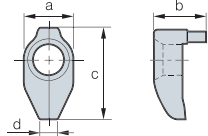
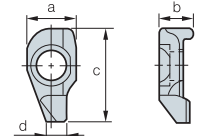
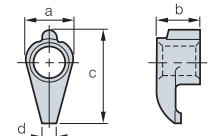
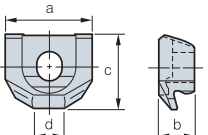
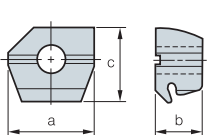
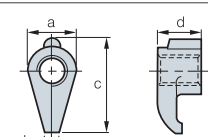
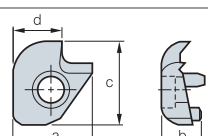
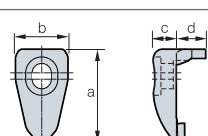
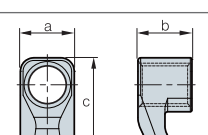
**Cuiverta rompeviruta**

| Geometria | Codigo              | Dimensiones |    |   |        |        |
|-----------|---------------------|-------------|----|---|--------|--------|
|           |                     | a           | b  | c | d      | angulo |
|           | <b>CFMP3R14R1-A</b> | 10.5        | 20 | 1 | (Ø4.3) |        |
|           | <b>CFMP3R-A</b>     | 8           | 18 | 1 | (Ø4.3) |        |
|           | <b>CFMP4R-A</b>     | 8           | 22 | 1 | (Ø4.3) |        |

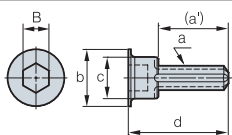
**Brida**

| Geometria | Codigo          | Dimensiones |      |       |      |        |
|-----------|-----------------|-------------|------|-------|------|--------|
|           |                 | a           | b    | c     | d    | angulo |
|           | <b>CA05R</b>    | 8.9         | 5.5  | 17.6  | 3.3  |        |
|           | <b>CA06R</b>    | 12          | 7.2  | 20.6  | 5.3  |        |
|           | <b>CH5R3</b>    | 7.85        | 7.2  | 14.8  | 3.1  |        |
|           | <b>CH6R4</b>    | 12.02       | 9    | 23.97 | 3.75 |        |
|           | <b>CBH4.5R1</b> | 8           | 5.74 | 17.7  | 4    |        |
|           | <b>CBH4.5R2</b> | 9.5         | 6.4  | 18    | 4    |        |
|           | <b>CBH5R1</b>   | 10          | 7.8  | 21.3  | 5    |        |
|           | <b>CBH6R1</b>   | 12          | 9.3  | 26    | 6    |        |
|           | <b>CDH6N</b>    | 9.5         | 10   | 18.6  | 6.1  |        |
|           | <b>CDH7N</b>    | 7.9         | 11.4 | 14.7  | 4.7  |        |
|           | <b>CDH8N</b>    | 10.9        | 16.9 | 22.4  | 6.1  |        |
|           | <b>CDH8N1</b>   | 10.9        | 16.9 | 19.1  | 6.1  |        |
|           | <b>CDH8N2</b>   | 10.9        | 16.9 | 25.4  | 6.1  |        |
|           | <b>CDH8N3</b>   | 12.5        | 19.8 | 25.4  | 9.2  |        |
|           | <b>CDS8N</b>    | 10.8        | 17   | 22.2  | 5    |        |
|           | <b>CGH5R1</b>   | 19.5        | 9.5  | 28.8  | 2.5  |        |
|           | <b>CGH5R2</b>   | 20.5        | 9.5  | 28.8  | 3.5  |        |
|           | <b>CGH5R3</b>   | 22.5        | 9.5  | 28.8  | 5.5  |        |

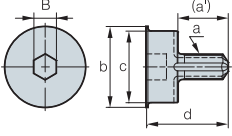
## Brida

| Geometria   | Codigo          | Dimensiones |      |       |       |        |
|---|-----------------|-------------|------|-------|-------|--------|
|   |                 | a           | b    | c     | d     | angulo |
|    | <b>CGH6R1</b>   | 22.3        | 11.9 | 23.2  | 2.5   |        |
|   | <b>CGH6R2</b>   | 23.2        | 11.9 | 23.2  | 3.4   |        |
|   | <b>CGH6R3</b>   | 24.0        | 11.9 | 23.2  | 4.2   |        |
|    | <b>CHH3.5R1</b> | 7.5         | 6.7  | 13    | 2.45  |        |
|   | <b>CHH4.5R1</b> | 7.9         | 7.85 | 14.1  | 2.54  |        |
|   | <b>CHH5.5R1</b> | 9.8         | 10   | 16.4  | 4     |        |
|    | <b>CH4R1</b>    | 7.4         | 5    | 14.1  | 3.1   |        |
|   | <b>CH5R1</b>    | 10.0        | 6.6  | 20.2  | 4.5   |        |
|    | <b>CH5R2</b>    | 6.85        | 7    | 13.8  | 2     |        |
|   | <b>CH6R2</b>    | 8.85        | 8.7  | 16.5  | 2     |        |
|   | <b>CH6R3</b>    | 11.8        | 10   | 23    | 4.2   |        |
|   | <b>CMH5R1</b>   | 18.5        | 7.9  | 16    | 6.26  |        |
|   | <b>CMH6R2</b>   | 20.0        | 11   | 17.5  | 13.8  |        |
|   | <b>CMH6R6</b>   | 18.5        | 7.9  | 16    | 6.26  |        |
|   | <b>CMH6R1</b>   | 24          | 8.5  | 16.5  | 8.28  |        |
|  | <b>CMH6R3</b>   | 20.0        | 11   | 17.51 |       |        |
|   | <b>CMH6L3</b>   | 20.0        | 11   | 17.51 |       |        |
|  | <b>CS5R1</b>    | 6.8         | 7    | 14.5  | 2     |        |
|   | <b>CS6R1</b>    | 8.8         | 8.5  | 18.1  | 2.7   |        |
|   | <b>CS8R1</b>    | 11.8        | 10   | 23    | 4.2   |        |
|  | <b>CTH6L1</b>   | 23.5        | 12   | 25.4  | 14.35 |        |
|   | <b>CTH6R1</b>   | 23.5        | 12   | 25.4  | 14.35 |        |
|   | <b>CTH6R2</b>   | 21.78       | 12.9 | 31.22 | 17.33 |        |
|  | <b>CVH3</b>     | 21          | 11   | 5.8   | 7.7   |        |
|   | <b>CVH3V</b>    | 29          | 14   | 7     | 8     |        |
|   | <b>CVH4</b>     | 25.5        | 14.5 | 6     | 7     |        |
|   | <b>CVH5</b>     | 30          | 17   | 7.5   | 9.5   |        |
|   | <b>CVH6</b>     | 33.5        | 18.5 | 8     | 10    |        |
|   |                 |             |      |       |       |        |
|  | <b>CXH8N</b>    | 10.1        | 10.0 | 17.5  | -     |        |

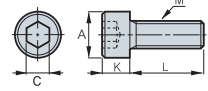
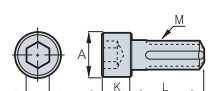
## Perno refrigerante

| Geometria   | Codigo               | Dimensiones |     |     |      |      |      |
|---|----------------------|-------------|-----|-----|------|------|------|
|   |                      | a           | b   | c   | d    | B(T) | á    |
|  | <b>CBA063-3IN/MM</b> | M10         | Ø25 | Ø16 | 37   | 8    | (27) |
|   | <b>CBA063-4IN/MM</b> | M10         | Ø25 | Ø16 | 42.5 | 8    | (27) |
|   | <b>CBA080-IN/MM</b>  | M12         | Ø28 | Ø18 | 45.5 | 10   | (32) |
|   | <b>CBP063-IN/MM</b>  | M10         | Ø22 | Ø16 | 38.6 | 8    | (27) |
|   | <b>CBP080-IN/MM</b>  | M12         | Ø25 | Ø18 | 48.6 | 10   | (32) |
|   |                      |             |     |     |      |      |      |

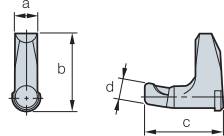
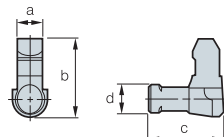
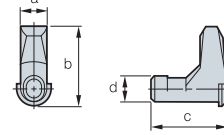
## Perno refrigerante

| Geometria  | Codigo                | Dimensiones |     |     |      |      |      |
|--|-----------------------|-------------|-----|-----|------|------|------|
|  |                       | a           | b   | c   | d    | B(T) | á    |
|  | <b>CBA100-IN/MM</b>   | M16         | Ø54 | Ø43 | 47   | 14   | (32) |
|  | <b>CBA100-IN-25.4</b> | M12         | Ø44 | Ø36 | 41.5 | 10   | (25) |
|  | <b>CBA125-IN</b>      | M20         | Ø65 | Ø54 | 56   | 17   | (38) |
|  | <b>CBA125-IN-25.4</b> | M12         | Ø44 | Ø36 | 43.5 | 10   | (25) |
|  | <b>CBA125-MM</b>      | M20         | Ø65 | Ø54 | 57   | 17   | (35) |
|  | <b>CBA160-IN</b>      | M24         | Ø83 | Ø73 | 56   | 19   | (38) |
|  | <b>CBA160-MM</b>      | M20         | Ø83 | Ø73 | 53   | 17   | (34) |
|  | <b>CBP100-IN</b>      | M16         | Ø50 | Ø43 | 48.6 | 14   | (32) |
|  | <b>CBP100-IN-25.4</b> | M12         | Ø44 | Ø36 | 46.5 | 10   | (25) |
|  | <b>CBP100-MM-1</b>    | M16         | Ø50 | Ø43 | 48.6 | 14   | (36) |
|  | <b>CBP125-IN</b>      | M20         | Ø65 | Ø54 | 56   | 17   | (38) |
|  | <b>CBP125-IN-25.4</b> | M12         | Ø44 | Ø36 | 55   | 10   | (25) |
|  | <b>CBP125-MM</b>      | M20         | Ø65 | Ø54 | 57   | 17   | (35) |
|  | <b>CBP125-MM-1</b>    | M20         | Ø61 | Ø54 | 65.6 | 14   | (33) |
|  | <b>CBP160-IN</b>      | M24         | Ø83 | Ø73 | 56   | 19   | (38) |
|  | <b>CBP160-MM</b>      | M20         | Ø83 | Ø73 | 53   | 17   | (34) |

## Llave perno

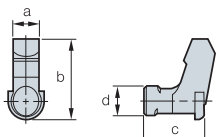
| Geometria  | Codigo        | Dimensiones |    |    |    |            |
|--|---------------|-------------|----|----|----|------------|
|  |               | A           | C  | K  | L  | M          |
|    | <b>SB0825</b> | 13          | 6  | 8  | 25 | M08 x 1.25 |
|  | <b>SB1025</b> | 16          | 8  | 10 | 25 | M10 x 1.50 |
|  | <b>SB1035</b> | 16          | 8  | 10 | 35 | M10 x 1.50 |
|  | <b>SB1230</b> | 18          | 10 | 12 | 30 | M12 x 1.75 |
|  | <b>SB1630</b> | 24          | 14 | 16 | 30 | M16 x 2.0  |
|  | <b>SB1645</b> | 24          | 14 | 16 | 45 | M6 x 2.0   |
|  | <b>SB2040</b> | 30          | 17 | 20 | 40 | M20 x 2.5  |
|  | <b>CB1025</b> | 13          | 6  | 8  | 25 | M08x1,25   |
|  | <b>CB1025</b> | 16          | 8  | 10 | 25 | M10x1,50   |
|  | <b>CB1035</b> | 16          | 8  | 10 | 35 | M10x1,50   |
|  | <b>CB1230</b> | 18          | 10 | 12 | 30 | M12x1,75   |
|  | <b>CB1245</b> | 18          | 10 | 12 | 45 | M12x1,75   |
|  | <b>CB1630</b> | 24          | 14 | 16 | 30 | M16x2,0    |
|  | <b>CB1645</b> | 24          | 14 | 16 | 45 | M16x2,0    |
|  | <b>CB2040</b> | 30          | 17 | 20 | 40 | M20x2,5    |
|  |               |             |    |    |    |            |
|  |               |             |    |    |    |            |

## Palanca

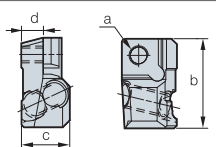
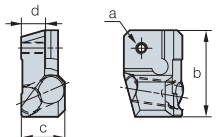
| Geometria  | Codigo       | Dimensiones |       |       |      |
|--|--------------|-------------|-------|-------|------|
|  |              | a           | b     | c     | d    |
|  | <b>LR10</b>  | 3.4         | 10.8  | 11.7  | 3    |
|  | <b>LR12</b>  | 3.7         | 13.5  | 13.4  | 3.5  |
|  | <b>LR16</b>  | 4.75        | 18.7  | 18.3  | 4.3  |
|  | <b>LR20</b>  | 5.9         | 20.5  | 18.7  | 5.55 |
|  | <b>LR25</b>  | 7.35        | 24.25 | 23.7  | 6.2  |
|  | <b>LR32</b>  | 8.45        | 29.7  | 26.95 | 7.9  |
|  | <b>LR32</b>  | 8.45        | 29.7  | 26.95 | 7.9  |
|  | <b>LV2</b>   | 2.6         | 7.75  | 6     | 2.1  |
|  | <b>LV3B</b>  | 3.1         | 10    | 9.5   | 3.7  |
|  | <b>LV4B</b>  | 4.7         | 14.55 | 15.6  | 4.7  |
|  | <b>LV4BN</b> | 4.7         | 16    | 14.9  | 4.68 |
|  |              |             |       |       |      |
|  |              |             |       |       |      |
|  | <b>LV3</b>   | 3.7         | 10    | 12    | 3.6  |
|  | <b>LV3N</b>  | 3.75        | 10    | 12    | 3.55 |
|  | <b>LV3AN</b> | 3.75        | 12.1  | 11.4  | 4.64 |
|  | <b>LV3C</b>  | 3.1         | 10    | 7.85  | 3.6  |
|  | <b>LV3CN</b> | 3.2         | 10    | 7.8   | 3.6  |
|  | <b>LV3DN</b> | 3.2         | 11.65 | 9.5   | 3.55 |
|  | <b>LV4</b>   | 4.7         | 14.55 | 14    | 4.7  |
|  | <b>LV4N</b>  | 4.7         | 13.45 | 13.2  | 4.68 |
|  | <b>LV5</b>   | 6           | 17.1  | 17    | 6    |
|  | <b>LV5N</b>  | 6           | 16.4  | 17.08 | 5.95 |
| <b>LV5AN</b>   | 6            | 18.82       | 17.3  | 5.95  |      |
| <b>LV6N</b>  | 7.5          | 20.5        | 21    | 7.6   |      |
| <b>LV8N</b>  | 8.6          | 25.5        | 25.4  | 8.6   |      |



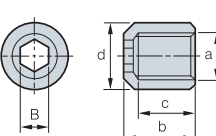
## Palanca

| Geometria   | Codigo | Dimensiones |       |      |      |
|---|--------|-------------|-------|------|------|
|   |        | a           | b     | c    | d    |
|  | LV4A   | 4.6         | 13.24 | 9.95 | 4.7  |
|   | LV4AN  | 4.7         | 13.3  | 10   | 4.68 |

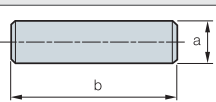
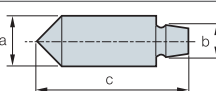
## Cartucho

| Geometria   | Codigo    | Dimensiones |      |      |     |
|---|-----------|-------------|------|------|-----|
|   |           | a           | b    | c    | d   |
|  | LFMP3R-A  | M3.5        | 18.7 | 10.1 | 4.6 |
|   | LFMP4R1-A | M4.5        | 24.3 | 13.8 | 6.2 |
|   | LFMP4R-A  | M4.5        | 26.3 | 13.8 | 6.2 |
|  | LFMA3R-A  | M3          | 18.5 | 9.5  | 4.8 |
|   | LFMA4R-A  | M3.5        | 26   | 13.1 | 7.3 |

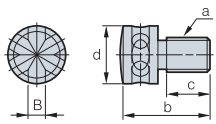
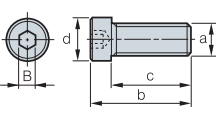
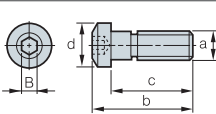
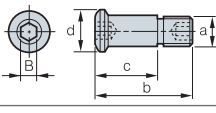
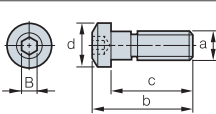
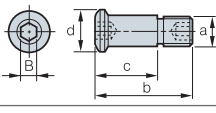
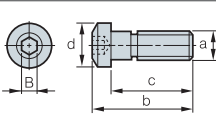
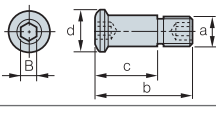
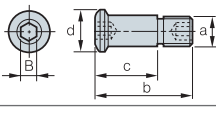
## Tuerca

| Geometria  | Codigo | Dimensiones |     |     |   |      |   |
|--|--------|-------------|-----|-----|---|------|---|
|  |        | a           | b   | c   | d | B(T) | á |
|  | N0407  | M4 X 0.7    | 7.5 | 6   | 7 | 3    |   |
|  | N0508  | M5 X 0.8    | 8.3 | 6.6 | 7 | 3    |   |

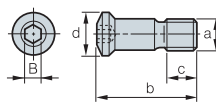

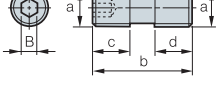





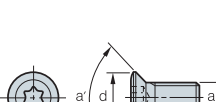







## Perno

| Geometria   | Codigo | Dimensiones |     |      |
|---|--------|-------------|-----|------|
|   |        | a           | b   | c    |
|  | PN0308 | 3.0         | 8   |      |
|   | PN0310 | 3.0         | 10  |      |
|   | PN0312 | 3.0         | 12  |      |
|   | PN0314 | 3.0         | 14  |      |
|  | PN0515 | 4.8         | 3.3 | 14.5 |

## Tornillo

| Geometria   | Codigo        | Dimensiones     |      |      |     |      |   |
|---|---------------|-----------------|------|------|-----|------|---|
|   |               | a               | b    | c    | d   | B(T) | á |
|  | AZ0508F       | M5 X 0.5        | 13   | 8    | 9   | Ø2   |   |
|   | AZ0514        | M5 X 0.8        | 14   | 7    | 9   | Ø2.5 |   |
|  | BHA0510       | M5 X 0.8        | 15   | 10   | 8.5 | 4.0  |   |
|   | BHA0512       | M5 X 0.8        | 17   | 12   | 8.5 | 4.0  |   |
|  | BHA0612       | M6 X 1.0        | 18   | 12   | 10  | 5.0  |   |
|   | BHA0614       | M6 X 1.0        | 20   | 14   | 10  | 5.0  |   |
|  | BHA0616       | M6 X 1.0        | 22   | 16   | 10  | 5    |   |
|   | BHA0619-NYLOK | M6 X 1.0        | 25   | 19   | 10  | 5    |   |
|  | CHX0407       | M4 X 0.7        | 9.5  | 7.36 | 5.7 | 2.5  |   |
|   | CHX0415       | M4 X 0.7        | 17.5 | 15   | 5.4 | 2.5  |   |
|  | CHX0510       | M5 X 0.8        | 13.1 | 10.1 | 7.7 | 3    |   |
|   | CHX0518       | M5 X 0.8        | 21.5 | 18   | 8   | 3    |   |
|  | CHX0622       | M6 X 1.0        | 26.5 | 22   | 10  | 4    |   |
|   | CHX0513       | M5 X 0.8        | 13   | 8    | 6.4 | 2.5  |   |
|  | CHX0616       | M6 X 1.0        | 16.2 | 10.1 | 8.5 | 3    |   |
|   | CHX0617L      | M6 x 1.0 (Left) | 17.2 | 10.1 | 8.5 | 3    |   |
|  | CHX0621       | M6 X 1.0        | 21   | 10.1 | 8.5 | 3    |   |

## Tornillo

| Geometria  | Codigo      | Dimensiones |      |      |      |      |   |
|--|-------------|-------------|------|------|------|------|---|
|  |             | a           | b    | c    | d    | B(T) | á |
|    | CHX0625     | 1/4-20UNC   | 24.8 | 11   | 10   | 4    |   |
|  | CTX03510    | M3.5 X 0.6  | 10   | 4.7  | 5.3  | 15   |   |
|    | CTX04513    | M4.5 X 0.75 | 13.1 | 6.9  | 6.8  | 20   |   |
|  | CTX04513H   | M4.5 X 0.75 | 13.1 | 7.2  | 6.8  | 20   |   |
|    | CTX0515     | M5 X 0.8    | 15   | 8    | 7    | 20   |   |
|  | CTX0517     | M5 X 0.8    | 17.5 | 10   | 7    | 20   |   |
|    | CTX0621     | M6 X 1.0    | 21.2 | 12.4 | 9    | 25   |   |
|  | DHA0514     | M5 X 0.8    | 14.0 | 5.0  | 7.0  | 2.5  |   |
|    | DHA0617     | M6 x 1.0    | 17.0 | 7.0  | 7.5  | 3.0  |   |
|  | DHA0620     | M6 x 1.0    | 20.0 | 8.0  | 8.0  | 3.0  |   |
|   | DHA0624     | M6 x 1.0    | 24.0 | 12.0 | 8.5  | 3.0  |   |
|  | DHA0815     | M8 X 1.25   | 15.5 | 6.25 | 6.25 | 4.0  |   |
|  | DHA0818F    | M8 X 1.0    | 18   | 8.5  | 5.5  | 4.0  |   |
|  | DHA0820     | M8 X 1.25   | 20.0 | 8.0  | 9.0  | 4.0  |   |
|  | DHA0821F    | M8 X 1.0    | 21.0 | 8.5  | 8.5  | 4.0  |   |
|  | DHA0825     | M8 X 1.25   | 25.0 | 10.0 | 9.0  | 4.0  |   |
|  | DHA0830     | M8 X 1.25   | 30.0 | 11.5 | 11.5 | 4.0  |   |
|  | ETGA0520CBM | M5 X 0.8    | 20   | 6.5  | 20   | 43°  |   |
|  | ETGD0825    | M8 X 1.25   | 25.2 | 11.1 | 40   | 40°  |   |
|  | ETKA0523    | M5 X 0.8    | 23   | 7.6  | 20   | 43°  |   |
|  | ETKA0625    | M6 X 1.0    | 25.5 | 8.8  | 20   | 43°  |   |
|  | ETKD0516    | M5 X 0.8    | 16.4 | 6.8  | 20   | 40°  |   |
|  | ETKD0620    | M6 X 1.0    | 20   | 8.3  | 25   | 40°  |   |
|  | ETNA02506   | M2.5 X 0.45 | 5.7  | 3.4  | 7    | 43°  |   |
|  | ETNA0408    | M4 X 0.7    | 8.0  | 5.1  | 15   | 43°  |   |
|  | ETNA0412    | M4 X 0.7    | 12   | 5.1  | 15   | 43°  |   |
|  | ETNA0511    | M5 X 0.8    | 11.0 | 6.4  | 20   | 43°  |   |
|  | ETND02506F  | M2.5 X 0.35 | 6.25 | 3.1  | 7    | 40°  |   |
|  | ETND0307F   | M3 X 0.35   | 7.8  | 3.7  | 8    | 40°  |   |
|  | ETND03509   | M3.5 X 0.6  | 9.6  | 4.7  | 10   | 40°  |   |
|  | FTGA03507   | M3.5 X 0.6  | 7.0  | 5.3  | 15   | 60°  |   |
|  | FTGA03508   | M3.5 X 0.6  | 8.0  | 5.3  | 15   | 60°  |   |
|  | FTGA03510   | M3.5 X 0.6  | 10.0 | 5.3  | 15   | 60°  |   |
|  | FTGA03512   | M3.5 X 0.6  | 12.0 | 5.0  | 15   | 60°  |   |
|  | FTGA0411F   | M4 X 0.5    | 11.0 | 7.0  | 15   | 60°  |   |
|  | FTGA0417CBM | M4 X 0.7    | 17.0 | 5.5  | 15   | 62°  |   |
|  | FTGA0510-P  | M5 X 0.8    | 10.0 | 7.0  | 20   | 63°  |   |
|  | FTGA0512-P  | M5 X 0.8    | 12.0 | 7.0  | 20   | 63°  |   |
|  | FTGA0513    | M5 X 0.8    | 13.2 | 7.0  | 20   | 61°  |   |
|  | FTGA0513-P  | M5 X 0.8    | 13.0 | 7.0  | 20   | 63°  |   |
|  | FTGA0517    | M5 X 0.8    | 17.0 | 7.5  | 20   | 61°  |   |
|  | FTGA0621    | M6 X 1.0    | 21.5 | 9.0  | 20   | 61°  |   |
|  | FTGA0826    | M8 X 1.25   | 26.0 | 11.6 | 25   | 61°  |   |
|  | FTKA02206   | M2.2 X 0.45 | 5.5  | 3.0  | 6    | 60°  |   |
|  | FTKA02206S  | M2.2 X 0.45 | 5.6  | 3.05 | 7    | 60°  |   |
|  | FTKA02555   | M2.5 X 0.45 | 5.5  | 3.5  | 7    | 60°  |   |
|  | FTKA02565   | M2.5 X 0.45 | 6.5  | 3.5  | 7    | 60°  |   |
|  | FTKA02565S  | M2.5 X 0.45 | 6.5  | 3.8  | 8    | 60°  |   |
|  | FTKA0307    | M3 X 0.5    | 7.2  | 4.2  | 9    | 60°  |   |
|  | FTKA03508   | M3.5 X 0.6  | 8.4  | 5.5  | 15   | 60°  |   |
|  | FTKA03510   | M3.5 X 0.6  | 10.4 | 5.5  | 15   | 60°  |   |
|  | FTKA03511A  | M3.5 X 0.6  | 11.0 | 5.2  | 15   | 60°  |   |
|  | FTKA0408    | M4 X 0.7    | 8.4  | 5.5  | 15   | 60°  |   |
|  | FTKA0410    | M4 X 0.7    | 10.0 | 5.5  | 15   | 60°  |   |
|  | FTKA0411K   | M4 X 0.7    | 11.0 | 6.8  | 15   | 60°  |   |
|  | FTKA0412B   | M4 X 0.7    | 12.5 | 5.5  | 15   | 60°  |   |
|  | FTKA0413    | M4 X 0.7    | 13.0 | 5.5  | 15   | 60°  |   |
|  | FTNA01633   | M1.6 X 0.35 | 3.3  | 2.6  | 6    | 60°  |   |
|  | FTNA0203    | M2 X 0.4    | 3.0  | 2.7  | 6    | 60°  |   |
|  | FTNA02033   | M2 X 0.4    | 3.3  | 2.7  | 6    | 60°  |   |
|  | FTNA0204    | M2 X 0.4    | 4.3  | 2.7  | 6    | 60°  |   |
|  | FTNA02205   | M2.2 X 0.45 | 4.5  | 3.0  | 6    | 60°  |   |
|  | FTNA0238    | M2 X 0.4    | 3.8  | 3.0  | 6    | 60°  |   |
|  | FTNA0305    | M3 X 0.5    | 5.2  | 4.2  | 9    | 60°  |   |
|  | FTNA0306    | M3 X 0.5    | 6.2  | 4.2  | 9    | 60°  |   |
|  | FTNA0307    | M3 X 0.5    | 7.2  | 4.2  | 9    | 60°  |   |
|  | FTNA0408    | M4 X 0.7    | 8.5  | 5.5  | 15   | 60°  |   |
|  | FTNA0411    | M4 X 0.7    | 11.0 | 5.5  | 15   | 60°  |   |
|  | FTNA0511    | M5 X 0.8    | 11   | 7.0  | 20   | 63°  |   |
|  | FTNA0513    | M5 X 0.8    | 13.0 | 7.0  | 20   | 60°  |   |
|  | FTNA0516    | M5 X 0.8    | 16.0 | 7.0  | 20   | 60°  |   |



## Tornillo

| Geometria | Codigo      | Dimensiones |      |      |     |      |     |
|-----------|-------------|-------------|------|------|-----|------|-----|
|           |             | a           | b    | c    | d   | B(T) | á   |
|           | FTNB0411    | M4 X 0.7    | 10.8 | 5.7  | 15  | 60°  |     |
|           | FTNC04509   | M4.5 X 0.75 | 9.5  | 6.8  | 20  | 55°  |     |
|           | FTNC04511   | M4.5 X 0.75 | 11.5 | 6.8  | 20  | 55°  |     |
|           | FTNB0209    | 2 X 0.4     | 9    | 2.5  | 2.7 | 60°  |     |
|           | FTNB0209-P  | 2 X 0.4     | 9    | 2.5  | 2.7 | 60°  |     |
|           | FTNB02512   | 2.5 X 0.45  | 12   | 3.5  | 3.5 | 60°  |     |
|           | FTNB02512-P | 2.5 X 0.45  | 12   | 3.5  | 3.5 | 60°  |     |
|           | FTNB02514   | 2.5 X 0.45  | 14   | 3.5  | 3.5 | 60°  |     |
|           | FTNB02514-P | 2.5 X 0.45  | 14   | 3.5  | 3.5 | 60°  |     |
|           | FTNB0316    | 3 X 0.5     | 16   | 4.5  | 4.2 | 60°  |     |
|           | FTNB0316-P  | 3 X 0.5     | 16   | 4.5  | 4.2 | 60°  |     |
|           | FTNB0319    | 3 X 0.5     | 19   | 5    | 4.5 | 60°  |     |
|           | FTNB03522   | 3.5 X 0.6   | 22   | 5.6  | 5.5 | 60°  |     |
|           | FTNB03524   | 3.5 X 0.6   | 24   | 5.6  | 5.5 | 60°  |     |
|           | FTNB0426    | 4 X 0.7     | 26   | 6.7  | 5.5 | 60°  |     |
|           | FTNB0528    | 5 X 0.8     | 28   | 6.5  | 7   | 60°  |     |
|           | KHA0508     | M5 X 0.8    | 8    |      | 2.5 |      |     |
|           | KHA0510     | M5 X 0.8    | 10   |      | 2.5 |      |     |
|           | KHA0610     | M6 X 1.0    | 10   |      | 3   |      |     |
|           | KHA0612     | M6 X 1.0    | 12   |      | 3.0 |      |     |
|           | KHA0812     | M8 X 1.25   | 12   |      | 4.0 |      |     |
|           | KHA0815     | M8 X 1.25   | 15   |      | 4.0 |      |     |
|           | KHA1015     | M10 X 1.5   | 15   |      | 5.0 |      |     |
|           | KHA1020     | M10 X 1.5   | 20   |      | 5.0 |      |     |
|           | KHB0417     | M4 X 0.7    | 17.2 | 4.5  | 2.5 | 2    |     |
|           | KHB0406     | M4 X 0.7    | 6    | 4.2  | 3   | 2    |     |
|           | KHC0510     | M5 X 0.8    | 10   | 8.1  | 2.5 | 90°  |     |
|           | KHC0610     | M6 X 1.0    | 10   | 7.8  | 3.0 | 90°  |     |
|           | KHC0812     | M8 X 1.25   | 12   | 9    | 4.0 | 90°  |     |
|           | KHC1016     | M10 X 1.5   | 16   | 12.3 | 5.0 | 90°  |     |
|           | KHC1020     | M10 X 1.5   | 20   | 16.3 | 5.0 | 90°  |     |
|           | KHD0510     | M5 X 0.8    | 10   | 9    | 3   | 2.5  |     |
|           | KHD0610     | M6 X 1.0    | 10   | 10   | 4   | 3    |     |
|           | KHD0810     | M8 X 1.25   | 10   | 10   | 7.5 | 4    |     |
|           | LTX0512     | M5 X 0.8    | 15.1 | 12   | 7.3 | 20   |     |
|           | LTX0514     | M5 X 0.8    | 17.1 | 14   | 7.3 | 20   |     |
|           | MHA0512     | M5 X 0.8    | 17.0 | 10.8 | 8.0 | 4.0  |     |
|           | MHB0310     | M3 X 0.5    | 13.4 | 8.0  | 5.5 | 2.5  |     |
|           | MHB0410     | M4 X 0.7    | 14.0 | 8.0  | 7.0 | 3.0  |     |
|           | MHB1055     | M10 X 1.5   | 65   | 50   | 16  | 8    |     |
|           | MHB1260     | M12 X 1.75  | 72   | 55   | 18  | 10   |     |
|           | MHB1680     | M16 X 2.0   | 96   | 75   | 24  | 14   |     |
|           | MHX0523     | M5 X 0.8    | 23.5 | 9.7  | 10  | 2.5  |     |
|           | MHX0626     | M6 X 1.0    | 25.8 | 10   | 11  | 3    |     |
| MHX0630   | M6 X 1.0    | 30          | 12.5 | 10.5 | 4   |      |     |
|           | PTKA02508   | M2.5 X 0.45 | 8    | 5    | 3.8 | 8    | 92° |
|           | PTKA03510   | M3.5 X 0.6  | 10   | 5    | 5   | 15   | 92° |
|           | PTKA0407    | M4 X 0.7    | 7    | 4.6  | 5.5 | 15   | 86° |
|           | PTKA0407F   | M4 X 0.5    | 7.3  | 3.8  | 6.5 | 15   | 91° |
|           | PTKA0408    | M4 X 0.7    | 8    | 5.6  | 5.5 | 15   | 86° |
|           | PTKA0408F   | M4 X 0.5    | 8.3  | 5.7  | 6.5 | 15   | 91° |
|           | PTKA0409F   | M4 X 0.5    | 9.3  | 6.7  | 6.5 | 15   | 91° |
|           | PTKA0410F   | M4 X 0.5    | 10.3 | 7.7  | 6.5 | 15   | 91° |
|           | PTKA0411F   | M4 X 0.5    | 11.3 | 8.7  | 6.5 | 15   | 91° |
|           | PTKA0412    | M4 X 0.7    | 12   | 7.5  | 5.9 | 15   | 92° |
|           | PTKA0412F   | M4 X 0.5    | 12.3 | 9.7  | 6.5 | 15   | 91° |
|           | PTKA0413F   | M4 X 0.5    | 13.3 | 10.7 | 6.5 | 15   | 91° |
|           | PTKA0512    | M5 X 0.8    | 12   | 7    | 6.9 | 20   | 92° |
|           | PTMA03508   | M3.5 X 0.6  | 8    | 5.3  | 6   | 9    | 90° |
|           | PTMA0403F   | M4 X 0.5    | 3.3  | 1.7  | 6.5 | 15   | 91° |
|           | PTMA0404F   | M4 X 0.5    | 4.3  | 2.7  | 6.5 | 15   | 91° |
|           | PTMA0405F   | M4 X 0.5    | 5.3  | 3.7  | 6.5 | 15   | 91° |
| PTMA0406F | M4 X 0.5    | 6.3         | 4.7  | 6.5  | 15  | 91°  |     |
| PTMA0411  | M4 X 0.7    | 11          | 8.5  | 6.6  | 15  | 90°  |     |

| Geometria | Codigo    | Dimensiones |            |       |      |      |   |
|-----------|-----------|-------------|------------|-------|------|------|---|
|           |           | a           | b          | c     | d    | B(T) | á |
|           | FHGA0618  | M6 X 1.0    | 18         | 8.5   | 4.0  | 61°  |   |
|           | PXMA0306  | M3 X 0.5    | 5.9        | 5.7   | 2    | 90°  |   |
|           | SHX0310   | M3 X 0.5    | 10         | 5.9   | 2    | 91°  |   |
|           |           |             |            |       |      |      |   |
|           | RHA0510   | M5 X 0.8    | 10         | 4.0   |      |      |   |
|           | RHA0613   | M6 X 1.0    | 16.3       | 13    | 10.5 | 4.0  |   |
|           | RHA0620   | M6 X 1.0    | 24         | 20    | 10.5 | 4.0  |   |
|           |           |             |            |       |      |      |   |
|           | VHX0509B  | M5 X 0.8    | 9          | 4.15  | 5    | 2    |   |
|           | VHX0512B  | M5 X 0.8    | 12         | 6.5   | 5    | 2    |   |
|           | VHX0512BN | M5 X 0.8    | 12         | 6.56  | 5    | 2    |   |
|           | VHX0514   | M5 X 0.8    | 14.5       | 8.25  | 5    | 2    |   |
|           | VHX0613N  | M6 X 1.0    | 13.4       | 7.5   | 5.93 | 2.5  |   |
|           | VHX0617   | M6 X 1.0    | 17         | 10    | 6    | 2.5  |   |
|           | VHX0617N  | M6 X 1.0    | 16.75      | 8.34  | 5.9  | 2.5  |   |
|           | VHX0621   | M6 X 1.0    | 21         | 14    | 6    | 2.5  |   |
|           | VHX0817N  | M8 X 1.0    | 17.05      | 7.98  | 7.9  | 3    |   |
|           | VHX0820N  | M8 X 1.0    | 20.7       | 7.98  | 7.9  | 3    |   |
|           | VHX0820AN | M8 X 1.0    | 20.5       | 10.36 | 7.9  | 3    |   |
|           | VHX0821N  | M8 X 1.0    | 21         | 10    | 8    | 3    |   |
|           | VHX0821N  | M8 X 1.0    | 21.2       | 9.68  | 7.9  | 3    |   |
|           | VHX0823N  | M8 X 1.0    | 23.5       | 10.36 | 7.9  | 3    |   |
|           | VHX0825   | M8 X 1.0    | 25         | 12    | 8    | 3    |   |
|           | VHX1027N  | M10 X 1.0   | 27.2       | 14.4  | 9.8  | 5    |   |
|           | VHX1236N  | M12 X 1.0   | 36         | 18.3  | 11.8 | 5    |   |
|           |           |             |            |       |      |      |   |
|           | VHX0613A  | M6 X 1.0    | 13.4       | 9.1   | 6.0  | 2.5  |   |
|           |           |             |            |       |      |      |   |
|           | SHXN0509F | M5 X 0.5    | M3.5 X 0.6 | 8.65  | 6.3  | 3.5  |   |
|           | SHXN0609F | M6 X 0.75   | M4 X 0.7   | 9     | 7.8  | 4    |   |
|           | SHXN0610F | M6 X 0.75   | M4 X 0.5   | 10    | 7.8  | 4    |   |
|           | SHXN0712F | M7 X 0.75   | M5 X 0.8   | 12    | 8.5  | 5    |   |
|           | WTX0813   | M8 X 1.25   | 17.2       | 4.9   | 8.5  | 25   |   |
|           | WTX0817   | M8 X 1.25   | 22         | 4.9   | 8.5  | 25   |   |

## Perno placa

| Geometria | Codigo | Dimensiones |      |          |   |
|-----------|--------|-------------|------|----------|---|
|           |        | a           | b    | c        | d |
|           | SP3    | 5.5         | 3.5  | 5.9      |   |
|           | SP3N   | 6.85        | 3.3  | 5.55     |   |
|           | SP4    | 7.0         | 4.0  | 7.6      |   |
|           | SP4N   | 5.8         | 4.35 | 7.4      |   |
|           | SP5    | 8.5         | 4.5  | 8.8      |   |
|           | SP5N   | 8.5         | 5.68 | 9        |   |
|           | SP6N   | 11.1        | 6.0  | 11.0     |   |
|           | SP8N   | 12.0        | 10.0 | 15.35    |   |
|           | SP2M   | 5           | 14   | M5 X 0.8 | 6 |
|           | SP3M   | 3.5         | 19.5 | M4 X 0.7 | 4 |
|           | SP3M-1 | 3.5         | 16.5 | M4 X 0.7 | 4 |
|           | SP4M   | 5           | 19   | M5 X 0.8 | 6 |



**Perno placa**

| Geometria | Codigo | Dimensiones |       |            |       |
|-----------|--------|-------------|-------|------------|-------|
|           |        | a           | b     | c          | d     |
|           | SP3D   | 3.7         | 13.1  | UNF10-32   | 5.6   |
|           | SP3D2  | 3.6         | 12    | UNF10-32   | 5.5   |
|           | SP3DS  | 3.7         | 11.54 | UNF10-32   | 5.6   |
|           | SP4D   | 4.97        | 17.19 | UNF1/4 28  | 7.12  |
|           | SP4DL  | 5           | 17.1  | UNF1/4 28  | 7     |
|           | SP4DS  | 4.97        | 13.26 | UNF1/4 28  |       |
|           | SP5D   | 6.21        | 21.9  | UNF5/16-24 | 9.44  |
|           | SP6D   | 7.75        | 21.9  | UNF3/8-24  | 11.02 |
|           | SP8D   | 9.02        | 29.63 | UNF7/16-20 | 14.21 |
|           | LSPS3  | 60          | 8.2   | 5.55       |       |
| LSPS4     | 65     | 10          | 7     |            |       |
| LSPS5     | 69     | 11.4        | 8.85  |            |       |
| LSPS6     | 69     | 13          | 11    |            |       |
| LSPS8     | 73     | 16.5        | 15.2  |            |       |

**Muelle**

| Geometria | Codigo  | Dimensiones |      |      |     |
|-----------|---------|-------------|------|------|-----|
|           |         | a           | b    | c    | d   |
|           | SR2     | 4.0         | 2.8  | 12.6 | 0.4 |
|           | SPR0315 | 3.0         | 15   |      |     |
|           | SPR0415 | 4.0         | 15   |      |     |
|           | SR3     | 9.2         | 12.5 |      |     |
|           | SR4     | 4.0         | 11.0 |      |     |
|           | SPR0714 | 7           | 14   |      |     |
|           | SPR0510 | 5           | 10   |      |     |
|           | SPR0714 | 7           | 14   |      |     |
|           | SPR0811 | 8           | 11   |      |     |

**Llave**

| Geometria | Codigo | Dimensiones |      |       |
|-----------|--------|-------------|------|-------|
|           |        | a           | b    | B (T) |
|           | HW20L  | 52          | 18   | 2     |
|           | HW25L  | 58.5        | 20.5 | 2.5   |
|           | HW30L  | 66          | 23   | 3     |
|           | HW35L  | 72          | 25   | 3.5   |
|           | HW40L  | 74          | 29   | 4     |
|           | HW50L  | 85          | 33   | 5     |
|           | HW40   | 82          | 80   | 4     |
|           | HW50   | 96          | 90   | 5     |
|           | SW50L  | 70          | 27.5 |       |
|           |        |             |      |       |
|           | TW06P  | 63          | 6    |       |
|           | TW07P  | 63          | 7    |       |
|           | TW08P  | 71          | 8    |       |
|           | TW09P  | 75          | 9    |       |
|           | TW10P  | 78          | 10   |       |
|           | TW15P  | 82          | 15   |       |
|           | TW20P  | 86          | 20   |       |
|           | TW15L  | 60          | 21   | 15    |
|           | TW20L  | 60          | 21   | 20    |

**Llave**

| Geometria | Codigo | Dimensiones |    |       |
|-----------|--------|-------------|----|-------|
|           |        | a           | b  | B (T) |
|           | TW07S  | 140         | 60 | 7     |
|           | TW08S  | 150         | 76 | 8     |
|           | TW09S  | 165         | 70 | 9     |
|           | TW15S  | 190         | 90 | 15    |
|           | TW20S  | 195         | 91 | 20    |
|           | TW20   | 75          | 80 | 20    |
|           | TW25   | 74          | 80 | 25    |
|           | SW15S  | 150         | 13 |       |
|           |        |             |    |       |

**Candado**

| Geometria | Codigo | Dimensiones |     |     |     |
|-----------|--------|-------------|-----|-----|-----|
|           |        | a           | b   | c   | d   |
|           | CR03   | 4.8         | 2.6 | 0.4 | 3.0 |
|           | CR04   | 6.6         | 3.6 | 0.4 | 4.0 |
|           | CR05   | 7.6         | 4.6 | 0.4 | 5.0 |
|           | ER03   | 7.0         | 2.6 | 0.6 | 3.0 |
|           | ER04   | 9.0         | 3.5 | 0.6 | 4.0 |
|           | ER05   | 11          | 4.3 | 0.6 | 5.0 |

**Washer**

| Geometria | Codigo | Dimensiones |     |         |
|-----------|--------|-------------|-----|---------|
|           |        | a           | b   | c       |
|           | WA3    | 11.0        | 6.8 | 0.5~1.0 |
|           | WA4    | 10.0        | 5.3 | 0.5~1.0 |

**Stopper**

| Geometria | Codigo | Dimensiones |      |    |     |
|-----------|--------|-------------|------|----|-----|
|           |        | a           | b    | c  | d°  |
|           | STP5   | 11          | 10.2 | 11 | 30° |

**Boquilla**

| Geometria | Codigo | Dimensiones |     |
|-----------|--------|-------------|-----|
|           |        | a           | b   |
|           | CN0605 | 6           | 4.6 |

L

# Información Técnica



04.12.14.877  
1/2500 P.M. ← M.C.  
T.S.S.

## Información General I

- L02 Grados y Piezas de Trabajo
- L06 Simbología: Acero, Metales No-Ferrosos
- L07 Tabla de Conversión materiales
- L08 Tabla para Calculo de Dureza
- L09 Propiedades grados de KORLOY

## Información Técnica

- L10 Información Técnica Torneado
- L20 Información Técnica Fresado
- L24 Información Técnica Tapers
- L27 Información Técnica Endmills
- L30 Información Técnica Brocas

## Información General II

- L36 Comparación de Rompevirutas
- L37 Tabla de Grados KORLOY
- L40 Comparación de Grados Torneado
- L41 Comparación de Grados Fresado



## Acero Carbon, Aleacion de Acero para uso en estructuras

| Tipo              | Korea                        | ISO                                | Japon                   | U.S.A              | Gran Bretania                            | Alemania                             | Francia                 | Rusia       |               |
|-------------------|------------------------------|------------------------------------|-------------------------|--------------------|--|--------------------------------------|-------------------------|-------------|---------------|
|                   | KS                           | ISO                                | JIS                     | AISI SAE           | BS BS/EN                                 | DIN DIN/EN                           | NF NF/EN                | GOCT        |               |
| Acero Carbon      | SM10C                        | C10                                | S10C                    | 1010               | 040A10<br>045A10<br>045M10               | C10E<br>C10R                         | XC10                    | -           |               |
|                   | SM15C                        | C15E4<br>C15M2                     | S15C                    | 1015               | 055M15                                   | C15E<br>C15R                         | -                       | -           |               |
|                   | SM20C                        | -                                  | S20C                    | 1020               | 070M20<br>C22, C22E<br>C22R              | C22<br>C22E<br>C22R                  | C22<br>C22E<br>C22R     | -           |               |
|                   | SM25C                        | C25<br>C25E4<br>C25M2              | S25C                    | 1025               | C25<br>C25E<br>C25R                      | C25<br>C25E<br>C25R                  | C25<br>C25E<br>C25R     | -           |               |
|                   | SM30C                        | C30<br>C30E4<br>C30M2              | S30C                    | 1030               | 080A30<br>080M30<br>CC30<br>C30E<br>C30R | C30<br>C30E<br>C30R                  | C30<br>C30E<br>C30R     | 30 Г        |               |
|                   | SM35C                        | C35<br>C35E4<br>C35M2              | S35C                    | 1035               | C35<br>C35E<br>C35R                      | C35<br>C35E<br>C35R                  | C35<br>C35E<br>C35R     | 35 Г        |               |
|                   | SM40C                        | C40<br>C40E4<br>C40M2              | S40C                    | 1039<br>1040       | 080M40<br>C40<br>C40E<br>C40R            | C40<br>C40E<br>C40R                  | C40<br>C40E<br>C40R     | 40 Г        |               |
|                   | SM43C                        | -                                  | S43C                    | 1042<br>1043       | 080A42                                   | -                                    | -                       | 40 Г        |               |
|                   | SM45C                        | C45<br>C45E4<br>C45M2              | S45C                    | 1045<br>1046       | C45<br>C45E<br>C45R                      | C45<br>C45E<br>C45R                  | C45<br>C45E<br>C45R     | 45 Г        |               |
|                   | SM48C                        | -                                  | S48C                    | -                  | 080A47                                   | -                                    | -                       | 45 Г        |               |
|                   | SM50C                        | C50<br>C50E4<br>C50M2              | S50C                    | 1049               | 080M50<br>C50<br>C50E<br>C50R            | C50<br>C50E<br>C50R                  | C50<br>C50E<br>C50R     | 50 Г        |               |
|                   | SM53C                        | -                                  | S53C                    | 1050<br>1053       | -  | -                                    | -                       | 50 Г        |               |
|                   | SM55C                        | C55<br>C55E4<br>C55M2              | S55C                    | 1055               | 070M55<br>C55<br>C55E<br>C55R            | C55<br>C55E<br>C55R                  | C55<br>C55E<br>C55R     | -           |               |
|                   | SM58C                        | C60<br>C60E4<br>C60M2              | S58C                    | 1059<br>1060       | C60<br>C60E<br>C60R                      | C60<br>C60E<br>C60R                  | C60<br>C60E<br>C60R     | 60 Г        |               |
| Aleacion de acero | Niquel Cromo Acero           | SNC236                             | -                       | SNC236             | -  | -                                    | -                       | 40XH        |               |
|                   |                              | SNC415(H)                          | -                       | SNC415(H)          | -  | -                                    | -                       | -           |               |
|                   |                              | SNC631(H)                          | -                       | SNC631(H)          | -  | -                                    | -                       | 30XH3A      |               |
|                   |                              | SNC815(H)                          | 15NiCr13                | SNC815(H)          | -  | 655M13(655H13)                       | 15NiCr13                | -           |               |
|                   |                              | SNC836                             | -                       | SNC836             | -  | -                                    | -                       | -           |               |
|                   | Niquel Cromo Acero Moldeable | SNCM220                            | 20NiCrMo2<br>20NiCrMoS2 | SNCM220            | 8615<br>8617(H)<br>8620(H)<br>8622(H)    | 805A20<br>805M20<br>805A22<br>805M22 | 20NiCrMo2<br>20NiCrMoS2 | 20NCD2      | -             |
|                   |                              | SNCM240                            | 41CrNiMo2<br>41CrNiMoS2 | SNCM240            | 8637<br>8640                             | -                                    | -                       | -           |               |
|                   |                              | SNCM415                            | -                       | SNCM415            | -  | -                                    | -                       | -           |               |
|                   |                              | SNCM420(H)                         | -                       | SNCM420(H)         | 4320(H)                                  | -                                    | -                       | -           | 20XH2M(20XHM) |
|                   |                              | SNCM431                            | -                       | SNCM431            | -  | -                                    | -                       | -           |               |
|                   |                              | SNCM439                            | -                       | SNCM439            | 4340                                     | -                                    | -                       | -           |               |
|                   |                              | SNCM447                            | -                       | SNCM447            | -  | -                                    | -                       | -           |               |
|                   |                              | SNCM616                            | -                       | SNCM616            | -  | -                                    | -                       | -           |               |
|                   |                              | SNCM625                            | -                       | SNCM625            | -  | -                                    | -                       | -           |               |
|                   |                              | SNCM630                            | -                       | SNCM630            | -  | -                                    | -                       | -           |               |
|                   | SNCM815                      | -                                  | SNCM815                 | -                  | -  | -                                    | -                       |             |               |
| Cromo Acero       | SCr415(H)                    | -                                  | SCr415(H)               | -                  | -  | 17Cr3<br>17CrS3                      | -                       | 15X<br>15XA |               |
|                   | SCr420(H)                    | 20Cr4(H)<br>20CrS4                 | SCr420(H)               | 5120(H)            | -  | -                                    | -                       | 20X         |               |
|                   | SCr430(H)                    | 34Cr4<br>34CrS4                    | SCr430(H)               | 5130(H)<br>5132(H) | 34Cr4<br>34CrS4                          | 34Cr4<br>34CrS4                      | 34Cr4<br>34CrS4         | 30X         |               |
|                   | SCr435(H)                    | 34Cr4<br>34CrS4<br>37Cr4<br>37CrS4 | SCr435(H)               | 5135(H)            | 37Cr4<br>37CrS4                          | 37Cr4<br>37CrS4                      | 37Cr4<br>37CrS4         | 35X         |               |
|                   | SCr440(H)                    | 37Cr4<br>37CrS4<br>41Cr4<br>41CrS4 | SCr440(H)               | 5140(H)            | 530M40<br>41Cr4<br>41CrS4                | 41Cr4<br>41CrS4                      | 41Cr4<br>41CrS4         | 40X         |               |
|                   | SCr445(H)                    | -                                  | SCr445(H)               | -                  | -  | -                                    | -                       | 45X         |               |

\* El acero de aleación de arriba puede ser suministrado por fabricadas nacionales



| Tipo              |                       | Korea                    | ISO                 | Japon                    | U.S.A              | Gran Bretania                           | Alemania            | Francia             | Rusia  |
|-------------------|-----------------------|--------------------------|---------------------|--------------------------|--------------------|---|---------------------|---------------------|--|
|                   |                       | KS                       | ISO                 | JIS                      | AISI SAE           | BS BS/EN                                | DIN DIN/EN          | NF NF/EN            | GOCT   |
| Aleación de acero | Cromo Acero Moldeable | SCM415(H)                | -                   | SCM415(H)                | -                  | -                                       | -                   | -                   | -  |
|                   |                       | SCM418(H)                | 18CrMo4<br>18CrMoS4 | SCM418(H)                | -                  | -                                       | 18CrMo4<br>18CrMoS4 | -                   | 20XM   |
|                   |                       | SCM420(H)                | -                   | SCM420(H)                | -                  | 708M20(708H20)                          | -                   | -                   | 20XM   |
|                   |                       | SCM430                   | -                   | SCM430                   | 4130               | -                                       | -                   | -                   | 30XM<br>30XMA  |
|                   |                       | SCM432                   | -                   | SCM432                   | -                  | -                                       | -                   | -                   | -  |
|                   |                       | SCM435(H)                | 34CrMo4<br>34CrMoS4 | SCM435(H)                | (4135H)<br>4137(H) | 34CrMo4<br>34CrMoS4                     | 34CrMo4<br>34CrMoS4 | 34CrMo4<br>34CrMoS4 | 35XM   |
|                   |                       | SCM440(H)                | 42CrMo4<br>42CrMoS4 | SCM440(H)                | 4140(H)<br>4142(H) | 708M70<br>709M40<br>42CrMo4<br>42CrMoS4 | 42CrMo4<br>42CrMoS4 | 42CrMo4<br>42CrMoS4 | -  |
|                   |                       | SCM445(H)                | -                   | SCM445(H)                | 4145(H)<br>4147(H) | -                                       | -                   | -                   | -  |
|                   | Cromo Magnesio Acero  | SMn420(H)                | 22Mn6(H)            | SMn420(H)                | 1522(H)            | 150M19                                  | -                   | -                   | -  |
|                   |                       | SMn433(H)                | -                   | SMn433(H)                | 1534               | 150M36                                  | -                   | -                   | 30 Г 2<br>35 Г 2<br>35 Г 2<br>40 Г 2<br>40 Г 2<br>45 Г 2 |
|                   |                       | SMn438(H)                | 36Mn6(H)            | SMn438(H)                | 1541(H)            | 150M36                                  | -                   | -                   | -  |
|                   |                       | SMn443(H)                | 42Mn6(H)            | SMn443(H)                | 1541(H)            | -                                       | -                   | -                   | -  |
|                   |                       | SMnC420(H)<br>SMnC443(H) | -                   | SMnC420(H)<br>SMnC443(H) | -                  | -                                       | -                   | -                   | -  |
|                   | Cromo Aluminio Acero  | SACM645                  | 41CrAlMo74          | SACM645                  | -                  | -                                       | -                   | -                   | -  |

• El acero de aleación de arriba puede ser suministrado por fabricadas nacionales

### Herramienta de Acero

| Tipo                 |                     | Korea       | ISO   | Japon               | U.S.A    | Gran Bretania | Alemania     | Francia   | Rusia |   |
|----------------------|---------------------|-------------|-------|---------------------|----------|---------------|--------------|-----------|-------|---|
|                      |                     | KS          | ISO   | JIS                 | AISI SAE | BS BS/EN      | DIN DIN/EN   | NF NF/EN  | GOCT  |   |
| Acero Alta Velocidad | SKH2                | HS18-0-1    | SKH2  | T1                  | -        | -             | -            | -         | -     |   |
|                      | SKH3                | -           | SKH3  | T4                  | -        | -             | -            | -         | -     |   |
|                      | SKH4                | -           | SKH4  | T5                  | -        | -             | -            | -         | -     |   |
|                      | SKH10               | -           | SKH10 | T15                 | -        | BM 2          | S6/5/2       | Z 85 WDCV | -     |   |
|                      | SKH51               | HS6-5-2     | SKH51 | M2                  | -        | -             | -            | -         | -     |   |
|                      | SKH52               | HS6-6-2     | SKH52 | M3-1                | -        | -             | -            | -         | -     |   |
|                      | SKH53               | HS6-5-3     | SKH53 | M3-2                | -        | -             | -            | -         | -     |   |
|                      | SKH54               | HS6-5-4     | SKH54 | M4                  | -        | BM 35         | S6/5/2/5     | 6-5-2-5   | -     |   |
|                      | SKH55               | HS6-5-2-5   | SKH55 | M 35                | -        | -             | -            | -         | -     |   |
|                      | SKH56               | -           | SKH56 | M36                 | -        | -             | -            | -         | -     |   |
|                      | SKH57               | HS10-4-3-10 | SKH57 | M7                  | -        | -             | S2/9/2       | -         | -     |   |
|                      | SKH58               | HS2-9-2     | SKH58 | M7                  | -        | -             | -            | -         | -     |   |
|                      | SKH59               | HS2-9-1-8   | SKH59 | M42                 | -        | -             | -            | -         | -     |   |
|                      | Aleaciones de Acero | STS11       | -     | SKS11               | F2       | -             | -            | -         | -     | - |
|                      |                     | STS2        | -     | SKS2                | -        | -             | -            | -         | -     | - |
| STS21                |                     | -           | SKS21 | -                   | -        | -             | -            | -         | -     |   |
| STS5                 |                     | -           | SKS5  | -                   | -        | -             | -            | -         | -     |   |
| STS51                |                     | -           | SKS51 | L6                  | -        | -             | -            | -         | -     |   |
| STS7                 |                     | -           | SKS7  | -                   | -        | -             | -            | -         | -     |   |
| STS8                 |                     | -           | SKS8  | -                   | -        | -             | -            | -         | -     |   |
| STS4                 |                     | -           | SKS4  | -                   | -        | -             | -            | -         | -     |   |
| STS41                |                     | -           | SKS41 | -                   | -        | -             | -            | -         | -     |   |
| STS43                |                     | 105V        | SKS43 | W2-9 1/<br>W2-8 1-2 | -        | -             | -            | -         | -     |   |
| STS44                |                     | -           | SKS44 | -                   | -        | -             | -            | -         | -     |   |
| STS3                 |                     | -           | SKS3  | -                   | -        | -             | 105WCr6      | 105WC13   | -     |   |
| STS31                |                     | 105WCr1     | SKS31 | -                   | -        | -             | -            | -         | -     |   |
| STS93                |                     | -           | SKS93 | -                   | -        | -             | -            | -         | -     |   |
| STS94                |                     | -           | SKS94 | -                   | -        | -             | -            | -         | -     |   |
| STS95                |                     | -           | SKS95 | -                   | -        | BD3           | X210Cr12     | Z200C12   | -     |   |
| STD1                 |                     | 210Cr12     | SKD1  | D3                  | -        | -             | -            | -         | -     |   |
| STD11                |                     | -           | SKD11 | D2                  | -        | BA2           | X100CrMoV5 1 | Z100CDV5  | -     |   |
| STD12                |                     | 100CrMoV5   | SKD12 | A2                  | -        | -             | -            | -         | -     |   |
| STD4                 |                     | -           | SKD4  | -                   | -        | BH21          | X30WCrV9 3   | Z30WCV9   | -     |   |
| STD5                 |                     | X30WCrV9-3  | SKD5  | H21                 | -        | -             | -            | -         | -     |   |
| STD6                 |                     | X37CrMoV5-1 | SKD6  | H11                 | -        | BH13          | X40CrMoV5 1  | Z40CDV5   | -     |   |
| STD61                |                     | X40CrMoV5-1 | SKD61 | H13                 | -        | -             | -            | -         | -     |   |
| STD62                |                     | X35CrWMoV5  | SKD62 | H12                 | -        | -             | -            | -         | -     |   |
| STD7                 | 32CrMoV12-28        | SKD7        | H10   | -                   | -        | -             | -            | -         |       |   |
| STD8                 | -                   | SKD8        | H19   | -                   | -        | -             | -            | -         |       |   |
| STF3                 | -                   | SKT3        | -     | -                   | -        | 55NiCrMoV6    | 55NCDV7      | -         |       |   |
| STF4                 | 55NiCrMoV7          | SKT4        | L6    | -                   | -        | -             | -            | -         |       |   |

• El acero de aleación de arriba puede ser suministrado por fabricadas nacionales

# Información general I

| Tipo                 | Korea  | ISO       | Japon  | U.S.A               | Gran Bretania | Alemania   | Francia  | Rusia |
|----------------------|--------|-----------|--------|---------------------|---------------|------------|----------|-------|
|                      | KS     | ISO       | JIS    | AISI SAE            | BS BS/EN      | DIN DIN/EN | NF NF/EN | GOCT  |
| Acero Carbon         | SUM11  | -         | SUM11  | 1110                |               |            |          |       |
|                      | SUM12  | -         | SUM12  | 1109                |               |            |          |       |
|                      | SUM21  | 9S20      | SUM21  | 1212                |               |            |          |       |
|                      | SUM22  | 11SMn28   | SUM22  | 1213                | 230M07        | 9SMn28     | S250     |       |
|                      | SUM22L | 11SMnPb28 | SUM22L | 12L13               |               | 9SMnPb28   | S250Pb   |       |
|                      | SUM23  | -         | SUM23  | 1215                | 240M07        | 9SMn36     | S 300    |       |
|                      | SUM23L | -         | SUM23L | -                   |               |            |          |       |
|                      | SUM24L | 11SMnPb28 | SUM24L | 12L14               |               | 9SMnPb36   | S300Pb   |       |
|                      | SUM25  | 12SMn35   | SUM25  | -                   |               |            |          |       |
|                      | SUM31  | -         | SUM31  | 1117                |               |            |          |       |
|                      | SUM31L | -         | SUM31L | -                   |               |            |          |       |
|                      | SUM32  | -         | SUM32  | -                   |               |            |          |       |
|                      | SUM41  | -         | SUM41  | 1137                |               |            |          |       |
|                      | SUM42  | -         | SUM42  | 1141                |               |            |          |       |
|                      | SUM43  | 44SMn28   | SUM43  | 1144                |               |            |          |       |
| Cromo Alto en Carbon | STB1   | -         | SUJ1   | -                   |               |            |          |       |
|                      | STB2   | B1        | SUJ2   | 52100               | 534A99        | 100Cr6     | 100Cr6   |       |
|                      | STB3   | B2        | SUJ3   | ASTM A 485 Grados 1 |               |            |          |       |
|                      | STB4   | -         | SUJ4   | -                   |               |            |          |       |
|                      | STB5   | -         | SUJ5   | -                   |               |            |          |       |

• El acero de aleación de arriba puede ser suministrado por fabricadas nacionales

## Acero Inoxidable

| Tipo             |             | Korea           | ISO              | Japon    | U.S.A  |          | Gran Bretania | Alemania        | Francia         | Rusia       |           |
|------------------|-------------|-----------------|------------------|----------|--------|----------|---------------|-----------------|-----------------|-------------|-----------|
|                  |             | KS              | ISO              | JIS      | UNS    | AISI SAE | BS BS/EN      | DIN DIN/EN      | NF NF/EN        | GOCT        |           |
| Acero inoxidable | Austenítico | STS201          | X12CrMnNiN17-7-5 | SUS201   | S20100 | 201      | 284S16        | X12CrNi17-7     | Z12CMN17-07Az   | 12X17-9AH4  |           |
|                  |             | STS202          | X12CrMnNiN18-9-5 | SUS202   | S20200 | 202      | 301S21        | X2CrNiN18-7     |                 | 07X16H6     |           |
|                  |             | STS301          | X10CrNi18-8      | SUS301   | S30100 | 301      |               |                 | X12CrNi17-7     | Z11CN17-08  |           |
|                  |             | STS301L         | X2CrNiN18-7      | SUS301L  |        |          |               |                 |                 |             |           |
|                  |             | STS301J1        |                  | SUS301J1 |        |          | 302S25        |                 |                 |             | 12X18H9   |
|                  |             | STS302          |                  | SUS302   | S30200 | 302      |               |                 | X10CrNiS18-9    | Z12CN18-09  |           |
|                  |             | STS302B         | X12CrNiSi18-9-3  | SUS302B  | S30215 | 302B     | 303S21        |                 |                 |             |           |
|                  |             | STS303          | X10CrNiS18-9     | SUS303   | S30300 | 303      | 303S41        |                 |                 | Z8CNF18-09  | 12X18H10E |
|                  |             | STS303Se        |                  | SUS303Se | S30323 | 303Se    |               |                 | X5CrNi18-10     |             |           |
|                  |             | STS303Cu        |                  | SUS303Cu |        |          | 304S31        |                 | X2CrNi19-11     | Z7CN18-09   | 08X18H10  |
|                  |             | STS304          | X5CrNi18-9       | SUS304   | S30400 | 304      | 304S11        |                 |                 |             | 03X18H11  |
|                  |             |                 | X2CrNi18-9       |          |        |          |               |                 |                 |             |           |
|                  |             | STS304L         | X2CrNi19-11      | SUS304L  | S30403 | 304L     |               |                 | X2CrNiN18-10    | Z3CN19-11   |           |
|                  |             | STS304N1        | X5CrNiN18-8      | SUS304N1 | S30451 | 304N     |               |                 |                 | Z6CN19-09Az |           |
|                  |             | STS304LN        | X2CrNiN18-8      | SUS304LN | S30453 | 304LN    |               |                 | X5CrNi18-12     | Z3CN18-10Az |           |
|                  |             | STS304J1        |                  | SUS304J1 |        |          | 305S19        |                 |                 |             | 06X18H11  |
|                  |             | STS305          | X6CrNi18-12      | SUS305   | S30500 | 305      |               |                 |                 | Z8CN18-12   |           |
|                  |             | STS309S         |                  | SUS309S  | S30908 | 309S     | 310S31        |                 | X5CrNiMo27-12-2 | Z10CN24-13  | 10X23H18  |
|                  | STS310S     | X6CrNi25-20     | SUS310S          | S31008   | 310S   | 316S31   |               | X5CrNiMo27-13-3 | Z8CN25-20       |             |           |
|                  | STS316      | X5CrNiMo17-12-2 | SUS316           | S31600   | 316    |          |               | X2CrNiMo17-13-2 | Z7CND17-12-02   |             |           |
|                  |             | X3CrNiMo17-12-3 |                  |          |        |          |               | X2CrNiMo17-14-3 | Z6CND18-12-03   | 03X17H14M3  |           |
|                  | STS316L     | X2CrNiMo17-12-2 | SUS316L          | S31603   | 316L   |          |               |                 | Z3CND17-12-02   |             |           |
|                  |             | X2CrNiMo17-12-3 |                  |          |        |          |               |                 | Z3CND17-12-03   |             |           |
|                  |             | X2CrNiMo18-14-3 |                  |          |        |          |               |                 |                 |             |           |
|                  | STS316N     |                 | SUS316N          | S31651   | 316N   | 317S16   |               | X6CrNiTi18-10   |                 |             |           |
|                  | STS317      |                 | SUS317           | S31700   | 317    | 321S31   |               | X6CrNiNb18-10   |                 | 08X18H10T   |           |
|                  | STS321      | X6CrNiTi18-10   | SUS321           | S32100   | 321    | 347S31   |               |                 | Z6CNT18-10      | 08X18H12    |           |
|                  | STS347      | X6CrNiNb18-10   | SUS347           | S34700   | 347    |          |               | X6CrAl13        | Z6CNNb18-10     |             |           |
|                  | STS384      | X3NiCr18-16     | SUS384           | S38400   | 384    | 405S17   |               |                 | Z6CN18-16       |             |           |
|                  | STS405      | X6CrAl13        | SUS405           | S40500   | 405    |          |               |                 | Z8CA12          |             |           |
|                  | STS410L     |                 | SUS410L          |          |        |          |               | X6Cr17          | Z3C14           |             |           |
|                  | STS429      |                 | SUS429           | S42900   | 429    | 430S17   |               | X7CrS18         |                 | 12X17       |           |
|                  | STS430      | X6Cr17          | SUS430           | S43000   | 430    |          |               | X6CrMo17-1      | Z8C17           |             |           |
|                  | STS430F     | X7CrS17         | SUS430F          | S43020   | 430F   | 434S17   |               |                 | Z8CF17          |             |           |
|                  | STS434      | X6CrMo17-1      | SUS434           | S43400   | 434    |          |               |                 | Z8CD17-01       |             |           |
|                  | STS444      | X2CrMoTi18-2    | SUS444           | S44400   | 444    |          |               | X10Cr13         | Z3CDT18-02      |             |           |
| STXMX27          |             | SUSXMX27        | S44627           |          |        |          |               | Z1CD26-01       |                 |             |           |
| Martensítico     | STS403      | X12Cr13         | SUS403           | S40300   | 403    | 410S21   |               |                 |                 |             |           |
|                  | STS410      | X12CrS13        | SUS410           | S41000   | 410    | 416S21   | X20Cr13       | Z13C13          |                 |             |           |
|                  | STS416      | X20Cr13         | SUS416           | S41600   | 416    | 420S29   | X20CrNi17-2   | Z11CF13         | 20X13           |             |           |
|                  | STS420J1    | X19CrNi16-2     | SUS420J1         | S42000   | 420    | 431S29   |               | Z20C13          | 20X17H2         |             |           |
|                  | STS431      | X70CrMo15       | SUS431           | S43100   | 431    |          |               | Z15CN16-02      |                 |             |           |
| STS440A          |             | SUS440A         | S44002           | 440A     |        |          | X7CrNiAl17-7  | Z70C15          |                 |             |           |
| Endurecido       | STS630      | X5CrNiCuNb16-4  | SUS630           | S17400   | S17400 |          |               | Z6CNU17-04      | 09X17H7I0       |             |           |
|                  | STS631      | X7CrNiAl17-7    | SUS631           | S17700   | S17700 |          |               | Z9CNA17-07      |                 |             |           |
|                  | STS631J1    |                 | SUS631J1         |          |        |          |               |                 |                 |             |           |

• El acero de aleación de arriba puede ser suministrado por fabricadas nacionales





➤ Fundición o Acero de Forja

| Tipo      |                                       | Korea     | ISO   | Japon     | U.S.A                                | Gran Bretania  | Alemania   | Francia   | Rusia |
|-----------|---------------------------------------|-----------|---|-----------|--------------------------------------|--|--|---|-------|
|           |                                       | KS        | ISO   | JIS       | AISI SAE                             | BS BS/EN   | DIN DIN/EN                                       | NF NF/EN  | GOCT  |
| Fundición | Grey iron casting                     | GC100     | 100,150, 200, 250, 300, 350                         | FC100     | No 20 B                              | Grade 150<br>Grade 220<br>Grade 260<br>Grade 300<br>Grade 350<br>Grade 400 | GG 10  | Ft 10 D<br>Ft 15 D<br>Ft 20 D<br>Ft 25 D<br>Ft 30 D<br>Ft 35 D<br>Ft 40 D | -     |
|           |                                       | GC150     |   | FC150     | No 25 B                              |  | GG 15  |   |       |
|           |                                       | GC200     |   | FC200     | No 30 B                              |  | GG 20  |   |       |
|           |                                       | GC250     |   | FC250     | No 35 B                              |  | GG 25  |   |       |
|           |                                       | GC300     |   | FC300     | No 45 B                              |  | GG 30  |   |       |
|           |                                       | GC350     |   | FC350     | No 50 B<br>No 55 B                   |  | GG 35<br>GG 40                                   |   |       |
|           | Spheroidal graphite iron casting      | GCD400    | 700-2, 600-3, 500-7, 450-10, 400-15, 400-18, 350-22 | FCD400    | 60-40-18                             | SNG 420/12<br>SNG 370/17<br>SNG 500/7<br>SNG 600/3<br>SNG 700/2            | GGG 40<br>GGG 40.3<br>GGG 50<br>GGG 60<br>GGG 70 | FCS 400-12<br>FGS 370-17<br>FGS 500-7<br>FGS 600-3<br>FGS 700-2           | B     |
|           |                                       | GCD500    |   | FCD500    | 80-55-06                             |  |  |   |       |
|           |                                       | GCD600    |   | FCD600    | 100-70-03                            |  |  |   |       |
|           |                                       | GCD700    |   | FCD700    |                                      |  |  |   |       |
|           | Bastidor esférico de hierro y grafito | FCAD      | -   | FCAD      | -                                    | EN-GJS-  | EN-GJS-  | EN-GJS-   | -     |
|           | Austenítica                           | FCA-FCDA- | L-, S-  | FCA-FCDA- | Tipo 1, 2, Tipo D-2, D-3A Clase 1, 2 | F1, F2, S2W, S5S   | GGL-, GGG-                                       | L-, S-  | -     |

➤ Aleaciones No-Ferrosas

| Tipo                 |                                      | Korea       | ISO          | Japon        | U.S.A    | Gran Bretania  | Alemania       | Francia     | Rusia      |               |          |
|----------------------|--------------------------------------|-------------|--------------|--------------|----------|----------------|----------------|-------------|------------|---------------|----------|
|                      |                                      | KS          | ISO          | JIS          | AISI SAE | BS BS/EN       | DIN DIN/EN     | NF NF/EN    | GOCT       |               |          |
| Aleación de aluminio | Lingotes de Aleación de Aluminio     | AC1B        | Al-Cu4MgTi   | AC1B         | 204.0    | -              | -              | A-U5GT      |            |               |          |
|                      |                                      | AC2A        |              | AC2A         | -        | -              |                |             |            |               |          |
|                      |                                      | AC2B        |              | AC2B         | 319.0    | -              | -              |             |            |               |          |
|                      |                                      | AC3A        |              | AC3A         | -        | LM-6           | -              |             |            |               |          |
|                      |                                      | AC4A        |              | AC4A         | -        | -              | G(GK)-AlSi9Cu3 |             |            |               |          |
|                      |                                      | AC4B        |              | AC4B         | -        | -              | -              |             |            |               |          |
|                      |                                      | AC4C        |              | Al-Si7Mg(Fe) | AC4C     | 356.0          | -              |             |            | G(GK)-AlSi7MG | A-S7G    |
|                      |                                      | AC4CH       |              | Al-Si7Mg     | AC4CH    | A356.0         | LM-25          |             |            | -             | -        |
|                      |                                      | AC4D        |              | Al-Si5Cu1Mg  | AC4D     | 355.0          | LM-16          |             |            | -             | -        |
|                      |                                      | AC5A        |              | Al-Cu4Ni2Mg2 | AC5A     | 242.0          | -              |             |            | G(GK)-AlMg5   | A-U4NT   |
|                      |                                      | AC7A        |              | -            | AC7A     | 514.0          | LM-5           |             |            | -             | -        |
|                      |                                      | AC8A        |              | -            | AC8A     | -              | LM-13          |             |            | -             | A-S12UNG |
|                      |                                      | AC8B        |              | -            | AC8B     | -              | LM-26          |             |            | -             | A-S10UG  |
|                      |                                      | AC8C        |              | -            | AC8C     | -              | -              |             |            | -             | A-S10UG  |
|                      |                                      | AC9A        |              | -            | AC9A     | -              | LM-29          |             |            | -             | -        |
|                      | AC9B                                 | -           | AC9B         | -            | -        | GD-AlSi12 (Cu) | A-S18UNG       |             |            |               |          |
|                      | Aleaciones de Aluminio               | ALDC1       | Al-Si12CuFe  | ADC1         | A413.0   | LM20           | GD-AlSi10Mg    | A-S13       |            |               |          |
|                      |                                      | ALDC2       |              | ADC3         | A360.0   | -              | GD-AlMg9       | A-S9G       |            |               |          |
|                      |                                      | ALDC3       |              | ADC5         | 518.0    | -              | -              | A-G6        |            |               |          |
|                      |                                      | ALDC4       |              | ADC6         | -        | -              | GD-AlSi9Cu3    | A-G3T       |            |               |          |
|                      |                                      | ALDC7       |              | Al-Si8Cu3Fe  | ADC10    | A380.0         | -              | GD-AlSi9Cu3 | -          |               |          |
|                      |                                      | ALDC7Z      |              | Al-Si8Cu3Fe  | ADC10Z   | A380.0         | LM24           | -           | -          |               |          |
|                      |                                      | ALDC8       |              | -            | ADC12    | 383.0          | LM2            | -           | -          |               |          |
|                      |                                      | ALDC8Z      |              | -            | ADC12Z   | 383.0          | LM2            | -           | -          |               |          |
|                      |                                      | ALDC9       |              | -            | ADC14    | B390.0         | LM30           | EN AW-5052  | -          |               |          |
|                      | Aleaciones de Aluminio estructuradas | A5052S      | AlMg4.5Mn0.7 | A5052S       | 5052     | EN AW-5052     | EN AW-5454     | EN AW-5052  |            |               |          |
|                      |                                      | A5454S      |              | A5454S       | 5454     | EN AW-5454     | EN AW-5083     | EN AW-5454  |            |               |          |
|                      |                                      | A5083S      |              | A5083S       | 5083     | EN AW-5083     | EN AW-5086     | EN AW-5083  |            |               |          |
|                      |                                      | A5086S      |              | A5086S       | 5086     | EN AW-5086     | EN AW-6061     | EN AW-5086  |            |               |          |
|                      |                                      | A6061S      |              | AlMg1SiCu    | A6061S   | 6061           | EN AW-6061     | EN AW-6063  | EN AW-6061 |               |          |
|                      |                                      | A6063S      |              | AlMg0.7Si    | A6063S   | 6063           | EN AW-6063     | EN AW-7003  | EN AW-6063 |               |          |
|                      |                                      | A7003S      |              | -            | A7003S   | -              | EN AW-7003     | -           | EN AW-7003 |               |          |
|                      |                                      | A7N01S      |              | -            | A7N01S   | -              | -              | EN AW-7075  | -          |               |          |
| A7075S               |                                      | AlZn5.5MgCu |              | A7075S       | 7075     | EN AW-7075     | -              | EN AW-7075  |            |               |          |

➤ Acero Resistente al Calor

| Tipo                       |              | Korea   | ISO    | Japon  | U.S.A                                    | Gran Bretania | Alemania      | Francia  | Rusia |        |          |        |
|----------------------------|--------------|---------|--------|--------|--|---------------|---------------|--|-------|--------|----------|--------|
|                            |              | KS      | ISO    | JIS    | UNS AISI SAE                             | BS BS/EN      | DIN DIN/EN    | NF NF/EN   | GOCT  |        |          |        |
| SAcero Resistente al Calor | Austenítico  | STR31   |        | SUH31  | 309<br>310<br>N08330<br>S66286<br>N08330 | 331S42        | X53CrMnNi21-9 | Z35CNWS14-14<br>Z52CMN21-09-Az<br>Z55CMN21-09-Az |       |        |          |        |
|                            |              | STR35   |        | 349S52 |  |               |               |  |       |        |          |        |
|                            |              | STR36   |        | 349S54 |  |               |               |  |       |        |          |        |
|                            |              | STR37   |        | 381S34 |  |               |               |  |       |        |          |        |
|                            |              | STR38   |        |        |  |               |               |  |       |        |          |        |
|                            |              | STR309  |        | 309S24 |  |               |               |  |       |        |          |        |
|                            |              | STR310  |        | 310S24 |  |               |               |  |       |        |          |        |
|                            |              | STR330  |        | S31000 |  |               |               |  |       |        |          |        |
|                            |              | STR660  |        | N08330 |  |               |               |  |       |        |          |        |
|                            |              | STR661  |        | S66286 |  |               |               |  |       |        |          |        |
|                            |              | STR21   |        | SUH21  |  | R30155        |               |  |       |        |          |        |
|                            |              | STR409  |        | SUH409 |  |               |               |  |       | 409S19 | X6CrTi12 | Z6CT12 |
|                            | STR409L      | SUH409L | S40900 |        |  | Z3CT12        |               |  |       |        |          |        |
|                            | STR446       | SUH446  |        | 409    | X45CrSi9-3                               | Z12NC25       |               |  |       |        |          |        |
|                            | Martensítico | STR1    | SUH1   | S44600 | 401S45                                   |               | Z45CS9        |  |       |        |          |        |
|                            |              | STR3    | SUH3   | S65007 | 446                                      | 443S65        | Z40CSD10      |  |       |        |          |        |
|                            |              | STR4    | SUH4   |        |  |               | Z80CSN20-02   |  |       |        |          |        |
|                            |              | STR11   | SUH11  |        |  |               |               |  |       |        |          |        |
| STR600                     |              | SUH600  |        |        |  |               |               |  |       |        |          |        |
| STR616                     |              | SUH616  | S42200 |        |  |               |               |  |       |        |          |        |

• El acero de aleación de arriba puede ser suministrado por fabricadas nacionales

## Simbología: Acero, Metales No-Ferrosos

### 🔄 Comparación del Material de Trabajo

| Grupo                                | Term. Estándar  | Codigo                                  | Grupo  | Term. Estándar  | Codigo                            |      |
|--------------------------------------|---|---|--|---|-----------------------------------|------|
| <b>Acero Estructural</b>             | Acero rolado p/Estructura soldada con autógena  | SWS                                     | <b>Acero Forjado</b>                             | Forja de Acero al Carbón  | SF                                |      |
|                                      | Acero rolado  | SBR                                     |  | Forja del acero de molibdeno de cromo   | SFCM                              |      |
|                                      | Acero rolado de estructura general  | SB                                      |  | Forja del acero de molibdeno del cromo niquelado  | SFNCM                             |      |
|                                      | Acero de calibre ligero para la estructura general  | SBC                                     | <b>Fundición</b>                                 | Gris  | GC                                |      |
|                                      | Caliente, producto plano enrollado, en plancha para industria automovilística o estructuras | SAPH                                    |  | Grafito Esférico  | GCD                               |      |
| <b>Placa de Acero</b>                | Acero Frio Hoja/Tira  | SBC                                     |  | Negra Maleable  | BMC                               |      |
|                                      | Acero Caliente Hoja/Tira  | SHP                                     |  | Blanca Maleable   | WMC                               |      |
| <b>Tubo de Acero</b>                 | Tubería de Acero al Carbón  | SPP                                     | Maleable perlífico                               | PMC   |                                   |      |
|                                      | Tubería de Acero al Carbón P/Caldera  | STH                                     | <b>Acero Fundido</b>                             | Molde de fundición  | SC                                |      |
|                                      | Tubería de Acero Para Gs a Alta Presión   | STHG                                    |  | Acero fundido al carbono de alta tensión de rotura y acero aleado fundido de bajo contenido | HSC                               |      |
|                                      | Tubería de Acero al Carbón Uso General  | SPS                                     |  | Molde de fundición Inoxidable   | SSC                               |      |
|                                      | Tubería de Acero al Carbón P/Maquinado  | STST                                    |  | Fundicion de Acero Resistente al Calor  | HRSC                              |      |
|                                      | Tubería de Aleación de Acero  | STA                                     |  | Molde de fundicion alto en Manganeso  | HMnSC                             |      |
|                                      | Tubería de Acero Inoxidable para Maquinado  | STS-TK                                  |  | Fundicion de acero para altas temp. y presión   | SCPH                              |      |
|                                      | Tubo de acero cuadrado para uso en general  | SPSR                                    |  | <b>Fundición</b>  | Fundicion de Latón                | BsC  |
|                                      | Tubo de Aleación de Acero   | SPA                                     |  |   | Fundicion de Latón Resistente     | HBsC |
|                                      | Pipa de acero de carbón para servicio a presión   | SPPS                                    | Fundicion de Bronce                              |   | BrC                               |      |
|                                      | Pipa de acero de carbón para el servicio de alta temp                                       | SPSR                                    | Fundición de Bronce Fosfórico                    |   | PCB                               |      |
|                                      | Pipa de acero de carbón para servicio de alta presión                                       | SPPH                                    | Fundicion de Aluminio y Bronce                   |   | AIBC                              |      |
|                                      | Pipa de acero inoxidable  | STSxT                                   | Fundicion de Aleación de Alumin                  |   | ACxA                              |      |
|                                      | <b>Hierro &amp; Acero</b>   | Acero al carbón para el uso enmaquinado | SMxxC, SMxxCK                                    |   | Fundición de Aleación de Magnesio | MgC  |
| Acero de molibdeno de aluminio/cromo |   | SACM                                    | Fundición de Zinc a Presión                      |   | ZnDC                              |      |
| Acero demolibdeno de cromo           |   | SCM                                     | Fundicion a presión de Aleación de Aluminio      |   | A $\varnothing$ DC                |      |
| Acero de cromo                       |   | SCr                                     | Fundicion a presión de Aleación de Magnesio      |   | MgDC                              |      |
| Acero de cromo                       |   | SNC                                     | Metal Blanco                                     | WM  |                                   |      |
| Acero de cromo niquelado             |   | SNCM                                    | Fundicion de Aleación de Aluminio para Cojinetes | AM  |                                   |      |
| Acromolibdeno de cromo niquelado     |   | SMn, SMnC                               | Fundicion de Aleación de Latón para cojinetes    | KM  |                                   |      |
| <b>Acero Especial</b>                |   | <b>Hettas. de Acero</b>                 | Acero al Carbón                                  | STC   |                                   |      |
|                                      | Barrenado Hueco   |   | SKC  |   |                                   |      |
|                                      | De Aleación de Acero  |   | STS, STD, STF                                    |   |                                   |      |
|                                      | De alta Velocidad   |   | SKH  |   |                                   |      |
|                                      | <b>Acero Inoxidable</b>   | Barra de Acero Inoxidable               | STS  |   |                                   |      |
|                                      |   | <b>Acero Resistente. Calor</b>          | Acero resistente al calor                        | STR   |                                   |      |
|                                      |   |   | Barra de acero de la resistencia de calor        | STR   |                                   |      |
|                                      | Hoja de acero de la resistencia de calor  | STR                                     |  |   |                                   |      |
|                                      | Acero libre en el corte   | SUM                                     |  |   |                                   |      |
|                                      | Acero especial  | STB                                     |  |   |                                   |      |
| Resorte de Acero                     | SPS   |   |  |   |                                   |      |





## Tabla de Conversión materiales

### Tabla de Conversión Mayor SI

#### Fuerza

| N                  | kgf                      | dyn                   |
|--------------------|--------------------------|-----------------------|
| 1                  | $1.01972 \times 10^{-1}$ | $1 \times 10^{-5}$    |
| 9.80665            | 1                        | $9.80665 \times 10^5$ |
| $1 \times 10^{-5}$ | $1.01972 \times 10^{-6}$ | 1                     |

#### Tensión

| Pa or N/m <sup>2</sup> | MPa or N/mm <sup>2</sup> | kgf/mm <sup>2</sup>      | kgf/cm <sup>2</sup>      | kgf/m <sup>2</sup>       |
|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1                      | $1 \times 10^{-6}$       | $1.01972 \times 10^{-7}$ | $1.01972 \times 10^{-5}$ | $1.01972 \times 10^{-1}$ |
| $1 \times 10^6$        | 1                        | $1.01972 \times 10^{-1}$ | $1.01972 \times 10$      | $1.01972 \times 10^5$    |
| $9.80665 \times 10^6$  | 9.80665                  | 1                        | $1 \times 10^2$          | $1 \times 10^6$          |
| $9.80665 \times 10^4$  | $9.80665 \times 10^{-2}$ | $1 \times 10^{-2}$       | 1                        | $1 \times 10^4$          |
| 9.80665                | $9.80665 \times 10^{-6}$ | $1 \times 10^{-6}$       | $1 \times 10^{-4}$       | 1                        |

#### Presión

| Pa                    | kPa                 | MPa                      | bar                      | kgf/cm <sup>2</sup>      |
|-----------------------|---------------------|--------------------------|--------------------------|--------------------------|
| 1                     | $1 \times 10^{-3}$  | $1 \times 10^{-6}$       | $1 \times 10^{-5}$       | $1.01972 \times 10^{-5}$ |
| $1 \times 10^3$       | 1                   | $1 \times 10^{-3}$       | $1 \times 10^{-2}$       | $1.01972 \times 10^{-2}$ |
| $1 \times 10^6$       | $1 \times 10^3$     | 1                        | $1 \times 10$            | $1.01972 \times 10$      |
| $1 \times 10^5$       | $1 \times 10^2$     | $1 \times 10^{-1}$       | 1                        | 1.01972                  |
| $9.80665 \times 10^4$ | $9.80665 \times 10$ | $9.80665 \times 10^{-2}$ | $9.80665 \times 10^{-1}$ | 1                        |

#### Trabajo, Energía Calorífera

| J                     | kW·h                     | kgf·m                    | kcal                     |
|-----------------------|--------------------------|--------------------------|--------------------------|
| 1                     | $2.77778 \times 10^{-7}$ | $1.01972 \times 10^{-1}$ | $2.38889 \times 10^{-4}$ |
| $3.60000 \times 10^6$ | 1                        | $3.67098 \times 10^5$    | $8.60000 \times 10^2$    |
| 9.80665               | $2.72407 \times 10^{-6}$ | 1                        | $2.34270 \times 10^{-3}$ |
| $4.18605 \times 10^3$ | $1.16279 \times 10^{-3}$ | $4.26858 \times 10^2$    | 1                        |

#### Poder

| W                   | kW                       | kgf·m/s                  | PS                       | kcal/h                |
|---------------------|--------------------------|--------------------------|--------------------------|-----------------------|
| 1                   | $1 \times 10^{-3}$       | $1.01972 \times 10^{-1}$ | $1.35962 \times 10^{-3}$ | 0.860                 |
| $1 \times 10^3$     | 1                        | $1.01972 \times 10^2$    | 1.359 62                 | $8.60000 \times 10^2$ |
| 9.81 65             | $9.80665 \times 10^{-3}$ | 1                        | $1.33333 \times 10^{-2}$ | 8.433 71              |
| $7.355 \times 10^2$ | $7.355 \times 10^{-1}$   | $7.5 \times 10$          | 1                        | $6.32529 \times 10^2$ |
| 1.16279             | $1.16279 \times 10^{-3}$ | $1.18572 \times 10^{-1}$ | $1.58095 \times 10^{-3}$ | 1                     |

#### Calor específico

| J/(kg·K)              | kcal/(kg·°C) cal/(g·°C)  |
|-----------------------|--------------------------|
| 1                     | $2.38889 \times 10^{-4}$ |
| $4.18605 \times 10^3$ | 1                        |

#### Conductividad térmica

| W/(m·K) | kcal/(h·m·°C)           |
|---------|-------------------------|
| 1       | $8.6000 \times 10^{-1}$ |
| 1.16279 | 1                       |

#### R.P.M.

| min <sup>-1</sup> | s <sup>-1</sup> | r.p.m. |
|-------------------|-----------------|--------|
| 1                 | 0.0167          | 1      |
| 60                | 1               | 60     |



## Tabla para Calculo de Dureza

### Tabla de Dureza según Pieza de Trabajo

| Vickers 50kgf<br>HV | Brinell 3000kgf HB   |                                  | Rockwell                                   |  |   |   | Apoyo<br>HS | Tensión de rotura (valor aproximado)<br>MPa (t) |
|---------------------|----------------------|----------------------------------|--|--|---|---|-------------|---|
|                     | Esfera estandar 10mm | Esfera de carburo cementado 10mm | Escala A, 60kgf, partícula de diamante HRA | Escala B, 100kgf, esfera de 1/16in HRB | Escala C, 150kgf, partícula de diamante HRC | Escala D, 100kgf, partícula de diamante HRD |             |   |
| 940                 | -                    | -                                | 85.6                                       | -                                      | 68.0  | 76.9  | 97          |   |
| 920                 | -                    | -                                | 85.3                                       | -                                      | 67.5  | 76.5  | 96          |   |
| 900                 | -                    | -                                | 85.0                                       | -                                      | 67.0  | 76.1  | 95          |   |
| 880                 | -                    | (767)                            | 84.7                                       | -                                      | 66.4  | 75.7  | 93          |   |
| 860                 | -                    | (757)                            | 84.4                                       | -                                      | 65.9  | 75.3  | 92          |   |
| 840                 | -                    | (745)                            | 84.1                                       | -                                      | 65.3  | 74.8  | 91          |   |
| 820                 | -                    | (733)                            | 83.8                                       | -                                      | 64.7  | 74.3  | 90          |   |
| 800                 | -                    | (722)                            | 83.4                                       | -                                      | 64.0  | 74.8  | 88          |   |
| 780                 | -                    | (710)                            | 83.0                                       | -                                      | 63.3  | 73.3  | 87          |   |
| 760                 | -                    | (698)                            | 82.6                                       | -                                      | 62.5  | 72.6  | 86          |   |
| 740                 | -                    | (684)                            | 82.2                                       | -                                      | 61.8  | 72.1  | 84          |   |
| 720                 | -                    | (670)                            | 81.8                                       | -                                      | 61.0  | 71.5  | 83          |   |
| 700                 | -                    | (656)                            | 81.3                                       | -                                      | 60.1  | 70.8  | 81          |   |
| 690                 | -                    | (647)                            | 81.1                                       | -                                      | 59.7  | 70.5  | -           |   |
| 680                 | -                    | (638)                            | 80.8                                       | -                                      | 59.2  | 70.1  | 80          |   |
| 670                 | -                    | 630                              | 80.6                                       | -                                      | 58.8  | 69.8  | -           |   |
| 660                 | -                    | 620                              | 80.3                                       | -                                      | 58.3  | 69.4  | 79          |   |
| 650                 | -                    | 611                              | 80.0                                       | -                                      | 57.8  | 69.0  | -           |   |
| 640                 | -                    | 601                              | 79.8                                       | -                                      | 57.3  | 68.7  | 77          |   |
| 630                 | -                    | 591                              | 79.5                                       | -                                      | 56.8  | 68.3  | -           |   |
| 620                 | -                    | 582                              | 79.2                                       | -                                      | 56.3  | 67.9  | 75          |   |
| 610                 | -                    | 573                              | 78.9                                       | -                                      | 55.7  | 67.5  | -           |   |
| 600                 | -                    | 564                              | 78.6                                       | -                                      | 55.2  | 67.0  | 74          |   |
| 590                 | -                    | 554                              | 78.4                                       | -                                      | 54.7  | 66.7  | -           | 2055  |
| 580                 | -                    | 545                              | 78.0                                       | -                                      | 54.1  | 66.2  | 72          | 2020  |
| 570                 | -                    | 535                              | 77.8                                       | -                                      | 53.6  | 65.8  | -           | 1985  |
| 560                 | -                    | 525                              | 77.4                                       | -                                      | 53.0  | 65.4  | 71          | 1950  |
| 550                 | (505)                | 517                              | 77.0                                       | -                                      | 52.3  | 64.8  | -           | 1905  |
| 540                 | (496)                | 507                              | 76.7                                       | -                                      | 51.7  | 64.4  | 69          | 1860  |
| 530                 | (488)                | 497                              | 76.4                                       | -                                      | 51.1  | 63.9  | -           | 1825  |
| 520                 | (480)                | 488                              | 76.1                                       | -                                      | 50.5  | 63.5  | 67          | 1795  |
| 510                 | (473)                | 479                              | 75.7                                       | -                                      | 49.8  | 62.9  | -           | 1750  |
| 500                 | (465)                | 471                              | 75.3                                       | -                                      | 49.1  | 62.2  | 66          | 1705  |
| 490                 | (456)                | 460                              | 74.9                                       | -                                      | 48.4  | 61.6  | -           | 1660  |
| 480                 | 488                  | 452                              | 74.5                                       | -                                      | 47.7  | 61.3  | 64          | 1620  |
| 470                 | 441                  | 442                              | 74.1                                       | -                                      | 46.9  | 60.7  | -           | 1570  |
| 460                 | 433                  | 433                              | 73.6                                       | -                                      | 46.1  | 60.1  | 62          | 1530  |
| 450                 | 425                  | 425                              | 73.3                                       | -                                      | 45.3  | 59.4  | -           | 1495  |
| 440                 | 415                  | 415                              | 72.8                                       | -                                      | 44.5  | 58.8  | 59          | 1460  |
| 430                 | 405                  | 405                              | 72.3                                       | -                                      | 43.6  | 58.2  | -           | 1410  |
| 420                 | 397                  | 397                              | 71.8                                       | -                                      | 42.7  | 57.5  | 57          | 1370  |
| 410                 | 388                  | 388                              | 71.4                                       | -                                      | 41.8  | 56.8  | -           | 1330  |
| 100                 | 379                  | 379                              | 70.8                                       | -                                      | 40.8  | 56.0  | 55          | 1290  |
| 390                 | 369                  | 369                              | 70.3                                       | -                                      | 39.8  | 55.2  | -           | 1240  |
| 380                 | 360                  | 360                              | 69.8                                       | (100.0)                                | 38.8  | 54.4  | 52          | 1205  |
| 370                 | 350                  | 350                              | 69.2                                       | -                                      | 39.9  | 53.6  | -           | 1170  |
| 360                 | 341                  | 341                              | 68.7                                       | (109.0)                                | 36.6  | 52.8  | 50          | 1130  |
| 350                 | 331                  | 331                              | 68.1                                       | -                                      | 35.5  | 51.9  | -           | 1095  |
| 340                 | 322                  | 322                              | 67.6                                       | (108.0)                                | 34.4  | 51.1  | 47          | 1070  |
| 330                 | 313                  | 313                              | 67.0                                       | -                                      | 33.3  | 50.2  | -           | 1035  |

| Vickers 50kgf<br>HV | Brinell 3000kgf HB   |                                  | Rockwell                                   |  |   |   | Apoyo<br>HS | Tensión de rotura (valor aproximado)<br>MPa (t) |
|---------------------|----------------------|----------------------------------|--|--|---|---|-------------|---|
|                     | Esfera estandar 10mm | Esfera de carburo cementado 10mm | Escala A, 60kgf, partícula de diamante HRA | Escala B, 100kgf, esfera de 1/16in HRB | Escala C, 150kgf, partícula de diamante HRC | Escala D, 100kgf, partícula de diamante HRD |             |   |
| 320                 | 303                  | 303                              | 66.4                                       | (107.0)                                | 32.2  | 49.4  | 45          | 1005  |
| 310                 | 294                  | 294                              | 65.8                                       | -                                      | 31.0  | 48.4  | -           | 980   |
| 300                 | 284                  | 284                              | 65.2                                       | (105.5)                                | 29.8  | 47.5  | 42          | 950   |
| 295                 | 280                  | 280                              | 64.8                                       | -                                      | 29.2  | 47.1  | -           | 935   |
| 290                 | 275                  | 275                              | 64.5                                       | (104.5)                                | 28.5  | 46.5  | 41          | 915   |
| 285                 | 270                  | 270                              | 64.2                                       | -                                      | 27.8  | 46.0  | -           | 905   |
| 280                 | 265                  | 265                              | 63.8                                       | (103.5)                                | 27.1  | 45.3  | 40          | 890   |
| 275                 | 261                  | 261                              | 63.5                                       | -                                      | 26.4  | 44.9  | -           | 875   |
| 270                 | 256                  | 256                              | 63.1                                       | (102.0)                                | 25.6  | 44.3  | 38          | 855   |
| 265                 | 252                  | 252                              | 62.7                                       | -                                      | 24.8  | 43.7  | -           | 840   |
| 260                 | 247                  | 247                              | 62.4                                       | (101.0)                                | 24.0  | 43.1  | 37          | 825   |
| 255                 | 243                  | 243                              | 62.0                                       | -                                      | 23.1  | 42.2  | -           | 805   |
| 250                 | 238                  | 238                              | 61.6                                       | 99.5                                   | 22.2  | 41.7  | 36          | 795   |
| 245                 | 233                  | 233                              | 61.2                                       | -                                      | 21.3  | 41.1  | -           | 780   |
| 240                 | 228                  | 228                              | 60.7                                       | 98.1                                   | 20.3  | 40.3  | 34          | 765   |
| 230                 | 219                  | 219                              | -  | 96.7                                   | (18.0)                                      | -   | 33          | 730   |
| 220                 | 209                  | 209                              | -  | 95.0                                   | (15.7)                                      | -   | 32          | 695   |
| 210                 | 200                  | 200                              | -  | 93.4                                   | (13.4)                                      | -   | 30          | 670   |
| 200                 | 190                  | 190                              | -  | 91.5                                   | (11.0)                                      | -   | 29          | 635   |
| 190                 | 181                  | 181                              | -  | 89.5                                   | (8.5)                                       | -   | 28          | 605   |
| 180                 | 171                  | 171                              | -  | 87.1                                   | (6.0)                                       | -   | 26          | 580   |
| 170                 | 162                  | 162                              | -  | 85.0                                   | (3.0)                                       | -   | 25          | 545   |
| 160                 | 152                  | 152                              | -  | 81.7                                   | (0.0)                                       | -   | 24          | 515   |
| 150                 | 143                  | 143                              | -  | 78.7                                   | -   | -   | 22          | 490   |
| 140                 | 133                  | 133                              | -  | 75.0                                   | -   | -   | 21          | 455   |
| 130                 | 124                  | 124                              | -  | 71.2                                   | -   | -   | 20          | 425   |
| 120                 | 114                  | 114                              | -  | 66.7                                   | -   | -   | -           | 390   |
| 110                 | 105                  | 105                              | -  | 62.3                                   | -   | -   | -           | -   |
| 100                 | 95                   | 95                               | -  | 56.2                                   | -   | -   | -           | -   |
| 95                  | 90                   | 90                               | -  | 52.0                                   | -   | -   | -           | -   |
| 90                  | 86                   | 86                               | -  | 48.0                                   | -   | -   | -           | -   |
| 85                  | 81                   | 81                               | -  | 41.0                                   | -   | -   | -           | -   |

Nota1.) El numero ASTM E 1 en la lista 140

Nota2.) 1. 1MPa = 1N/mm<sup>2</sup>

2. El numero en el espacio blanco no es generalmente usado





# Propiedades grados de KORLOY

## Propiedades Físicas de los grados KORLOY

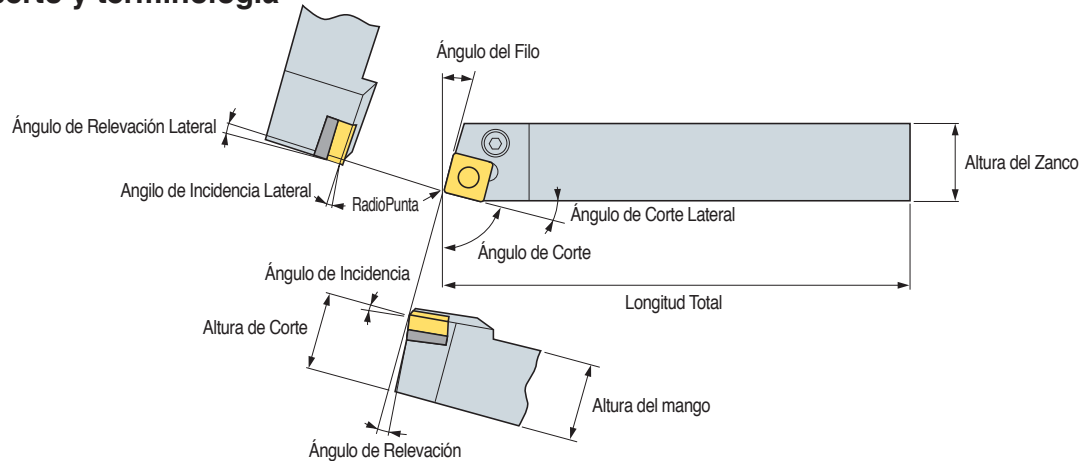
| Aplicación                                     | Simbología ISO | Grados KORLOY | Gravedad Especifica (g/cm <sup>3</sup> ) | Dureza (HRA) | TRS (kgf/mm <sup>2</sup> ) | Resistencia (kg/mm <sup>2</sup> ) | Modulo de Youngs (10 <sup>3</sup> kgf/mm <sup>2</sup> ) | Coefficiente de Expansión Termica (10 <sup>-6</sup> /°C) | Conductividad Termica (cal/cmsec°C) |     |
|--|----------------|---------------|--|--------------|----------------------------|-----------------------------------|---|--|-------------------------------------|-----|
| Grados para herramientas de Corte              | P              | P01           | ST05                                     | 10.6         | 92.7                       | 140                               | 440   | -  | -                                   | -   |
|  |                | P10           | ST10                                     | 10.0         | 92.1                       | 175                               | 460   | 48   | 6.2                                 | 25  |
|  |                | P20           | ST20                                     | 11.8         | 91.9                       | 200                               | 480   | 56   | 5.2                                 | 42  |
|  |                | P30           | ST30A                                    | 12.2         | 91.3                       | 230                               | 500   | 53   | 5.2                                 | -   |
|  | M              | M10           | U10                                      | 12.9         | 92.4                       | 170                               | 500   | 47   | -                                   | -   |
|  |                | M20           | U20                                      | 13.1         | 91.1                       | 210                               | 500   | -  | -                                   | 88  |
|  |                | M30           | ST30A                                    | 12.2         | 91.3                       | 230                               | 500   | 53   | 5.2                                 | -   |
|  |                | M40           | U40                                      | 13.3         | 89.2                       | 270                               | 440   | -  | -                                   | -   |
|  | K              | K01           | H02                                      | 14.8         | 93.2                       | 185                               | -   | 61   | 4.4                                 | 105 |
|  |                | K10           | H01                                      | 13.0         | 92.9                       | 210                               | 570   | 66   | 4.7                                 | 109 |
| K20  |                | G10           | 14.7                                     | 90.9         | 250                        | 500                               | 63  | -  | 105                                 |     |
| Aleaciones de grano Ultrafino                  | Z              | Z10           | FA1                                      | 14.1         | 91.4                       | 290                               | -   | 58   | 5.7                                 | -   |
|  |                | Z20           | FCC                                      | 12.5         | 91.3                       | 235                               | -   | -  | -                                   | -   |
| Grados para piezas de carburo de Tugsteno      | V              | V1            | D1                                       | 15.0         | 92.3                       | 205                               | 520   | -  | -                                   | -   |
|  |                | V2            | D2                                       | 14.8         | 90.9                       | 250                               | 150   | -  | -                                   | -   |
|  |                | V3            | D3                                       | 14.6         | 89.7                       | 310                               | 410   | -  | -                                   | -   |
|  |                | V4            | G5                                       | 14.3         | 89.0                       | 320                               | 380   | -  | -                                   | -   |
|  |                | V5            | G6                                       | 14.0         | 87.7                       | 350                               | 330   | -  | -                                   | -   |
| Grados para herramientas de explotacion minera | E              | E1            | GR10                                     | 14.8         | 90.9                       | 220                               | -   | -  | -                                   | -   |
|  |                | E2            | GR20                                     | 14.8         | 90.3                       | 240                               | -   | -  | -                                   | -   |
|  |                | E3            | GR30                                     | 14.8         | 89.0                       | 270                               | -   | -  | -                                   | -   |
|  |                | E4            | GR35                                     | 14.8         | 88.2                       | 270                               | -   | -  | -                                   | -   |
|  |                | E5            | GR50                                     | 14.5         | 87.0                       | 300                               | -   | -  | -                                   | -   |

## Propiedades Físicas de los elementos

| Elementos                      | Masa Especificas (g/cm <sup>3</sup> ) | Dureza (HB) | Modulo de Young (x10 <sup>3</sup> kgf/mm <sup>2</sup> ) | Conductividad Termica (cal/cmsec°C) | Coefficiente de Expansion Termica (x10 <sup>-6</sup> /°C) | Punto de Fusión (°C) |
|--------------------------------|---------------------------------------|-------------|---|-------------------------------------|---|----------------------|
| WC                             | 15.6                                  | 2,150       | 70  | 0.3                                 | 5.1   | 2,900                |
| TiC                            | 4.94                                  | 3,200       | 45  | 0.04                                | 7.6   | 3,200                |
| TaC                            | 14.5                                  | 1,800       | 29  | 0.05                                | 6.6   | 3,800                |
| NbC                            | 8.2                                   | 2,050       | 35  | 0.04                                | 6.8   | 3,500                |
| TiN                            | 5.43                                  | 2,000       | 26  | 0.07                                | 9.2   | 2,950                |
| Al <sub>2</sub> O <sub>3</sub> | 3.98                                  | 3,000       | 42  | 0.07                                | 8.5   | 2,050                |
| cBN                            | 3.48                                  | 4,500       | 71  | 3.1                                 | 4.7   | -                    |
| Diamond                        | 3.52                                  | 9,000       | 99  | 5.0                                 | 3.1   | -                    |
| Co                             | 8.9                                   | -           | 10~18   | 0.165                               | 12.3  | 1,495                |
| Ni                             | 8.9                                   | -           | 20  | 0.22                                | 13.3  | 1,455                |



## Forma del inserto y terminología

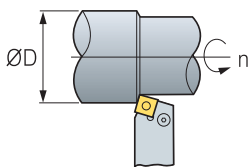


## Relación de ángulos entre la herramienta y la pieza de trabajo

| Inclinación Efectos del filo | Terminología   | Función   | Efectos  |
|------------------------------|--|---|--|
| <b>Ángulo de Inclinación</b> | Ángulo de Incidencia Lateral<br>Ángulo de Incidencia | • Fuerza de corte, calor de corte, los efectos del control de la viruta el vidade la herramienta                                      | • (+): Máquina-capacidad excelente (reduciendo la fuerza de corte, la fuerza de debilitamiento del filo)<br>• (+): Cuando capacidad de maquinado excelente la capacidad que trabaja la máquina<br>• (-): Cuando es fuerte el filo es necesario que la condición o la escala sea interrumpida |
| <b>Ángulo de incidencia</b>  | Ángulo de relieve y relieve lateral                  | • Solamente contacto del filo con la cara de corte  | • (-): El filo es fuerte pero tiene vida corta de la herramienta por hacer mal funcionamiento del filo   |
| <b>Ángulo del Filo</b>       | Ángulo de filo                                       | • Control de la viruta y dirección de fuerza del corte  | • (+): Control mejorado de la viruta porque el grueso de la viruta es grande   |
|                              | Ángulo de filo lateral                               | • Residuos saltan sin control, la dirección de la fuerza de corte afecta a control de la virutay a la dirección de la fuerza de corte | • (+): El filo fuerte debido a la fuerza de corte distribuida pero al control de la viruta es malo por grueso fino de la viruta<br>• (-): Funcionamiento mejorado de la viruta   |
|                              | Ángulo de filo de final                              | • Previene la fricción entre el filo y la cara de corte   | • (-): El filo es fuerte pero tiene vida corta de la herramienta por hacer mal funcionamiento del filo   |

## Formulas para maquinado

### Velocidad de Corte



$$vc = \frac{\pi \times D \times n}{1000} \text{ (m/min)}$$

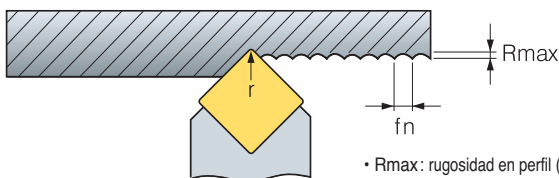
- vc: Velocidad del corte (m/min)
- D: Diámetro (mm)
- n: RPM (min<sup>-1</sup>)
- π: Constante Circular (3.14)

### Avance

$$fn = \frac{vf}{n} \text{ (mm/rev)}$$

- fn: Avance por diente (mm/rev)
- vf: Alimentación de la tabla (mm/min)
- n: RPM (min<sup>-1</sup>)

### Superficie



- Rmax: rugosidad en perfil (rugosidad de superficie máxima) (μ)
- fn: Alimentación por la revolución (mm/rev)
- r : Radio de punta

### Azperiza Superficial Teorica

$$R_{max} = \frac{fn^2}{8r} 1000 (\mu\text{m})$$

### Azperiza superficial

Acero:  $R_{max} \times (1.5 \sim 3)$   
Fundición:  $R_{max} \times (3 \sim 5)$

### Poder Requerido

$$P_{kw} = \frac{Q \times kc}{60 \times 102 \times \eta}$$

$$P_{HP} = \frac{P_{kw}}{0.75}$$

$$Q = \frac{vc \times fn \times ap}{1000}$$

- P<sub>kw</sub>: Poder requerido (kW)
- P<sub>HP</sub>: Poder requerido (HP)
- vc: Velocidad del corte (m/min)
- ap: Profundidad de corte (mm)
- fn: avance por revolución (mm/rev)
- kc: Resistencia de corte específica (kg/mm<sup>2</sup>)
- η: Eficiencia de maquinado (0.7~0.8)

### Rango de Material Removido

#### Kc aproximados

|                        |     |
|------------------------|-----|
| Acero Suave            | 190 |
| Acero medio en Carbón  | 210 |
| Acero Alto en Carbón   | 240 |
| Aleacion baja en Acero | 190 |
| Aleacion alta en acero | 245 |
| Fundición              | 93  |
| Fundición Maleable     | 120 |
| Bronze, Latón          | 70  |

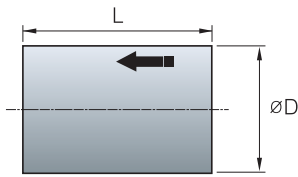
$$Q \text{ (cm}^3\text{/min)} = vc \times ap \times fn$$

- Q: Rango material removido (cm<sup>3</sup>/min)
- ap: Vel. Corte (mm)
- vc: Velocidad del corte (m/min)
- fn: Alimentación por la revolución (mm/rev)



## ● Tiempo de Maquinado

### Maquinado Externo 1



#### RPM Constante

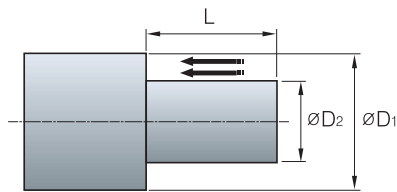
$$T = \frac{60 \times L}{f_n \times n}$$

#### Vel. de corte constante

$$T = \frac{60 \times \pi \times L \times D}{1000 \times f_n \times v_c}$$

T : Tiempo que trabaja a máquina (sec)  
 L : Longitud de corte (mm)  
 f<sub>n</sub> : Alimentación por la revolución (mm/rev)  
 n : Revolución por minuto (min)  
 D : Diámetro del objeto (mm)  
 v<sub>c</sub> : Velocidad del corte (m/min)

### Maquinado Externo 2



#### RPM Constante

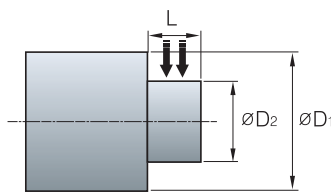
$$T = \frac{60 \times L}{f_n \times n} \times N$$

#### Vel. de corte constante

$$T = \frac{60 \times \pi \times L \times (D_1 + D_2)}{2 \times 1000 \times f_n \times v_c} \times N$$

T : Tiempo que trabaja a máquina (sec)  
 L : Longitud de corte (mm)  
 f<sub>n</sub> : Alimentación por la revolución (mm/rev)  
 n : Revolución por el minuto (min)  
 D<sub>1</sub> : Diámetro máximo del objeto (mm)  
 D<sub>2</sub> : Diámetro mínimo del objeto (mm)  
 v<sub>c</sub> : Velocidad del corte (m/min)  
 N : El número de paso = (D<sub>1</sub>-D<sub>2</sub>)/d/2

### Careado



#### RPM Constante

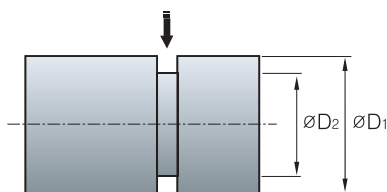
$$T = \frac{60 \times (D_1 - D_2)}{2 \times f_n \times n} \times N$$

#### Vel. de corte constante

$$T_1 = \frac{60 \times \pi \times (D_1 + D_2) \times (D_1 - D_2)}{4000 \times f_n \times v_c} \times N$$

T : Tiempo que trabaja a máquina (sec)  
 T<sub>1</sub> : Tiempo que trabaja a máquina antes del máximo RPM (sec)  
 L : Anchura de trabajar a máquina (mm)  
 f<sub>n</sub> : Alimentación por la revolución (mm/rev)  
 n : Revolución por el minuto (min)  
 D<sub>1</sub> : Diámetro máximo del objeto (mm)  
 D<sub>2</sub> : Diámetro mínimo del objeto (mm)  
 v<sub>c</sub> : Velocidad del corte (m/min)  
 N : El número de paso = (D<sub>1</sub>-D<sub>2</sub>)/d/2

### Ranurado



#### RPM Constante

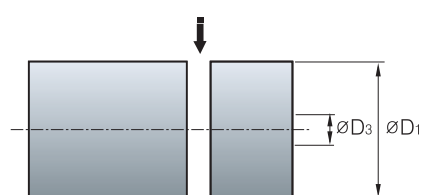
$$T = \frac{60 \times (D_1 - D_2)}{2 \times f_n \times n}$$

#### Vel. de corte constante

$$T_1 = \frac{60 \times \pi \times (D_1 + D_2) \times (D_1 - D_2)}{4000 \times f_n \times v_c}$$

T : Tiempo que trabaja a máquina (sec)  
 T<sub>1</sub> : Tiempo que trabaja a máquina antes del máximo RPM (sec)  
 L : Anchura de trabajar a máquina (mm)  
 f<sub>n</sub> : Alimentación por la revolución (mm/rev)  
 n : Revolución por el minuto (min)  
 D<sub>1</sub> : Diámetro máximo del objeto (mm)  
 D<sub>2</sub> : Diámetro mínimo del objeto (mm)  
 v<sub>c</sub> : Velocidad del corte (m/min)

### Tronzado



#### RPM Constante

$$T = \frac{60 \times D_1}{2 \times f_n \times n}$$

#### Vel. de corte constante

$$T_1 = \frac{60 \times \pi \times (D_1 + D_3) \times (D_1 - D_3)}{4000 \times f_n \times v_c}$$

$$T_3 = T_1 + \frac{60 \times D_3}{2 \times f_n \times n_{max}}$$

T : Tiempo que trabaja a máquina (sec)  
 T<sub>1</sub> : Tiempo que trabaja a máquina antes del máximo RPM (sec)  
 T<sub>3</sub> : Tiempo que trabaja hasta máximo RPM (seg)  
 f<sub>n</sub> : Alimentación por la revolución (mm/rev)  
 n : Revolución por el minuto (min)  
 n<sub>max</sub> : Revolución por el minuto máxima (min)  
 D<sub>1</sub> : Diámetro máximo del objeto (mm)  
 D<sub>3</sub> : Diámetro máximo en el máximo RPM (mm)  
 v<sub>c</sub> : Velocidad del corte (m/min)



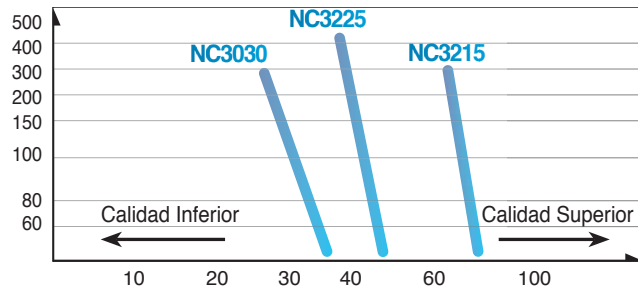
## ➤ Condición de Corte

- El trabajar con máquina deseables significa tiempo breve que trabaja la máquina, larga vida de la herramienta y buena precisión. Ésta es la razón que la condición apropiada del corte para cada las herramientas se debe seleccionar según las características de material, dureza, formas, para la eficacia de la máquina

## ➤ Velocidad de Corte

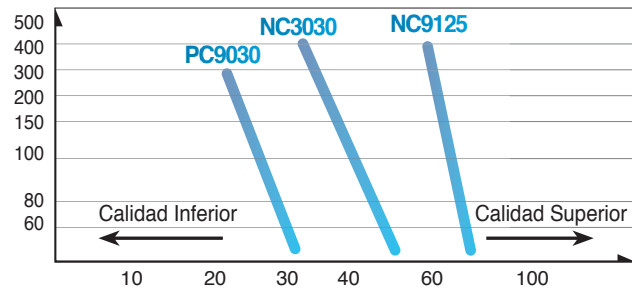
- **Pieza de trabajo:** S45C (180HB)
- **Criterio de la vida de la herramienta:** VB = 0.2 mm
- **Profundidad del corte:** 1.5 mm
- **Alimentación:** 0.3 mm/rev
- **Portainserto:** PCLNR2525-M12
- **Inserto:** CNMG120408, Corte seco

(La característica de la vida de la herramienta del grado de P)



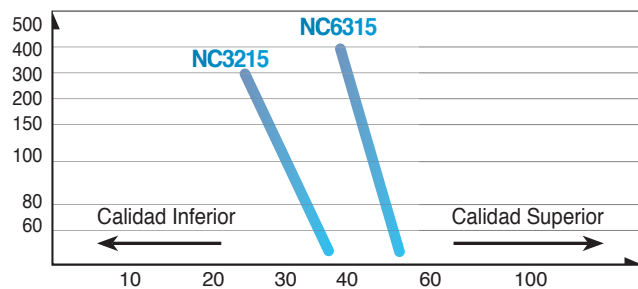
- **Pieza de trabajo:** STS304 (200HB)
- **Criterio de la vida de la herramienta:** VB = 0.2 mm
- **Profundidad del corte:** 1.5 mm
- **Alimentación:** 0.3 mm/rev
- **Portainserto:** PCLNR2525-M12
- **Inserto:** CNMG120408, Corte seco

(La característica de la vida de la herramienta del grado de M)



- **Pieza de trabajo:** GC300 (180HB)
- **Criterio de la vida de la herramienta:** VB = 0.2 mm
- **Profundidad del corte:** 1.5 mm
- **Alimentación:** 0.3 mm/rev
- **Portainserto:** PCLNR2525-M12
- **Inserto:** CNMG120408, Corte seco

(La característica de la vida de la herramienta del grado de K)



## ➤ Condición de Corte Efectiva

- Cuando la velocidad del corte aumenta el hasta 20% en un uso, la vida de la herramienta disminuye respectivamente abajo del 50%. Aunque inverso, si la velocidad del corte aumenta el hasta 50% las disminuciones de la vida de la herramienta abajo hasta el 20%. Por una parte si cortar velocidad es vida demasiado baja de la herramienta (20-40 m/min) acorta debido a la vibración





## ➤ Avance

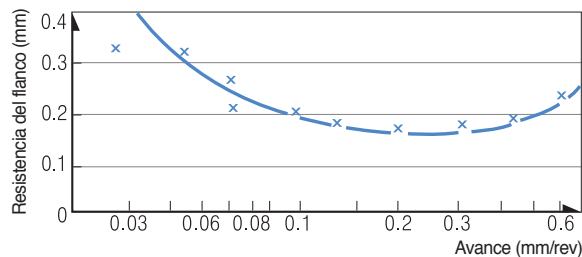
- El nivel de entrada en torneado significa el intervalo progresado de una distancia en un pedazo del trabajo dentro de 1 revolución. El nivel de entrada significa la alimentación de la tabla dividida por el número de dientes del cortador (nivel de entrada por el diente)

## ➤ Efectos del Avance

- Cuando el nivel de entrada disminuye el desgaste del flanco es aumentos. Cuando el nivel de entrada es demasiado bajo, la vida de la herramienta se acorta radicalmente
- Cuando el nivel de entrada aumenta, el desgaste del flanco consigue un más grande debido a las temperaturas altas, no obstante los niveles de entrada efectúan vida de la herramienta menos que la velocidad del corte. Y niveles de entrada más altos mejoran eficacia que trabaja a máquina

(Correlación entre el avance y el desgaste en el flanco en torneado de acero)

- **Pieza de trabajo:** SNCN431
- **Grado:** ST20
- **Vel de corte:** 200 m/min
- **Profundidad:** 1.0 mm
- **Tiempo de corte:** 10 mm

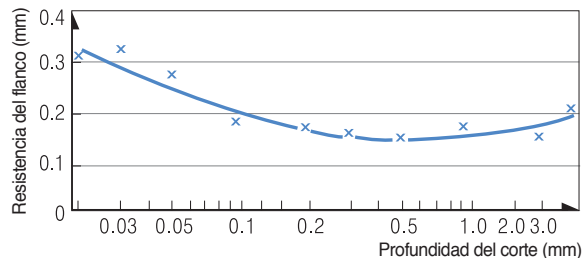


## ➤ Profundidad de Corte

- Determinado por los permisos requeridos a trabajar por la máquina un material y la capacidad la máquina puede tolerar. Hay límites del corte según las diversas formas y tamaños del inserto

(La relación entre la profundidad del corte y el flanco de torneado de a)

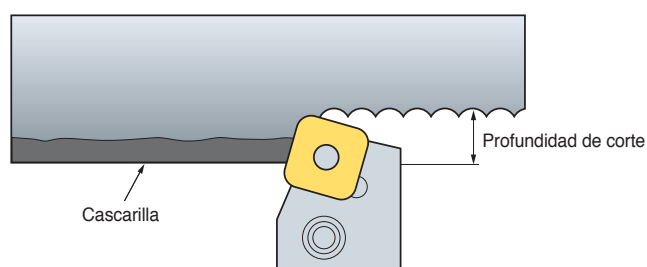
- **Pieza de trabajo:** SNCN431
- **Grado:** ST20
- **Vel de corte:** 200 m/min
- **Avance:** 0.2 mm/rev
- **Tempo de corte:** 10 mm



## ➤ Efectos de la Profundidad de Corte

- La profundidad del corte no tiene una influencia grande el vida de la herramienta
- Cuando la profundidad del corte es pequeña el pedazo del trabajo no se corta sino se frota algo. En estos casos, la máquina del trabajo endureció las piezas que disminuyen vida de la herramienta
- Al trabajar la máquina con una profundidad de corte más pequeña de la escala, generalmente causa desgaste anormal debido a impurezas duras en la superficie de trabajo

(Partes superficiales incluyendo el desbaste de la escala de fresado)



## 🔄 Ángulo de Relieve

- El ángulo de relieve evita la fricción entre el objeto y la cara del inserto y hace que el filo se mueva a lo largo del objeto fácilmente

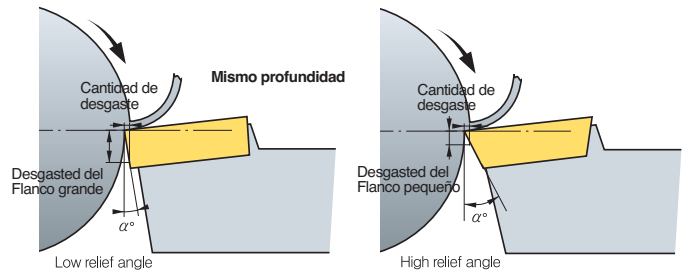
### ● Relación entre el ángulo de relieve y el flanco de uso

#### Afecta

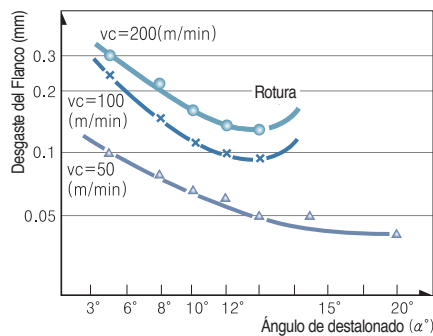
1. Si el ángulo de relieve es grande el desgaste del filo disminuye
2. Si el ángulo de relieve es grande la fuerza del filo se debilita
3. Si el ángulo de relieve es pequeño habrá rechinido

#### Selección de sistema

1. Pieza de trabajo endecida, cuando el filo es fuerte es necesario un ángulo de relieve baja
2. Pieza de torneado suave, Utilizar Ángulo de alto relieve



- **Pieza de trabajo:** SNCM431 (HB)
- **Grado:** P20
- **ap:** 1 mm
- **fn:** 0.32 mm/rev
- **T:** 20 mm



## 🔄 Ángulo de Corte Lateral

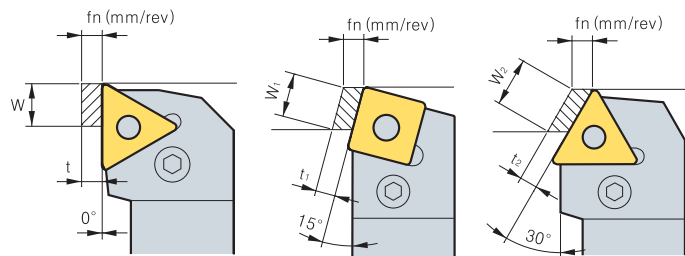
- El ángulo de filo lateral tiene influencia grande en flujo de la viruta y el ángulo de filo lateral apropiado de la fuerza de corte por lo tanto es muy importante

### ● Ángulo de filo lateral y grueso de la viruta

- Como el ángulo de filo lateral está consiguiendo virutas más grandes está consiguiendo más fino y más de par en par (refiera a izquierdo representan). En la misma alimentación y profundidad del corte con grueso de la viruta del ángulo de acercamiento 0° es igual que la anchura de la alimentación (t=fn) y de la viruta es igual a la profundidad del corte (W=ap)

$$t_1 = 0.97t, W_1 = 1.04W$$

$$t_2 = 0.87t, W_2 = 1.15W$$



① Ángulo Aproximación 0°    ② Ángulo Aproximación 15°    ③ Ángulo Aproximación 30°

### ● Ángulo de filo lateral y 3 fuerzas de corte

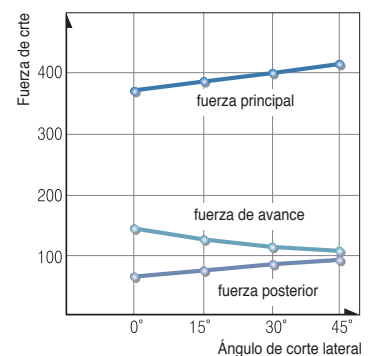
#### Afecta

1. El ángulo de filo lateral grande con la misma alimentación hace la viruta que ata longitud más de largo y el deluente del grueso de la viruta. De modo que las fuerzas de corte dispersen al filo largo por lo tanto la vida de la herramienta consigue más de largo
2. Ángulo de filo lateral grande par alas barras largas que trabajan a máquina pueden causar el doblez

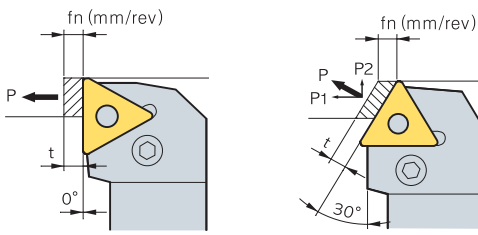
#### Selección de sistema

1. Profundidad de corte en acabado/Pieza de trabajo fino/baja rigidez en la maquina - Ángulo de relieve bajo
2. Poder calorífico alto y duro/Pieza de trabajo de gran desbaste/Pieza de trabajo de alta rigidez- alto Ángulo de relieve

- **Pieza de trabajo :** SCM440 (HB250)
- **Grado:** TNGA220412
- **vc:** 100 mm/min
- **ap:** 4 mm
- **fn:** 0.45 mm/rev



● Ángulo de filo lateral y carga del corte

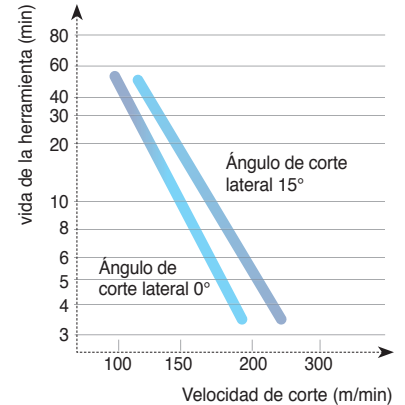


① La fuerza "P" es bloqueada    ② La fuerza "P" es dispersada "P1", "P2"

Mientras que el ángulo de acercamiento consigue una fuerza trasera más grande y la fuerza de la alimentación consigue una fuerza más pequeña

● Ángulo de filo lateral y vida de la herramienta

- Pieza de trabajo: SCM440
- Grado: P20
- $ap$ : 3 mm
- $fn$ : 0.2 mm/rev



● Ángulo de filo lateral y mejoramiento del corte

| Especificación        | Bajo                     | Rango de Acercamiento | Alto                       |
|-----------------------|--------------------------|-----------------------|----------------------------|
| Rango de desgaste     | Alto                     | ←-----→               | Bajo                       |
| Pieza de trabajo      | Corte facil del material | ←-----→               | Material dificil de cortar |
| Energía del máquinado | Corto                    | ←-----→               | Largo                      |
| Chafaneado            | Dificil de cortar        | ←-----→               | Facil de cortar            |
| Cómo máquinar         | Acabado                  | ←-----→               | Desbaste                   |
| Rigidez de la pieza   | Objeto fino y largo      | ←-----→               | Pieza gruesa               |
| Rigidez de la máquina | En caso de baja rigidez  | ←-----→               | En caso de alta rigidez    |

➤ Ángulo de Corte Final

- Afecta a la superficie a máquinar para prevenir interferencia entre la superficie de trabajo y el inserto

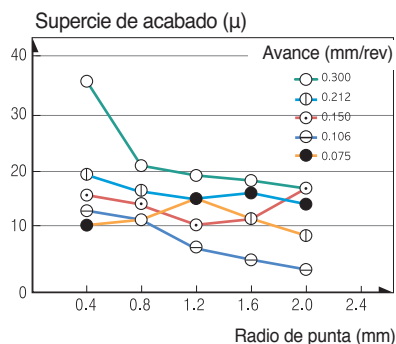
Ventajas

1. Si el ángulo de corte final reduce el filo, consiga un filo más fuerte de corte y genere aumentos en máquinado
2. Filode corte pequeño puede causar craterizaciones debidoalos aumentos de fuerza de corte

➤ Nose-R

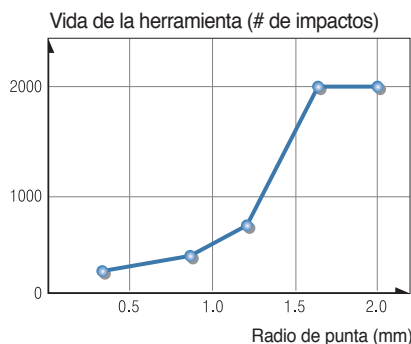
- El radio de punta "Nose R" no sólo afecta a la aspereza de la superficie, sino tambien a la fuerza del filo
- Es generalmente deseable que el radio de punta "Nose R" sea 2~3 veces más grande que la alimentación

● Radio de punta y superficie de acabado



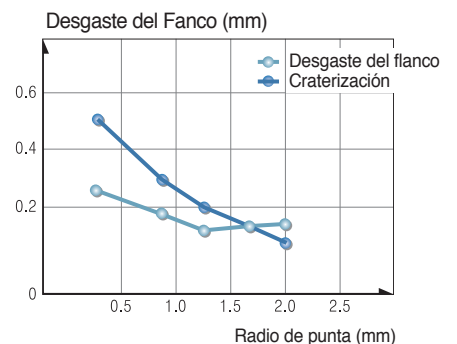
- Pieza de trabajo: SNCM439, HB200
- Grado: P20
- $vc$ : 120 mm/min
- $ap$ : 0.5 mm

● Radio de Punta y Vida de la Herramienta



- Pieza de trabajo: SCM440, HB280
- Grado: P10
- $vc$ : 100 mm/min,  $ap$ : 0.5 mm
- $fn$ : 0.3 mm/rev

● Radio de Punta y desgaste de la Herramienta



- Pieza de trabajo: SNCM439, HB200
- Grado: P10
- $vc$ : 140 mm/min,  $ap$ : 2 mm
- $fn$ : 0.2 mm/rev, T: 10 min



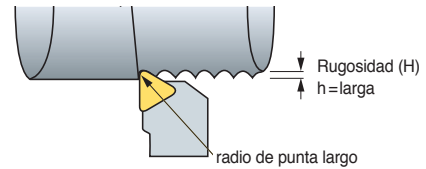
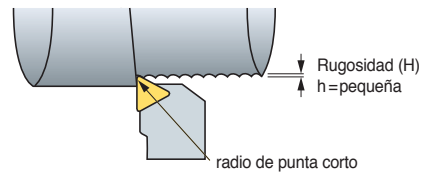
## 🔄 Nose-R

### Afecta

1. Un radio "R" grande mejora la superficie de acabado
2. Un radio "R" grande mejora la fuerza del filo
3. Un radio "R" grande reduce el desgaste del filo
4. Un radio "R" demasiado grande causa el rechinido debido a la fuerza de corte creciente

### Selección de sistema

1. Para acabados con baja profundidad de corte/pieza larga y fina/ cuando el poder de maquinado es lento - Radio de punta pequeño "R"
2. Para usos que necesitan filo fuerte tal como maquinado intermitente/ para desbaste de piezas grandes/cuando la energía del máquinado es bastante fuerte - Radio de punta grande "R"



## ● Relación entre Radio de Punta y Alimentación

| Radio de Punta / Avance (mm/rev) | 0.4 | 0.8 | 1.2 |
|----------------------------------|-----|-----|-----|
| 0.15                             |     |     |     |
| 0.26                             |     |     |     |
| 0.46                             |     |     |     |

## 🔄 Forma del Filo y sus Afectaciones

### ● Ángulo de Incidencia ( $\alpha$ )

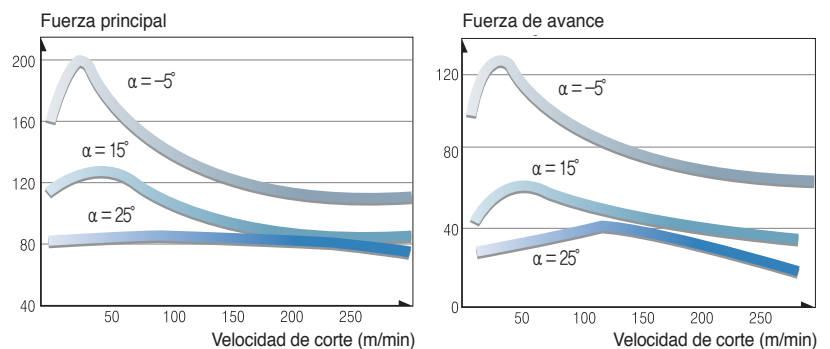
El ángulo de incidencia tiene influencia grande el fuerza de corte, flujo de la viruta y vida de la herramienta

### Afecta

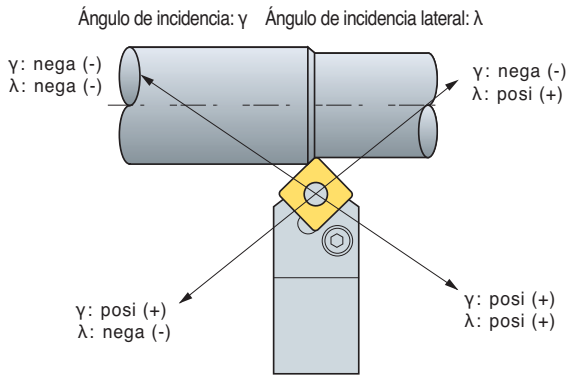
1. Altos resultados del ángulo de incidencia dan buena superficial final
2. El ángulo de incidencia aumenta en la energía que trabaja a máquina 1°, disminuya el 1%
3. El alto ángulo de incidencia debilita el filo

### Selección de sistema

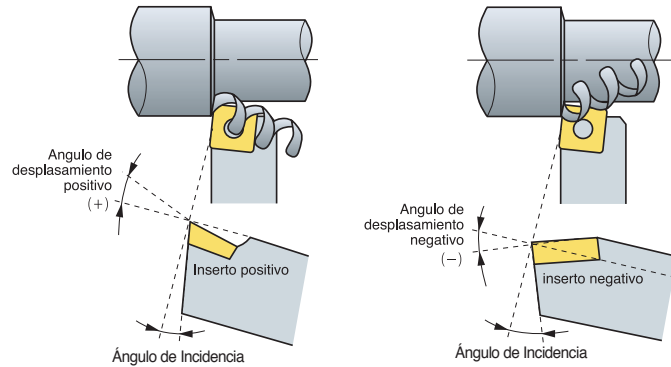
1. Para el objeto duro/Para los usos que necesitan el filo fuerte tal como escala de molino interrumpida y que trabaja a máquina - Bajo Ángulo de incidencia
2. Para el objeto suave/Fácil de cortar/Cuando la rigidez de la energía y de la pieza de trabajo es baja -Alto Ángulo de incidencia.



● **Ángulo de incidencia y control de virutas**



Para prevenir que en la superficie trabajada se dañe. Evite la combinación Negativa-Positivay  $\gamma$  :nega(-)  $\lambda$  :posi(+)



➤ **Selección por Herramienta**

- Hoy en día, es muy difícil seleccionar las mejores herramientas de corte, el sistema de maquinado y las condiciones del corte mejores. Sin embargo, puede ser simplificado clasificando los factores básicos

● **Selección del insertos y portaherramientas**

Se enumeran abajo los factores básicos, elija B según A

**A: Factores Basicos**

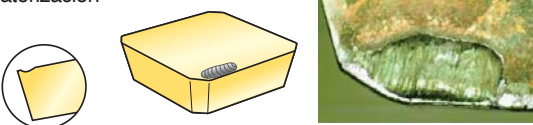
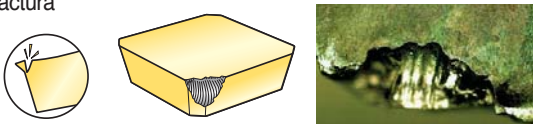
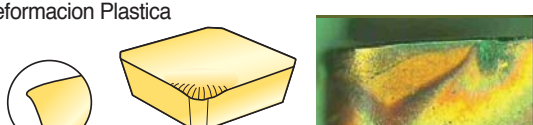
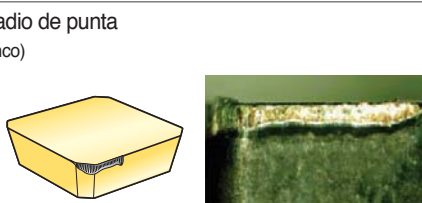
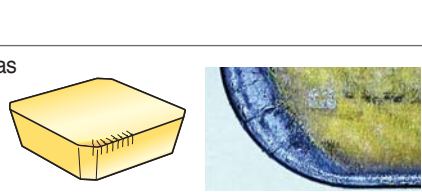


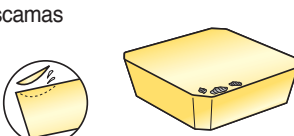

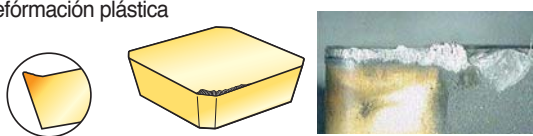
- Material de trabajo
- Forma de la pieza
- Tamaño de la pieza
- Dureza de la pieza
- Desbaste de la pieza (antes de maquinar)
- Acabado de superficie requerido
- Tipo de maquinaachine
- Condicion de la maquina (rigidez, poder etc)
- Hp de la maquina
- Sistema de sujecion con brida

**B: Sistema de Selección**

- ① Selección el mejor ángulo de incidencia como sea posible
- ② Selección el mayor zanco como sea posible
- ③ Seleccione el mayor filo de corte del inserto
- ④ Selección el mayor radio de punta
- ⑤ En Acabado, Selección el inserto con mas filos de corte
- ⑥ Selección el inserto mas pequeño
- ⑦ La velocidad del corte se debe determinar cuidadosamente según condiciones del corte
- ⑧ Selección la profundidad de corte según requiera
- ⑨ Selección el avance segu requiera
- ⑩ La condición del corte debe ser resuelta dentro de gamas del uso de la rompeviruta



## Localización de Averías

| Fallas de la herramienta  | CaUsO  | Solution  |
|---|--|---|
| <p>Craterización</p>   | <ul style="list-style-type: none"> <li>• Grado inadecuado</li> <li>• Condiciones de corte inadecuadas</li> </ul>   | <ul style="list-style-type: none"> <li>• Elija un grado más duro</li> <li>• Disminuya la condición del corte</li> </ul>   |
| <p>Fractura</p>    | <ul style="list-style-type: none"> <li>• Grado incorrecto</li> <li>• Alimentación excesiva</li> <li>• Acorte la fuerza del filo</li> <li>• Rigidez escasa del sostenedor</li> </ul>  | <ul style="list-style-type: none"> <li>• Elija un grado más resistente</li> <li>• Disminuya la alimentación</li> <li>• Elija un holder de tamaño más grande</li> <li>• Elija un holder mas grande</li> </ul>  |
| <p>Deformación Plastica</p>                                  | <ul style="list-style-type: none"> <li>• Grado incorrecto</li> <li>• Condición excesiva del corte</li> <li>• Alta temperatura de corte</li> </ul>  | <ul style="list-style-type: none"> <li>• Elija un grado más duro</li> <li>• Disminuya la condición del corte</li> <li>• Elija un grado con conductividad de calor mas grande</li> </ul>   |
| <p>Desgaste en radio de punta<br/>(Desgaste del flanco)</p>  | <ul style="list-style-type: none"> <li>• Cuando la dureza del objeto es demasiado alta compare con la herramienta</li> <li>• Cuando la superficie del machinig endureció el objeto</li> <li>• Grado incorrecto</li> <li>• Velocidad excesiva del corte</li> <li>• Ángulo de relevación demasiado pequeño</li> <li>• Alimentación demasiado baja</li> </ul> | <ul style="list-style-type: none"> <li>• Elija un grado más duro</li> <li>• Disminuya la velocidad del corte</li> <li>• Elija un ángulo de relevación más grande</li> <li>• Aumente la alimentación</li> </ul>  |
| <p>Fisuras termicas</p>                                    | <ul style="list-style-type: none"> <li>• Extensión y contracción por temperatura de corte</li> <li>• Grado incorrecto (*Operación especial de fresado)</li> </ul>  | <ul style="list-style-type: none"> <li>• Aplique refrigerante al corte (en caso del corte refrigerado, utilice bastante líquido refrigerador)</li> <li>• Elija un grado más resistente</li> </ul>   |
| <p>Despostille residuos de viruta</p>                      | <ul style="list-style-type: none"> <li>• Grado incorrecto</li> <li>• Alimentación excesiva</li> <li>• Acorte la fuerza del filo</li> <li>• Rigidez escasa del holder</li> </ul>  | <ul style="list-style-type: none"> <li>• Elija un grado más resistente</li> <li>• Disminuya la alimentación</li> <li>• Aplique al borde grande del afilamiento o del chaflán</li> <li>• Elija un sostenedor más grande del tamaño</li> </ul>                          |
| <p>Desgaste de la muesca</p>                               | <ul style="list-style-type: none"> <li>• Pieza de trabajo endurecida</li> <li>• Fricción debido a la mala geometría de la viruta (genera vibración)</li> </ul>   | <ul style="list-style-type: none"> <li>• Elija un grado más duro</li> <li>• Mejore el ángulo de incidencia y la forma del control de la viruta</li> </ul>   |
| <p>Escamas</p>   | <ul style="list-style-type: none"> <li>• Despostillamiento en el filo</li> <li>• Mal control de la viruta</li> </ul>   | <ul style="list-style-type: none"> <li>• Mejore el ángulo de corte del</li> <li>• Aplicable para el control de viruta en tamaños grandes</li> </ul>   |
| <p>Fractura Completa</p>                                   | <ul style="list-style-type: none"> <li>• Condición inutilizable debido al fracturamiento de partes mayores del filo por el progreso del desgaste</li> </ul>  | <ul style="list-style-type: none"> <li>• Reducir la velocidad de avance</li> <li>• Reducir la profundidad de corte</li> <li>• Seleccione una calidad más dura</li> <li>• Seleccione un rompevirutas más fuerte</li> <li>• Seleccione un inserto más grueso</li> </ul> |
| <p>Defórmación plástica</p>                                | <ul style="list-style-type: none"> <li>• La velocidad de corte lento</li> <li>• Los materiales pegajosos</li> </ul>  | <ul style="list-style-type: none"> <li>• Aumentar la velocidad de corte</li> <li>• Utilice una geometría más positiva</li> <li>• Utilice un grado mas duro</li> </ul>   |



Tipos de Fallas y localización de Averías

| Problemas  | Razones   | Solución           |        |                      |                        |                   |                       |  |   |                              |                  |                |                         |                           |  |                             |                                 |                       |
|--|---|--------------------|--------|----------------------|------------------------|-------------------|-----------------------|--|---|------------------------------|------------------|----------------|-------------------------|---------------------------|--|-----------------------------|---------------------------------|-----------------------|
|  |   | Condición de Corte |        |                      |                        | Grado del Inserto |                       |  |   | Forma de la Herramienta      |                  |                |                         | Sujeción de la Pieza      |  |                             |                                 |                       |
|  |   | Velocidad de Corte | Avance | Profundidad de Corte | Refrigerante           | Dureza del Grado  | Resistencia del Grado | Grado con mejor resistencia al impacto térmico | Grado con mejor resistencia a la adhesión de material | Evaluación de la Rompeviruta | Ángulo de Ataque | Radio de Punta | Ángulo de corte Lateral | Fuerza del borde del filo | Presión mejorada del inserto Clase M → Clase G | Rigidez mejorada del Holder | Sujeción de la pieza de Trabajo | Proyección del Holder |
| <b>Presión Pobre</b><br>(tamaño que trabaja a máquina Inestable)   | La condición del corte es incorrecta                                |                    |        |                      |                        |                   |                       |  |   |                              |                  |                | ●                       |                           |  |                             |                                 |                       |
|  | Separación de herramienta y pieza de trabajo                        |                    |        |                      |                        |                   |                       |  | ●   | ↑                            | ↓                |                |                         |                           | ●  | ●                           | ●                               | ●                     |
| <b>El empuje de la parte posterior del filo es grande</b><br>Es necesario ajustarlo porque la precisión que trabaja a máquina cambia durante la operación. | Aumento del desgaste del flanco                                     |                    |        |                      |                        | ●                 |                       |  |   |                              | ↑                |                |                         |                           |  |                             |                                 |                       |
|  | La condición del corte es incorrecta                                | ↓                  | ↑      |                      |                        | ●                 |                       |  |   |                              |                  |                |                         |                           |  |                             |                                 |                       |
| <b>Desbaste superficial pobre para el acabado</b><br><br>Criterio de la vida de la herramienta..   | Fuerza de corte debilitada aumentando el desgaste de la herramienta | ↓                  |        |                      | Corte con refrigerante |                   |                       | ●  | ●   | ↑                            | ↑                |                | ↓                       | ●                         |  |                             |                                 |                       |
|  | Despillamiento en el filo   |                    | ↓      | ↓                    |                        | ●                 |                       |  | ●   |                              | ↑                |                | ↑                       |                           |  | ●                           | ●                               | ●                     |
|  | Adherencia en el borde  | ↑                  | ↑      |                      | Corte con refrigerante |                   |                       | ●  | ●   | ↑                            |                  |                | ↓                       | ●                         |  |                             |                                 |                       |
|  | Condiciones incorrectas del corte                                   | ↑                  | ↓      | ↓                    | Corte con refrigerante |                   |                       |  |   |                              |                  |                |                         |                           |  |                             |                                 |                       |
|  | Herramientas, forma incorrecta del filo                             |                    |        |                      |                        |                   |                       |  | ●   |                              | ↑                |                | ↓                       | ●                         |  |                             |                                 |                       |
|  | Vibración, rechinando   | ↓                  | ↓      | ↓                    | Corte con refrigerante | ●                 |                       |  | ●   | ↑                            | ↓                |                | ↓                       |                           | ●  | ●                           | ●                               | ●                     |
| <b>Generación de calor de corte</b><br>Precisión pobre de trabajo en el maquinado y vida corta de la herramienta por el calor de corte                     | Condiciones incorrectas del corte                                   | ↓                  | ↓      | ↓                    |                        | ●                 |                       |  |   |                              |                  |                |                         |                           |  |                             |                                 |                       |
|  | Herramientas, forma incorrecta del filo                             |                    |        |                      |                        |                   |                       | ●  | ↑   |                              |                  | ↓              |                         |                           |  |                             |                                 |                       |
| <b>Rebabas, salto de Virutas</b><br>Rebabas de acero, de Aluminio  | Condiciones incorrectas del corte                                   | ↓                  | ↑      |                      | Corte con refrigerante | ●                 |                       |  |   |                              |                  |                |                         |                           |  |                             |                                 |                       |
|  | Desgaste de la herramienta, condiciones incorrectas del corte       |                    |        |                      |                        |                   |                       | ●  | ●   | ↑                            | ↓                |                | ↓                       |                           |  |                             |                                 |                       |
| <b>Fundición</b>   | Condiciones incorrectas del corte                                   |                    | ↓      | ↓                    |                        | ●                 |                       |  |   |                              |                  |                |                         |                           |  |                             |                                 |                       |
|  | Desgaste de la herramienta, condiciones incorrectas del corte       |                    |        |                      |                        |                   |                       | ●  | ↑   | ↑                            |                  | ↓              |                         | ●                         | ●  | ●                           | ●                               |                       |
| <b>Acero Suave</b>   | Condiciones incorrectas del corte                                   | ↑                  | ↑      |                      | Corte con refrigerante | ●                 |                       |  |   |                              |                  |                |                         |                           |  |                             |                                 |                       |
|  | Desgaste de la herramienta, condiciones incorrectas del corte       |                    |        |                      |                        |                   |                       | ●  | ●   | ↑                            |                  | ↓              |                         |                           |  |                             |                                 |                       |

↑: Incrementa ↓: Decrease ●: Uso ○: Uso Correcto

Criterio de Vida de la Herramienta

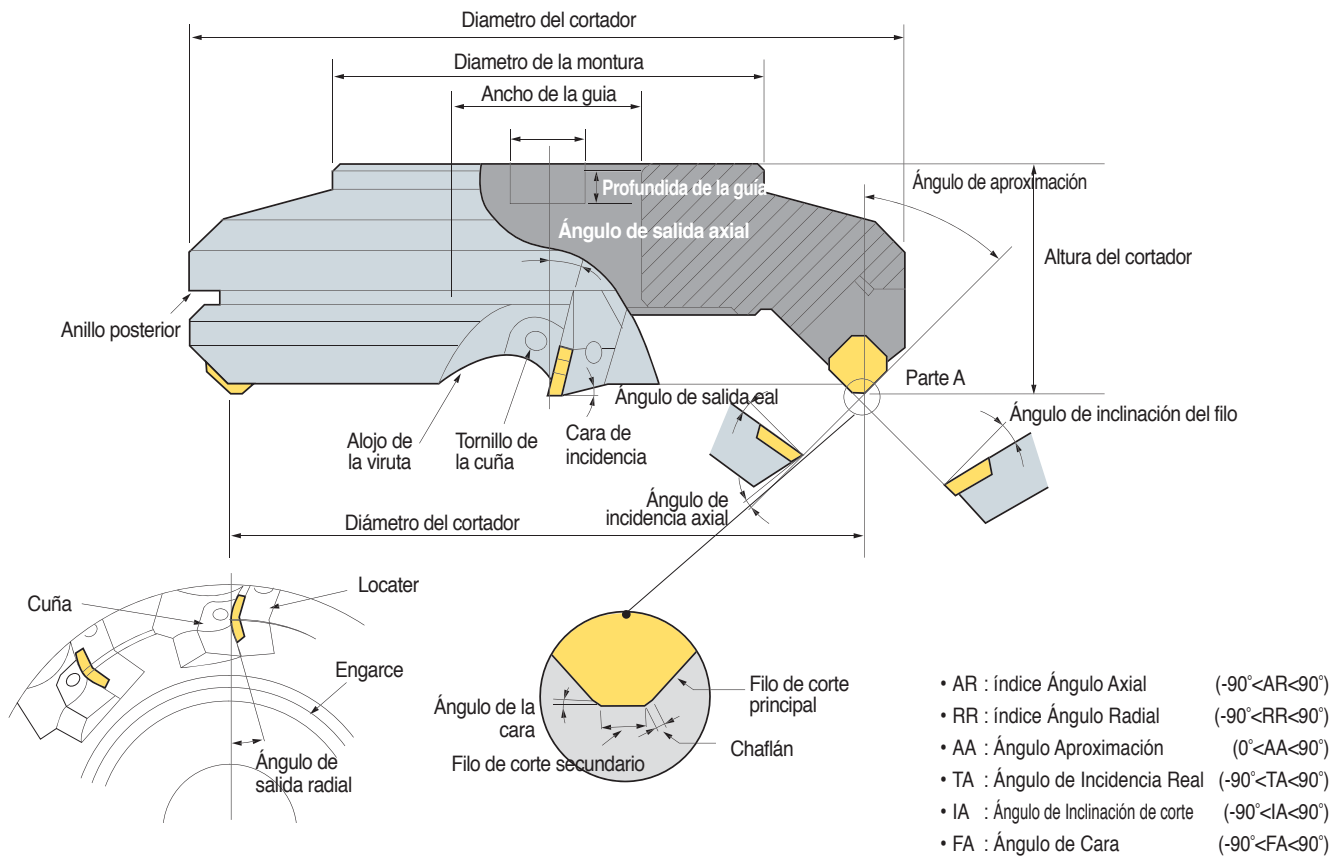
● KS B0813

|                                     |                        |  |
|-------------------------------------|------------------------|--|
| <b>Flanco Resistencia Espesor</b>   | 0.2 mm                 | Precisión de corte ligera, acabado en aleaciones no ferroass |
|                                     | 0.4 mm                 | Maquinado especial para acero                                |
|                                     | 0.7 mm                 | Corte General en fundición, acércete                         |
|                                     | 1~1.25 mm              | Corte General en fundición, acércete                         |
| <b>Prof. de desgaste del cráter</b> | En general 0.05~0.1 mm |  |

● ISO (B8688)

| Criterio de Vida en la herramienta                                    | Aplicación  |
|---|---|
| Fractura  | Maquinado especial para acero                     |
| Anchura del desgaste en Flanco VB = 0.3 mm                            | Incluso en el desgaste del flanco de los carburos |
| VBmax = 0.5 mm  | Desgaste desigual del flanco                      |
| Anchura de Desgaste KT = 0.06+0.3fmm (f:mm/rev)                       | Herramienta de carburos cementados                |
| Criterio Asperesa Superficial 1, 1.6, 2.5, 4, 6.3, 10 <sup>μ</sup> Ra | Cuando el desbaste superficial es importante      |

## Forma y Código del Cortador de Fresado



### Terminología y funciones del Ángulo de corte

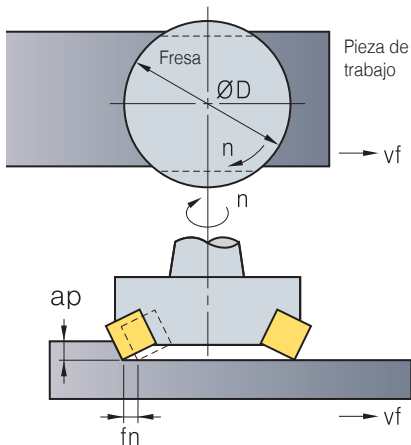
| No. | Falla de Herramienta                    | Símbolo | Función  | Efectos   |
|-----|---|---------|--|---|
| 1   | Ángulo de incidencia axial              | A.R     | Sentido de flujo de la viruta, Adherencia              | Postivo: corte excelente, prevención del filo de adicción   |
| 2   | Ángulo de Incidencia radial             | R.R     | Afectación en el empuje                                | Negativo: Excelente control de viruta   |
| 3   | Ángulo de acercamiento                  | A.A     | El grueso de la viruta, determina el sentido del flujo | (+): El grueso de la viruta llega a ser más fino, fuerza de corte podría ser reducido   |
| 4   | Ángulo de incidencia verdadero          | T.A     | Ángulo de incidencia Eficaz                            | (+): Un mejor corte. Prevención de la Adherencia, fuerza de debilitamiento del filo<br>(-): La fuerza del filo aumenta, difícil Adherencia del material al filo |
| 5   | Ángulo de inclinación del filo de corte | I.A     | Determina el sentido del flujo de la viruta            | (+): El buen flujo de la viruta, disminuciones de la fuerza de corte, la fuerza de la esquina del borde se debilita   |
| 6   | Ángulo de inclinación                   | F.A     | Azperesa superficial que controla el acabado           | Rugosidad de superficie incrementa a medida que F.A. se acerca a los $0^{\circ}$  |



Características de la combinación del Ángulo de Incidencia

|                    | Doble Ángulo Positivo  | Doble Ángulo Negativo   | Ángulo Positivo - Negativo   | Ángulo Negativo - Positivo  |
|--------------------|--|---|--|---|
| <b>División</b>    |  |   |  |   |
| <b>Uso</b>         | <ul style="list-style-type: none"> <li>Maquinado general en acero, fundición, acero inoxidable</li> <li>Para maquinar acero blando, que puede producir filo de aportación fácilmente</li> <li>Para maquinar materiales con superficies pobres</li> </ul> | <ul style="list-style-type: none"> <li>Para condiciones de intermitencia</li> <li>Desbastado de fundición y acero</li> </ul>  | <ul style="list-style-type: none"> <li>Para maquinar materiales difíciles de cortar, como acero inoxidable, acero para moldes</li> <li>Para desbastado profundo en acero y fundición de acero</li> </ul> | <ul style="list-style-type: none"> <li>Cuando la viruta fluye hacia el centro del cortador</li> </ul>   |
| <b>Ventajas</b>    | <ul style="list-style-type: none"> <li>Logra un buena acabado de superficie aun en materiales blandos con tendencia al filo de aportación</li> <li>Por su baja carga de corte, se obtiene un corte sin dificultades</li> </ul>                           | <ul style="list-style-type: none"> <li>Filo de corte fuerte</li> <li>Apropiado para desbastado en malas condiciones de superficie, (como arena, aceite, etc)</li> <li>Muy económico, ambas caras del inserto son funcionales</li> <li>Buen control de viruta</li> </ul> | <ul style="list-style-type: none"> <li>Buen flujo de viruta, fácil de maquinar.</li> <li>Recomendable para maquinar materiales difíciles de cortar</li> </ul>  | -   |
| <b>Desventajas</b> | <ul style="list-style-type: none"> <li>Filo de corte frágil</li> <li>Inserto de una cara únicamente</li> <li>La máquina y el cortador deben tener la suficiente potencia y rigidez</li> </ul>  | <ul style="list-style-type: none"> <li>La máquina y el cortador deben tener la suficiente potencia y rigidez</li> </ul>   | <ul style="list-style-type: none"> <li>Inserto de una cara únicamente (No economicos)</li> </ul>   | <ul style="list-style-type: none"> <li>Ya que las virutas fluyen hacia el centro del cortador, se puede raspar la superficie ya maquinada</li> <li>Mal flujo de viruta</li> </ul> |

Formulas de Corte



● Velocidad de Corte

$$vc = \frac{\pi \cdot D \cdot n}{1000} \text{ (m/min)}$$

- vc : Velocidad del corte (m/min)
- D : Diámetro de la herramienta (mm)
- n : Revolución por el minuto (min<sup>-1</sup>)
- π : Constante de la circular (3.14)

● Avance

$$fz = \frac{vf}{z \cdot n} \text{ (mm/t)}$$

- fz : Avance por diente (mm/t)
- vf : Avance por minuto (mm/min)
- n : Revolución por minuto (min<sup>-1</sup>)
- z : Numero de dientes

● Cantidad de retiro de viruta

$$Q = \frac{L \cdot v_f \cdot a_p}{1000} \text{ (cm}^3\text{/min)}$$

- Q : Cantidad del retiro de la viruta (coif/min)
- L : Anchura del corte (milímetro)
- vf : Alimentación de la tabla (mm/min)
- ap : Profundidad del corte (milímetro)

● Poder Requerido

$$P_{kw} = \frac{Q \cdot k_c}{60 \times 102 \times \eta} \quad P_{hp} = \frac{P_{kw}}{0.75}$$

- Pc : Requisito de energía (kilovatio Kw)
- H : Requisito de energía de caballo (HP)(mm/min)
- Q : Cantidad del retiro de la viruta (cm<sup>3</sup>/min)
- kc : Resistencia específica del corte (kgf/mm<sup>2</sup>)
- η : Machine efficiency rate (0.7-0.8)

● Tiempo de Maquinado

$$T = \frac{60 \times L_t}{v_f} \text{ (sec)}$$

- T : Tiempo que trabaja a máquina (sec)
- Lt : Longitud total de la alimentación de la tabla (mm)(=Lw+D+2R)
- Lw : La longitud del objeto (milímetros)
- D : El diámetro del cuerpo del cortador (milímetro)
- vf : Avance Tabla (mm/min)
- R : ongitude de Incudencia (mm)

● Ángulo de inclinación del Filo

Ángulo de incidencia Real  $\tan(T) = \tan(R) \times \cos(AA) + \tan(A) \times \sin(C)$   
 Ángulo de Inclinación del Filo  $\tan(I) = \tan(A) \times \cos(AA) - \tan(R) \times \sin(C)$



## Valores de la resistencia específica del corte

| Pieza de trabajo                        | Fuerza Tensible (kg/mm <sup>2</sup> ) y dureza | Resistencia específica del corte según la varia alimentación kc (MPa) |            |            |            |            |
|---|--|---|------------|------------|------------|------------|
|   |  | 0.1 (mm/t)  | 0.2 (mm/t) | 0.3 (mm/t) | 0.4 (mm/t) | 0.6 (mm/t) |
| Acero suave                             | 52   | 220   | 195        | 182        | 170        | 158        |
| Acero de carbón medio                   | 62   | 198   | 180        | 173        | 160        | 157        |
| Acero de alto carbón                    | 72   | 252   | 220        | 204        | 185        | 174        |
| Acero de herramienta                    | 67   | 198   | 180        | 173        | 170        | 160        |
| Acero de herramienta                    | 77   | 203   | 180        | 175        | 170        | 158        |
| Acero de manganeso del cromo            | 77   | 230   | 200        | 188        | 175        | 166        |
| Acero de manganeso del cromo            | 63   | 275   | 230        | 206        | 180        | 178        |
| Acero de molibdeno del cromo            | 73   | 254   | 225        | 214        | 200        | 180        |
| Acero de molibdeno del cromo            | 60   | 218   | 200        | 186        | 180        | 167        |
| Acero de molibdeno del cromo del níquel | 94   | 200   | 180        | 168        | 160        | 150        |
| Acero de molibdeno del cromo del níquel | HB352  | 210   | 190        | 176        | 170        | 153        |
| Acero de molde                          | 52   | 280   | 250        | 232        | 220        | 204        |
| Fundicion endurecida                    | HrC46  | 300   | 270        | 250        | 240        | 220        |
| Fundicion Meehanite                     | 36   | 218   | 200        | 175        | 160        | 147        |
| Fundicion gris                          | HB200  | 175   | 140        | 124        | 105        | 97         |
| Latón                                   | 50   | 115   | 95         | 80         | 70         | 63         |
| Aleación ligera (Al - Mg)               | 16   | 58  | 48         | 40         | 35         | 32         |
| Aleación ligera (Al - Si)               | 20   | 70  | 60         | 52         | 45         | 39         |

## Cantidad de Retiro de viruta (cm<sup>3</sup>/min) por Hp

| Pieza                      | Rango de Hp | Cantidad de Retiro de viruta (cm <sup>3</sup> /min) |      |      |      |       |       |
|----------------------------|-------------|---|------|------|------|-------|-------|
|                            |             | 5Hp   | 10Hp | 20Hp | 30Hp | 40Hp  | 50Hp  |
| Acero                      | Suave.      | 32  | 75   | 163  | 295  | 425   | 570   |
|                            | Medio.      | 26  | 55   | 127  | 212  | 310   | 425   |
|                            | Duro        | 18  | 41   | 93   | 163  | 228   | 310   |
| Fundicion                  | Suave.      | 52  | 116  | 260  | 455  | 670   | 880   |
|                            | Medio.      | 32  | 75   | 163  | 295  | 425   | 570   |
|                            | Duro        | 26  | 55   | 127  | 212  | 310   | 425   |
| Bronc <sup>o</sup> e Laton | Suave.      | 77  | 163  | 390  | 670  | 980   | 1,280 |
|                            | Medio.      | 54  | 118  | 275  | 490  | 700   | 910   |
|                            | Duro        | 26  | 55   | 127  | 245  | 325   | 425   |
| Aluminio                   |             | 90  | 195  | 440  | 780  | 1,110 | 1,500 |

## Clasificación del desgaste superficial

| Tipo  | Símbolo          | Descripción   | Diagrama |
|---|------------------|---|----------|
| Altura Máxima   | R <sub>max</sub> | <ul style="list-style-type: none"> <li>La distancia entre lo alto de la línea de pico de perfil y el fondo de la línea de valle de perfil en esta porción ejemplificada es medido en la dirección magnífica y longitudinal de la curva de tenacidad (Expresado por unidad μ)</li> <li>Excluir extraordinariamente valores ( tan pequeño o grande) que se parece a ranuras o montañas</li> </ul> |          |
| Medición del acabado de superficie en 10 puntos         | R <sub>z</sub>   | <ul style="list-style-type: none"> <li>Ejemplificado por la curva de tenacidad en la dirección de su línea media, la suma de el valor de promedio de valor absoluto de lo más alto pico de perfil y la profundidad de cinco profundos valles de perfil medidos en el magnificador vertical es expresado por micro metro (μ)</li> </ul>  |          |
| Medición del acabado de superficie por promedio central | R <sub>a</sub>   | <ul style="list-style-type: none"> <li>jemplificar solamente la longitud de referencia desde la curva de tenacidad en la dirección de línea media, tomando X-axis en la dirección de línea media y Y-axis en la dirección de magnificador longitudinal de esta ejemplificada parte y es expresado por mro metro (μ)</li> <li>Generalmente, leer el valor medido por Ra medidor</li> </ul>       |          |

| Símbolo                 |                  | ▽▽▽▽ | ▽▽▽  | ▽▽   | ▽    | ~               |
|-------------------------|------------------|------|------|------|------|-----------------|
| Rugosidad de superficie | R <sub>max</sub> | 0.8s | 6.3s | 25s  | 100s | Sin Especificar |
|                         | R <sub>z</sub>   | 0.8z | 6.3z | 25z  | 100z |                 |
|                         | R <sub>a</sub>   | 0.2a | 1.6a | 6.3a | 25a  |                 |

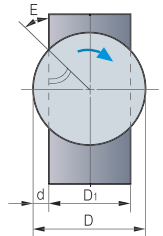
## Selección del diámetro de MILL-MAX (D)

### Selección por Rigidez del Maquinado

| Hp de la Maquina (PS)                                 | 10~15    | 15~20     | Over 20   |
|---|----------|-----------|-----------|
| Especificación apropiada del cuerpo del cortador (mm) | Ø80~Ø100 | Ø125~Ø160 | Ø160~Ø200 |

### Selección por Rigidez de la Maquina

| Hp de la Maquina (PS) | E             | δ     |
|-----------------------|---------------|-------|
| Acero                 | +20°~10°      | 3 : 2 |
| Fundicion             | menos de +50° | 5 : 4 |
| Aleacion Ligera       | menos de +40° | 5 : 3 |



D : Diámetro externo del cuerpo del cortador

D1 : Anchura del objeto

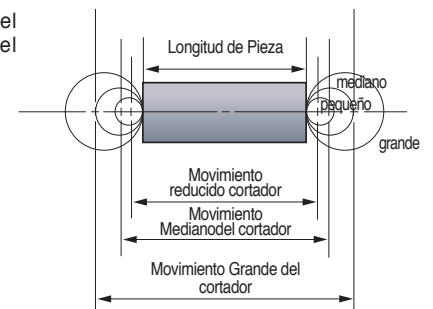
d : Parte proyectada del cuerpo del cortador

E : Dedique el ángulo

δ : Cociente del cuerpo del cortador y anchura del objeto (D: D1)

### Selección por tiempo de maquinado

Mientras mas grande el cortador, mas largo el tiempo de maquinado



### Selección por num. de diente

| Pieza  | Acero      | Fundicion | Aleacion Ligera |
|--------|------------|-----------|-----------------|
| Diente | Dx (1~1.5) | Dx (1~4)  | Dx1+a           |

ex) D = ø100 ⇒ 4" x (1~1.5) = 4~6

D es el tamaño del volador convertido a pulgadas



## Localización de Problemas en Fresado

| Problema                         | Razones   | Soluciones           |                |        |              |                         |                      |                  |                   |             |                   |        |   |
|----------------------------------|---|----------------------|----------------|--------|--------------|-------------------------|----------------------|------------------|-------------------|-------------|-------------------|--------|---|
|                                  |   | Condiciones de Corte |                |        |              | Forma de la herramienta |                      |                  |                   |             | Grado del Inserto |        |   |
|                                  |   | Veloc. de corte      | Prof. de corte | Avance | Refrigerante | Ángulo de Salida        | Ángulo de incidencia | Ángulo de aprox. | Fractura del filo | Radio Punta | Resistencia       | Dureza |   |
| <b>Desgaste en el Flanco</b>     | <ul style="list-style-type: none"> <li>Grado inadecuado</li> <li>Condición de corte inadecuada</li> <li>Vibraciones</li> </ul>  | ↓                    |                | ↑      |              |                         |                      | ↑                | ↓                 |             | ↑                 |        | ↑ |
| <b>Craterización</b>             | <ul style="list-style-type: none"> <li>Condiciones de corte inadecuadas</li> <li>Grado inadecuado</li> </ul>  | ↓                    | ↓              | ↓      | ●            | ↑                       | ↑                    |                  |                   |             | ↓                 |        | ↑ |
| <b>Astillamiento</b>             | <ul style="list-style-type: none"> <li>Falta de resistencia del inserto</li> <li>Avance excesivo</li> <li>Excesiva carga de corte</li> </ul>  |                      |                | ↓      |              | ↓                       | ↓                    | ↓                |                   | ↑           | ↑                 |        |   |
| <b>Adhesión al filo</b>          | <ul style="list-style-type: none"> <li>Condiciones de corte inadecuadas</li> <li>diseño de filo de corte inadecuado</li> <li>Grado inadecuado</li> </ul>  | ↑                    | ↓              |        |              | ↑                       |                      |                  |                   |             | ↓                 |        |   |
| <b>Vibraciones</b>               | <ul style="list-style-type: none"> <li>Condiciones de corte inadecuadas</li> <li>Falta de inserto</li> <li>Inadecuada forma de la punta</li> <li>Mal flujo de virutas</li> <li>Mal ajuste de la pieza de trabajo</li> </ul> |                      | ↓              | ↓      | ●            | ↑                       |                      | ↑                | ↓                 | ↓           |                   |        |   |
| <b>Mal acabado en superficie</b> | <ul style="list-style-type: none"> <li>Adhesión de material al filo</li> <li>Condiciones de corte inadecuadas</li> <li>Vibraciones</li> <li>Mal flujo de virutas</li> </ul>   | ↑                    | ↓              | ↓      | ●            | ↑                       |                      |                  | ↓                 | ↑           |                   |        |   |
| <b>Fisuras Térmicas</b>          | <ul style="list-style-type: none"> <li>Condiciones de corte inadecuadas</li> <li>Grado inadecuado</li> </ul>  | ↓                    | ↓              | ↓      | ⊙            | ↑                       |                      |                  |                   |             | ↑                 | ↑      |   |
| <b>Fractura</b>                  | <ul style="list-style-type: none"> <li>Condiciones de corte inadecuadas</li> <li>Carga de corte Excesiva</li> <li>Mal flujo de virutas</li> <li>Vibración</li> <li>Holgura excesiva</li> </ul>                              |                      | ↓              | ↓      | ●            |                         |                      |                  |                   |             |                   |        | ↑ |

↑: Incrementa   ↓: Decrease   ●: Uso   ⊙: Uso Correcto

## Formulas para Fresado

### ● Índice de Eficiencia del Maquinado ( $\eta$ )

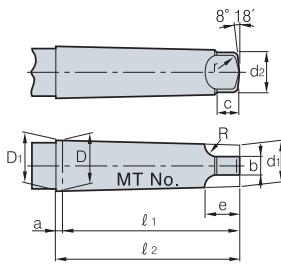
| Transmisión de Fuerza                               | Verim (E) | Referans  |
|---|-----------|---|
| Conducción de la conexión directa del eje principal | 0.90      |   |
| Conducción por Bandas                               | 0.85      | Doble conexión: $0.85 \times 0.85 \approx 0.70$ |
| Arranque de Conducción                              | 0.75      |   |
| Conducción por presión de aceite                    | 0.60-0.90 |   |



# L Información Técnica Tapers

(mm)

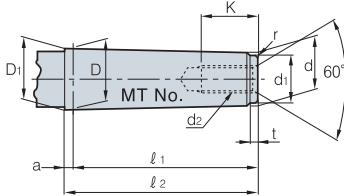
## Cono Morse (tipo espiga)



| MT No. | Cono               | Ángulo Cono(α) | D      | a   | D <sub>1</sub> | d <sub>1</sub> | ℓ <sub>1</sub> | ℓ <sub>2</sub> | d <sub>2</sub> | b    | c   | e    | R  | r   |
|--------|--------------------|----------------|--------|-----|----------------|----------------|----------------|----------------|----------------|------|-----|------|----|-----|
| 0      | $\frac{1}{19.212}$ | 1°29'27"       | 9.045  | 3   | 9.201          | 6.104          | 56.5           | 59.5           | 6.0            | 3.9  | 6.5 | 10.5 | 4  | 1   |
| 1      | $\frac{1}{20.047}$ | 1°25'43"       | 12.065 | 3.5 | 12.240         | 8.972          | 62.0           | 65.5           | 8.7            | 5.2  | 8.5 | 13.5 | 5  | 1.2 |
| 2      | $\frac{1}{20.020}$ | 1°25'50"       | 17.780 | 5   | 18.030         | 14.034         | 75.0           | 80.0           | 13.5           | 6.3  | 10  | 16   | 6  | 1.6 |
| 3      | $\frac{1}{19.922}$ | 1°26'16"       | 23.825 | 5   | 24.076         | 19.107         | 94.0           | 99.0           | 18.5           | 7.9  | 13  | 20   | 7  | 2   |
| 4      | $\frac{1}{19.254}$ | 1°29'15"       | 31.267 | 6.5 | 31.605         | 25.164         | 117.5          | 124.0          | 24.5           | 11.9 | 16  | 24   | 8  | 2.5 |
| 5      | $\frac{1}{19.002}$ | 1°30'26"       | 44.399 | 6.5 | 4.741          | 36.531         | 149.5          | 156.0          | 35.7           | 15.9 | 19  | 29   | 10 | 3   |
| 6      | $\frac{1}{19.180}$ | 1°29'36"       | 63.348 | 8   | 63.765         | 52.399         | 210.0          | 218.0          | 51.0           | 19.0 | 27  | 40   | 13 | 4   |
| 7      | $\frac{1}{19.231}$ | 1°29'22"       | 83.058 | 10  | 83.578         | 68.186         | 286.0          | 296.0          | 66.8           | 28.6 | 35  | 54   | 19 | 5   |

(mm)

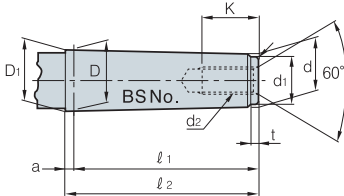
## Cono Morse (tipo tornillo)



| MT No. | Cono               | Ángulo Cono(α) | D      | a   | D <sub>1</sub> | d      | ℓ <sub>1</sub> | ℓ <sub>2</sub> | d <sub>1</sub> | d <sub>2</sub> | k  | t    | r   |
|--------|--------------------|----------------|--------|-----|----------------|--------|----------------|----------------|----------------|----------------|----|------|-----|
| 0      | $\frac{1}{19.212}$ | 1°29'27"       | 9.045  | 3   | 9.201          | 6.442  | 50             | 53             | 6              | -              | -  | 4    | 0.2 |
| 1      | $\frac{1}{20.047}$ | 1°25'43"       | 12.065 | 3.5 | 12.230         | 9.396  | 53.5           | 57             | 9              | M6             | 16 | 5    | 0.2 |
| 2      | $\frac{1}{20.020}$ | 1°25'50"       | 17.780 | 5   | 18.030         | 14.583 | 64             | 69             | 14             | M10            | 24 | 5    | 0.2 |
| 3      | $\frac{1}{19.922}$ | 1°26'16"       | 23.825 | 5   | 24.076         | 19.759 | 81             | 86             | 19             | M12            | 28 | 7    | 0.6 |
| 4      | $\frac{1}{19.254}$ | 1°29'15"       | 31.267 | 6.5 | 31.605         | 25.943 | 102.5          | 109            | 25             | M16            | 32 | 9    | 1   |
| 5      | $\frac{1}{19.002}$ | 1°30'26"       | 44.399 | 6.5 | 4.741          | 37.584 | 129.5          | 136            | 35.7           | M20            | 40 | 9    | 2.5 |
| 6      | $\frac{1}{19.180}$ | 1°29'36"       | 63.348 | 8   | 63.765         | 53.859 | 182            | 190            | 51             | M24            | 50 | 12   | 4   |
| 7      | $\frac{1}{19.231}$ | 1°29'22"       | 83.058 | 10  | 83.578         | 70.058 | 250            | 260            | 65             | M33            | 80 | 18.5 | 5   |

(mm)

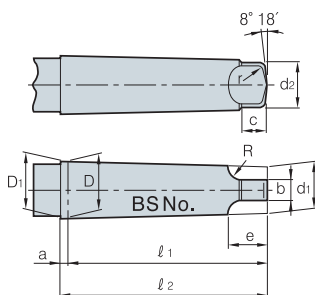
## Zanco cónico (tipo tornillo)



| B&S No. | D      | a   | D <sub>1</sub> | d      | d <sub>1</sub> | ℓ <sub>1</sub> | ℓ <sub>2</sub> | t | r   | d <sub>2</sub> | K  |
|---------|--------|-----|----------------|--------|----------------|----------------|----------------|---|-----|----------------|----|
| 4       | 10.221 | 2.4 | 10.321         | 8.890  | 8.0            | 31.0           | 34.2           | 2 | 0.2 | -              | -  |
| 5       | 13.286 | 2.4 | 13.386         | 11.430 | 10.0           | 44.4           | 46.8           | 3 | 0.2 | -              | -  |
| 6       | 15.229 | 2.4 | 15.330         | 12.700 | 11.0           | 60.0           | 62.7           | 3 | 0.2 | M8(1/4)        | 20 |
| 7       | 18.424 | 2.4 | 18.524         | 15.240 | 14.0           | 76.2           | 78.6           | 4 | 0.2 | M10(3/8)       | 24 |
| 8       | 22.828 | 3.2 | 22.962         | 19.090 | 17.0           | 90.5           | 93.7           | 4 | 0.6 | M12(1/2)       | 28 |
| 9       | 27.104 | 3.2 | 27.238         | 22.863 | 21.0           | 101.6          | 104.8          | 4 | 0.6 | M12(1/2)       | 28 |
| 10      | 32.749 | 3.2 | 32.887         | 26.534 | 24.0           | 144.5          | 147.7          | 5 | 1.0 | M16(5/8)       | 32 |
| 11      | 38.905 | 3.2 | 39.039         | 31.749 | 29.0           | 171.4          | 174.6          | 5 | 1.0 | M16(5/8)       | 32 |
| 12      | 45.641 | 3.2 | 45.774         | 38.103 | 35.0           | 181.0          | 184.2          | 6 | 2.5 | M20(3/4)       | 40 |
| 13      | 52.654 | 3.2 | 52.787         | 44.451 | 41.0           | 196.8          | 200.0          | 6 | 3.0 | M20(3/4)       | 40 |
| 14      | 59.533 | 3.2 | 59.666         | 50.800 | 47.0           | 209.6          | 212.8          | 7 | 4.0 | M24(1)         | 40 |
| 15      | 66.408 | 3.2 | 66.541         | 57.150 | 53.0           | 222.2          | 225.4          | 7 | 4.0 | M24(1)         | 50 |
| 16      | 73.292 | 3.2 | 73.425         | 63.500 | 59.0           | 35.0           | 238.2          | 8 | 5.0 | M30(1 1/8)     | 60 |

(mm)

## Zanco cónico (tipo espiga)

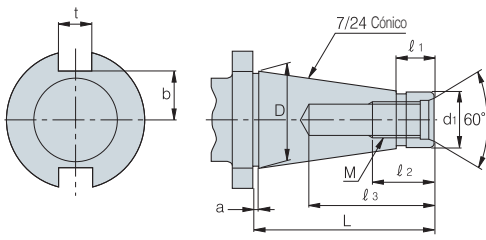


| B&S No. | D      | a   | D <sub>1</sub> | d <sub>1</sub> | d <sub>2</sub> | ℓ <sub>1</sub> | ℓ <sub>2</sub> | b    | c    | e    | R    | r   |
|---------|--------|-----|----------------|----------------|----------------|----------------|----------------|------|------|------|------|-----|
| 4       | 10.221 | 2.4 | 10.321         | 8.458          | 8.1            | 42.1           | 44.5           | 5.5  | 8.7  | 14.4 | 7.9  | 1.3 |
| 5       | 13.286 | 2.4 | 13.386         | 10.962         | 10.7           | 55.6           | 58.0           | 6.3  | 9.5  | 16.2 | 7.9  | 1.5 |
| 6       | 15.229 | 2.4 | 15.330         | 12.167         | 11.7           | 73.0           | 75.4           | 7.1  | 11.1 | 18.0 | 7.9  | 1.5 |
| 7       | 18.424 | 2.4 | 18.524         | 14.675         | 14.2           | 89.7           | 92.1           | 7.9  | 11.9 | 20.3 | 9.5  | 1.8 |
| 8       | 22.828 | 3.2 | 22.962         | 18.453         | 18.0           | 104.8          | 108.0          | 8.7  | 12.7 | 22.0 | 9.5  | 2.0 |
| 9       | 28.104 | 3.2 | 27.238         | 22.200         | 21.8           | 117.5          | 120.7          | 9.5  | 14.3 | 25.4 | 11.1 | 2.5 |
| 10      | 32.749 | 3.2 | 32.887         | 25.751         | 25.7           | 162.7          | 165.9          | 11.1 | 16.7 | 28.1 | 11.1 | 2.8 |
| 11      | 38.905 | 3.2 | 39.039         | 30.985         | 30.7           | 189.7          | 192.9          | 11.1 | 16.7 | 30.0 | 12.7 | 3.3 |
| 12      | 45.641 | 3.2 | 45.774         | 37.246         | 37.1           | 201.6          | 204.8          | 12.7 | 19.0 | 32.5 | 12.7 | 3.8 |
| 13      | 52.654 | 3.2 | 52.787         | 43.589         | 43.4           | 217.5          | 220.7          | 12.7 | 19.0 | 35.7 | 15.9 | 4.3 |
| 14      | 59.533 | 3.2 | 59.666         | 49.841         | 49.8           | 232.6          | 235.8          | 14.2 | 21.4 | 41.2 | 19.0 | 4.8 |
| 15      | 66.408 | 3.2 | 66.541         | 56.186         | 56.1           | 245.3          | 248.5          | 14.2 | 21.4 | 44.4 | 22.2 | 5.3 |
| 16      | 73.292 | 3.2 | 73.425         | 62.441         | 62.2           | 260.4          | 263.6          | 15.8 | 23.8 | 50.0 | 25.4 | 5.8 |



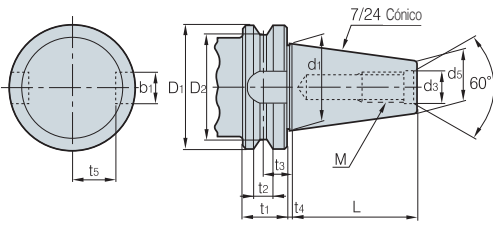
(mm)

## Adaptador Estándar para Fresadora KSB4014



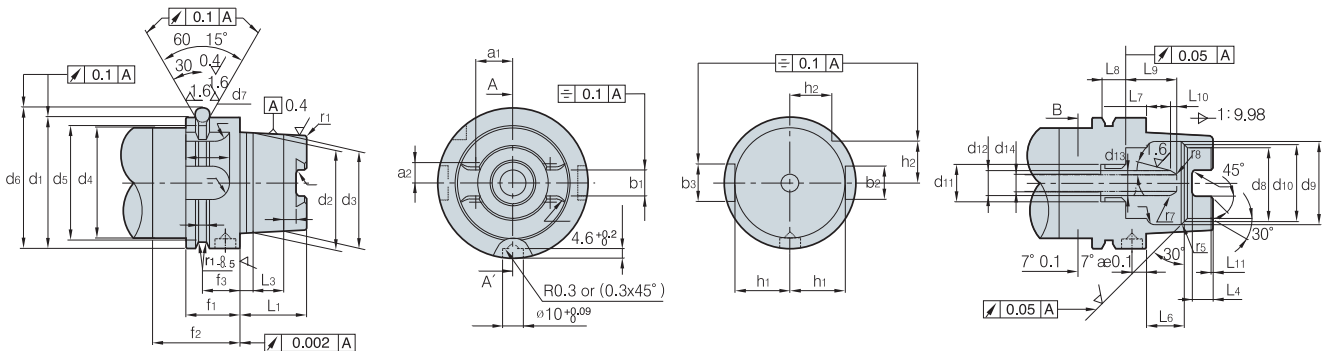
| NT No. | Dimensiones                   | D       | D <sub>1</sub>                          | L   | ℓ <sub>1</sub> | M          | ℓ <sub>2</sub> | ℓ <sub>3</sub> | a   | t    | b    |
|--------|-------------------------------|---------|---|-----|----------------|------------|----------------|----------------|-----|------|------|
| 30     | 1 <sup>1</sup> / <sub>4</sub> | 31.750  | 17.40 <sup>-0.29</sup> <sub>0.36</sub>  | 70  | 20             | UNC 1/2"   | 24             | 50             | 1.6 | 15.9 | 6    |
| 40     | 1 <sup>3</sup> / <sub>4</sub> | 44.450  | 25.32 <sup>-0.30</sup> <sub>0.384</sub> | 95  | 25             | UNC 5/8"   | 30             | 60             | 1.6 | 15.9 | 22.5 |
| 50     | 2 <sup>3</sup> / <sub>4</sub> | 69.850  | 39.60 <sup>-0.31</sup> <sub>0.41</sub>  | 130 | 25             | UNC 1"     | 45             | 90             | 3.2 | 25.4 | 35   |
| 60     | 4 <sup>1</sup> / <sub>4</sub> | 107.950 | 60.20 <sup>-0.34</sup> <sub>0.46</sub>  | 210 | 45             | UNC 1 1/4" | 56             | 110            | 3.2 | 25.4 | 60   |

## Adaptador tipo Botella KSB4409



| BT No. | D <sub>1</sub> | D <sub>2</sub> | t <sub>1</sub> | t <sub>2</sub> | t <sub>3</sub> | t <sub>4</sub> | d <sub>1</sub> | d <sub>3</sub> | L     | M        | b <sub>1</sub> | t <sub>5</sub> | d <sub>5</sub> |
|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------|----------|----------------|----------------|----------------|
| 35     | 53             | 43             | 22             | 10             | 14.6           | 2              | 38.1           | 13             | 56.5  | M12x1.75 | 16.1           | 19.6           | 21.62          |
| 40     | 63             | 52             | 25             | 10             | 16.6           | 2              | 44.45          | 17             | 65.4  | M16x2    | 16.1           | 22.6           | 25.3           |
| 45     | 85             | 73             | 30             | 12             | 21.2           | 3              | 57.15          | 21             | 82.8  | M20x2.5  | 19.3           | 29.1           | 33.1           |
| 50     | 100            | 85             | 35             | 15             | 23.2           | 3              | 69.85          | 25             | 101.8 | M24x3    | 25.7           | 35.4           | 40.1           |
| 60     | 155            | 135            | 45             | 20             | 28.2           | 3              | 107.95         | 31             | 161.8 | M30x3.5  | 25.7           | 60.1           | 60.7           |

## Adaptador Tipo HSK (DIN 69893) KSB IS012164-1



(mm)

| HSK No. | b <sub>1</sub> | b <sub>2</sub> | b <sub>3</sub> | d <sub>1</sub> | d <sub>2</sub> | d <sub>3</sub> | d <sub>4</sub> | d <sub>5</sub> | d <sub>6</sub> | d <sub>7</sub> | d <sub>8</sub> | d <sub>9</sub> | d <sub>10</sub> | d <sub>11</sub> | d <sub>12</sub> | d <sub>13</sub> | d <sub>14</sub> | a <sub>1</sub> | a <sub>2</sub> |
|---------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| 50      | 10.54          | 12             | 14             | 50             | 38             | 36.90          | 42             | 43             | 59.3           | 7              | 26             | 32             | 29              | M16X1           | 10              | 6.8             | 6.8             | 13.997         | 7.648          |
| 63      | 12.5           | 16             | 14             | 63             | 48             | 46.53          | 53             | 55             | 72.3           | 7              | 34             | 40             | 37              | M18X1           | 12              | 8               | 8.4             | 17.862         | 9.25           |
| 100     | 20             | 20             | 14             | 100            | 75             | 72.80          | 85             | 92             | 109.75         | 7              | 53             | 63             | 58              | M24X1.5         | 16              | 12              | 12              | 27.329         | 15.00          |

(mm)

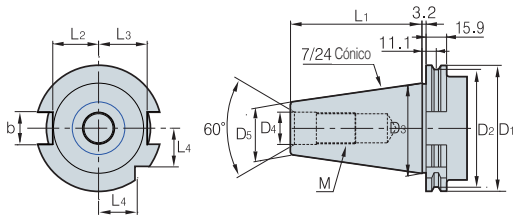
| HSK No. | f <sub>1</sub> | f <sub>2</sub> | f <sub>3</sub> | f <sub>4</sub> | b <sub>1</sub> | b <sub>2</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | L <sub>4</sub> | L <sub>5</sub> | L <sub>6</sub> | L <sub>7</sub> | L <sub>8</sub> | L <sub>9</sub> | L <sub>10</sub> | L <sub>11</sub> | L <sub>12</sub> | r <sub>1</sub> | r <sub>2</sub> | r <sub>3</sub> | r <sub>4</sub> | r <sub>5</sub> | r <sub>6</sub> | r <sub>7</sub> | r <sub>8</sub> |
|---------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 50      | 26             | 42             | 18             | 3.75           | 2              | 15.5           | 25             | 5              | 11             | 7.5            | 4.5            | 14.13          | 10             | 10             | 23             | 3               | 1               | 19              | 1              | 1.5            | 2.38           | 6              | 0.5            | 1              | 2              | 6              |
| 63      | 26             | 42             | 18             | 3.75           | 28.5           | 20             | 32             | 6.3            | 14.7           | 10             | 6              | 18.13          | 10             | 12             | 24.5           | 3               | 1               | 21              | 1.2            | 1.5            | 3              | 8              | 0.6            | 1.5            | 3              | 8              |
| 100     | 29             | 45             | 20             | 3.75           | 44             | 31.5           | 50             | 10             | 24             | 15             | 10             | 28.56          | 12.5           | 16             | 28             | 3               | 1.5             | 24              | 2              | 2              | 3              | 12             | 1              | 1.5            | 3              | 10             |



# L Información Técnica Tapers

(mm)

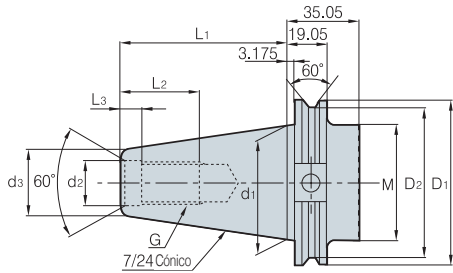
## DIN 69871



| Zanco # | D <sub>1</sub> | D <sub>2</sub> | D <sub>3</sub> | D <sub>4</sub> | D <sub>5</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | L    | b    | M        |
|---------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------|------|----------|
| 30      | 50.0           | 44.3           | 31.75          | 13             | 17.8           | 47.8           | 16.4           | 19.0           | 33.5 | 16.0 | M12x1.75 |
| 40      | 63.5           | 56.2           | 44.45          | 17             | 24.5           | 68.4           | 22.8           | 25.0           | 42.5 | 16.1 | M16x2    |
| 45      | 82.5           | 57.2           | 57.15          | 21             | 33.0           | 82.7           | 29.1           | 31.3           | 52.5 | 19.3 | M20x2.5  |
| 50      | 97.5           | 91.2           | 68.85          | 25             | 40.1           | 101.7          | 35.5           | 37.7           | 61.5 | 25.7 | M24x3    |

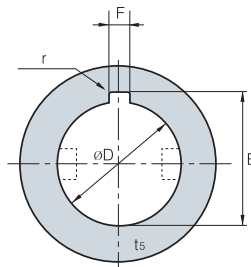
(mm)

## Zanco CAT



| Zanco # | D <sub>1</sub> | D <sub>2</sub> | M       | d <sub>1</sub> | d <sub>2</sub> | d <sub>3</sub> | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | G      |
|---------|----------------|----------------|---------|----------------|----------------|----------------|----------------|----------------|----------------|--------|
| CAT40   | 63.5           | 56.36          | M16x2   | 44.45          | 16.28          | 21.84          | 68.25          | 28.45          | 4.78           | 5/8-11 |
| CAT45   | 82.55          | 75.41          | M20x2.5 | 57.15          | 19.46          | 27.69          | 82.55          | 38.1           | 4.78           | 3/4-10 |
| CAT50   | 98.43          | 91.29          | M24x3   | 69.85          | 26.19          | 35.05          | 101.6          | 44.45          | 6.35           | 1-8    |

## Orificio Estándar para Fresado (KSB3203)



### ● Tipo A

| Diametro | øDH <sub>7</sub>                   | E                                  | F                                      | r   |
|----------|------------------------------------|------------------------------------|--|-----|
| 8        | 8 <sup>+0.015</sup> <sub>0</sub>   | 8.9 <sup>+0.25</sup> <sub>0</sub>  | 2 <sup>+0.16</sup> <sub>+0.06</sub>    | 0.4 |
| 10       | 10 <sup>+0.015</sup> <sub>0</sub>  | 11.5 <sup>+0.25</sup> <sub>0</sub> | 3 <sup>+0.16</sup> <sub>+0.06</sub>    | 0.4 |
| 13       | 13 <sup>+0.018</sup> <sub>0</sub>  | 14.6 <sup>+0.25</sup> <sub>0</sub> | 3 <sup>+0.16</sup> <sub>+0.06</sub>    | 0.6 |
| 16       | 16 <sup>+0.018</sup> <sub>0</sub>  | 17.7 <sup>+0.25</sup> <sub>0</sub> | 4 <sup>+0.19</sup> <sub>+0.07</sub>    | 0.6 |
| 19       | 19 <sup>+0.021</sup> <sub>0</sub>  | 21.1 <sup>+0.25</sup> <sub>0</sub> | 5 <sup>+0.19</sup> <sub>+0.07</sub>    | 1   |
| 22       | 22 <sup>+0.021</sup> <sub>0</sub>  | 24.1 <sup>+0.25</sup> <sub>0</sub> | 6 <sup>+0.19</sup> <sub>+0.07</sub>    | 1   |
| 27       | 27 <sup>+0.021</sup> <sub>0</sub>  | 29.8 <sup>+0.25</sup> <sub>0</sub> | 7 <sup>+0.23</sup> <sub>+0.08</sub>    | 1.2 |
| 32       | 32 <sup>+0.025</sup> <sub>0</sub>  | 34.8 <sup>+0.25</sup> <sub>0</sub> | 8 <sup>+0.23</sup> <sub>+0.08</sub>    | 1.2 |
| 40       | 40 <sup>+0.025</sup> <sub>0</sub>  | 43.5 <sup>+0.3</sup> <sub>0</sub>  | 10 <sup>+0.23</sup> <sub>+0.08</sub>   | 1.2 |
| 50       | 50 <sup>+0.025</sup> <sub>0</sub>  | 53.5 <sup>+0.3</sup> <sub>0</sub>  | 12 <sup>+0.23</sup> <sub>+0.095</sub>  | 1.6 |
| 60       | 60 <sup>+0.030</sup> <sub>0</sub>  | 64.2 <sup>+0.3</sup> <sub>0</sub>  | 14 <sup>+0.275</sup> <sub>+0.095</sub> | 1.6 |
| 70       | 70 <sup>+0.030</sup> <sub>0</sub>  | 75.0 <sup>+0.3</sup> <sub>0</sub>  | 16 <sup>+0.275</sup> <sub>+0.095</sub> | 2   |
| 80       | 80 <sup>+0.030</sup> <sub>0</sub>  | 85.5 <sup>+0.3</sup> <sub>0</sub>  | 18 <sup>+0.275</sup> <sub>+0.095</sub> | 2   |
| 100      | 100 <sup>+0.035</sup> <sub>0</sub> | 107.0 <sup>+0.3</sup> <sub>0</sub> | 24 <sup>+0.32</sup> <sub>+0.11</sub>   | 2.5 |

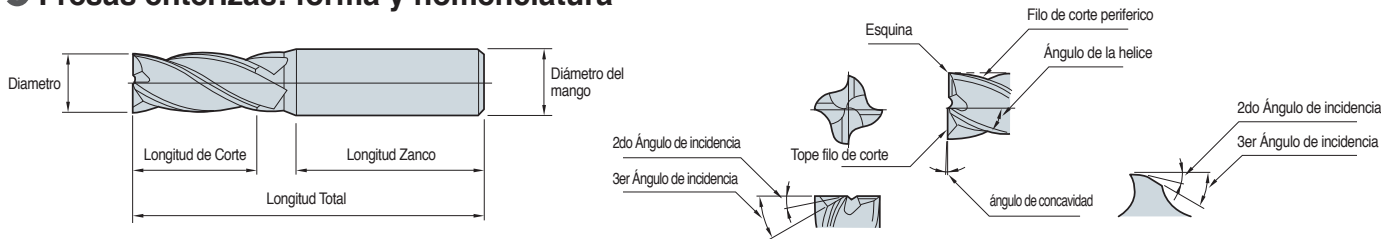
### ● Tipo B

| Diametro | øDH <sub>7</sub>                      | E                                    | F                                       | r   |
|----------|---------------------------------------|--------------------------------------|---|-----|
| 1/2      | 12.70 <sup>+0.018</sup> <sub>0</sub>  | 14.17 <sup>+0.25</sup> <sub>0</sub>  | 2.38 <sup>+0.31</sup> <sub>+0.13</sub>  | 0.5 |
| 5/8      | 15.875 <sup>+0.018</sup> <sub>0</sub> | 17.74 <sup>+0.25</sup> <sub>0</sub>  | 3.18 <sup>+0.31</sup> <sub>+0.13</sub>  | 0.8 |
| 3/4      | 19.050 <sup>+0.021</sup> <sub>0</sub> | 20.89 <sup>+0.25</sup> <sub>0</sub>  | 3.18 <sup>+0.31</sup> <sub>+0.13</sub>  | 0.8 |
| 7/8      | 22.225 <sup>+0.021</sup> <sub>0</sub> | 24.07 <sup>+0.25</sup> <sub>0</sub>  | 3.18 <sup>+0.31</sup> <sub>+0.13</sub>  | 0.8 |
| 1        | 25.40 <sup>+0.021</sup> <sub>0</sub>  | 28.04 <sup>+0.25</sup> <sub>0</sub>  | 6.35 <sup>+0.31</sup> <sub>+0.13</sub>  | 1.2 |
| 1 1/4    | 31.750 <sup>+0.025</sup> <sub>0</sub> | 35.18 <sup>+0.25</sup> <sub>0</sub>  | 7.94 <sup>+0.32</sup> <sub>+0.14</sub>  | 1.6 |
| 1 1/2    | 38.10 <sup>+0.025</sup> <sub>0</sub>  | 42.32 <sup>+0.25</sup> <sub>0</sub>  | 9.53 <sup>+0.89</sup> <sub>+0.25</sub>  | 1.6 |
| 1 3/4    | 44.450 <sup>+0.025</sup> <sub>0</sub> | 49.48 <sup>+0.25</sup> <sub>0</sub>  | 11.11 <sup>+0.89</sup> <sub>+0.25</sub> | 1.6 |
| 2        | 50.80 <sup>+0.03</sup> <sub>0</sub>   | 55.83 <sup>+0.25</sup> <sub>0</sub>  | 12.7 <sup>+0.89</sup> <sub>+0.25</sub>  | 1.6 |
| 2 1/2    | 63.50 <sup>+0.03</sup> <sub>0</sub>   | 69.42 <sup>+0.25</sup> <sub>0</sub>  | 15.81 <sup>+0.89</sup> <sub>+0.25</sub> | 1.6 |
| 3        | 76.20 <sup>+0.03</sup> <sub>0</sub>   | 82.93 <sup>+0.25</sup> <sub>0</sub>  | 19.05 <sup>+0.89</sup> <sub>+0.25</sub> | 2.4 |
| 3 1/2    | 88.90 <sup>+0.035</sup> <sub>0</sub>  | 98.81 <sup>+0.25</sup> <sub>0</sub>  | 22.23 <sup>+0.89</sup> <sub>+0.25</sub> | 2.4 |
| 4        | 101.60 <sup>+0.035</sup> <sub>0</sub> | 111.51 <sup>+0.25</sup> <sub>0</sub> | 25.4 <sup>+0.89</sup> <sub>+0.25</sub>  | 2.4 |
| 4 1/2    | 114.30 <sup>+0.035</sup> <sub>0</sub> | 125.81 <sup>+0.25</sup> <sub>0</sub> | 25.58 <sup>+0.89</sup> <sub>+0.25</sub> | 3.2 |
| 5        | 127.0 <sup>+0.04</sup> <sub>0</sub>   | 140.08 <sup>+0.25</sup> <sub>0</sub> | 31.75 <sup>+0.89</sup> <sub>+0.25</sub> | 3.2 |





### Fresas enterizas: forma y nomenclatura



### Comparación acorde al Numero de Flautas

#### Características del de flautas

| Ø10 mm                         | 2 Flautas                           | 3 Flautas                           | 4 Flautas             |
|--------------------------------|-------------------------------------|-------------------------------------|-----------------------|
| <b>Forma</b>                   |                                     |                                     |                       |
| <b>Vista corte transversal</b> | 44mm <sup>2</sup>                   | 46mm <sup>2</sup>                   | 48mm <sup>2</sup>     |
| <b>Relación</b>                | 56%                                 | 58%                                 | 61%                   |
| <b>Ventajas</b>                | Buen Flujo de Virutas               | Buen Flujo de Virutas               | Alta rigidez          |
| <b>Desventajas</b>             | Resistencia débil                   | Diam. Externoficilde medir          | Mal flujo de virutas  |
| <b>Uso</b>                     | Ranurado Lateral<br>Multi-funcional | Ranurado Lateral<br>Medio a Acabado | Escuadrado<br>Acabado |

#### Afectación del Número de Flautas

| Specification                    | Major features         | 2 Flautas | 4 Flautas |
|----------------------------------|------------------------|-----------|-----------|
| <b>Rigidez de la herramienta</b> | A la torsion           | ○         | ⊙         |
|                                  | Al doblez              | ○         | ⊙         |
| <b>Acabado de superficie</b>     | Desbaste               | ○         | ⊙         |
|                                  | Maquinado de precision | ○         | ⊙         |
| <b>Control de Virutas</b>        | Obstrucción de viruta  | ⊙         | ○         |
|                                  | Evacuacion de viruta   | ⊙         | ○         |
| <b>Ranurado</b>                  | Evacuacion de viruta   | ⊙         | ○         |
|                                  | Ranurado               | ⊙         | ○         |
| <b>Careado Lateral</b>           | Acabado de superficie  | ○         | ⊙         |
|                                  | Vibracion              | ⊙         | ○         |

⊙: Excelente ○: Bueno

### Diferencia entre Endmills de uso genetal y de Alta Velocidad

| Endmills de uso General   |  | Endmills de Alta Velocidad |  |
|---------------------------|--|----------------------------|--|
| Forma Seccion Transversal | Características  | Forma Seccion Transversal  | Características  |
|                           | - Aplicable para baja velocidad/<br>Alta profundidad de corte<br>- Baja dureza de la pieza (Acero Fundicion) |                            | - Aplicable para alta velocidad/<br>Alta profundidad de corte/avance alto<br>- Para Piezas endurecidas |

### Calculo de condiciones de corte

#### Calculo de Velocidad de Avance

$$vc = \frac{\pi \times D \times n}{1000} \quad n = \frac{1000 \times vc}{\pi \times D}$$

#### Calculo de Velocidad de Avance

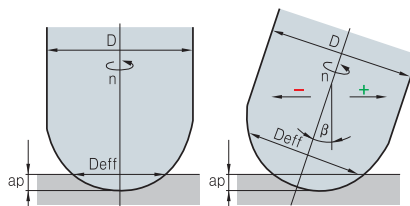
$$vf = n \times fn \text{ or } n \times fz \times z$$

$$fn = \frac{vf}{n} \quad fz = \frac{fn}{z} \text{ or } \frac{vf}{n \times z}$$

vc: Vel. de corte (m/min)  
 n: Constante circular (3.141592)  
 D: Diametro Endmill (mm)  
 n: R.P.M. (min<sup>-1</sup>)  
 vf: Vel. de avance (m/min)  
 fn: Avance \*revolucion (mm/rev)  
 fz: Avance \*min (mm/t)  
 z: Numero de flautas

### Calculo de condiciones de corte (Endmills Esfericos)

|  |   |
|--|---|
| Revolucion por minuto                  | $n = \frac{vc \times 1000}{D \times \pi}$   |
| Velocidad de Corte                     | $vc = \frac{D \times \pi \times n}{1000}$   |
| Avance por diente                      | $fz = \frac{vf}{z \times n}$  |
| Cance por revoluciones                 | $fn = fz \times z$  |
| Velocidad de Avance                    | $vf = fz \times z \times n$   |
| Indice de retiro de virutas            | $Q = ae \times ap \times vf$  |
| Diametro efectivo del endmill esferico | $D_{eff} = 2 \times \sqrt{D \times ap - ap^2}$ <small>Tabla de cálculo</small><br>$D_{eff} = D \times \sin \left[ \beta \pm \arccos \left( \frac{D - 2ap}{D} \right) \right]$ |



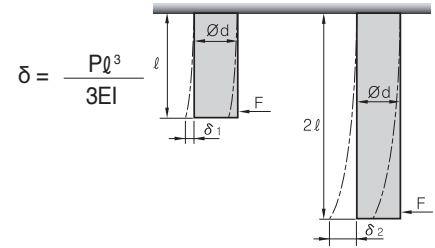
## Ventajas de la Longitud de Flautas

### ● Índice de Expresión del Cocien

- Relación Aspecto
- $l/d$
- Ex) 3D, 15D, 22D

### ● Índice de Deformación según la longitud

- Índice de deformación según la longitud
- El índice de deformación es fuerza de reacción contra fuerza externa
- Fije la longitud de la flauta y la largura total tan cortas como sea posible
- Mas flautas, mayor rigidez
- Cuando la flauta es mas estrecha, mas rígida sera



$\delta$  = Volumen de deformación  $l$  = Longitud de Corte

$P$  = Fuerza de Corte  $E$  = Coeficiente de elasticidad

$$I = \text{Momento inercial} \left( I = \frac{\pi d^4}{64} \right)$$

•  $l: 2l$

•  $\delta_1: \delta_1 = 8\delta_1 = \delta_2$

## Tabla de conversión de R.P.M. - diametro externo

| vc<br>Externo | Velocidad de Corte (vc, m/min) |        |        |        |        |         |         |         |         |         |         |         |         |         |         |         |
|---------------|--------------------------------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|               | 20                             | 30     | 40     | 50     | 60     | 70      | 80      | 90      | 100     | 120     | 140     | 150     | 180     | 200     | 250     | 300     |
| 0.2           | 31,831                         | 47,746 | 63,662 | 79,577 | 95,493 | 111,408 | 127,324 | 143,239 | 159,155 | 190,986 | 222,817 | 238,720 | 286,479 | 318,310 | 397,887 | 477,465 |
| 0.3           | 21,221                         | 31,831 | 42,441 | 53,052 | 63,662 | 74,272  | 84,883  | 95,493  | 106,103 | 127,324 | 148,545 | 159,155 | 190,986 | 212,207 | 265,258 | 318,310 |
| 0.4           | 15,915                         | 23,873 | 31,831 | 39,789 | 47,746 | 55,704  | 63,662  | 71,620  | 79,577  | 95,493  | 111,408 | 119,366 | 143,239 | 159,155 | 198,944 | 238,732 |
| 0.5           | 12,732                         | 19,099 | 25,465 | 31,831 | 38,197 | 44,563  | 50,930  | 57,296  | 63,662  | 76,394  | 89,127  | 95,493  | 114,592 | 127,324 | 159,155 | 190,986 |
| 0.6           | 10,610                         | 15,915 | 21,221 | 26,526 | 31,831 | 37,136  | 42,441  | 47,746  | 53,052  | 63,662  | 74,272  | 79,577  | 95,493  | 106,103 | 132,629 | 159,155 |
| 0.7           | 9,095                          | 13,642 | 18,189 | 22,736 | 27,284 | 31,831  | 36,378  | 40,926  | 45,473  | 54,567  | 63,662  | 68,209  | 81,851  | 90,946  | 113,682 | 136,419 |
| 0.8           | 7,958                          | 11,937 | 15,915 | 19,894 | 23,873 | 27,852  | 31,831  | 35,810  | 39,789  | 47,746  | 55,704  | 59,683  | 71,620  | 79,577  | 99,472  | 119,366 |
| 0.9           | 7,074                          | 10,610 | 14,147 | 17,684 | 21,221 | 24,757  | 28,294  | 31,831  | 35,368  | 42,441  | 49,515  | 53,052  | 63,662  | 70,736  | 88,419  | 106,103 |
| 1             | 6,366                          | 9,549  | 12,732 | 15,915 | 19,099 | 22,282  | 25,465  | 28,648  | 31,831  | 38,197  | 44,563  | 47,746  | 57,296  | 63,662  | 79,577  | 95,793  |
| 1.5           | 4,244                          | 6,366  | 8,488  | 10,610 | 12,732 | 14,854  | 16,977  | 19,099  | 21,221  | 25,465  | 29,709  | 31,831  | 38,197  | 42,441  | 53,052  | 63,662  |
| 2             | 3,183                          | 4,775  | 6,366  | 7,958  | 9,549  | 11,141  | 12,732  | 14,324  | 15,915  | 19,099  | 22,282  | 23,873  | 28,648  | 31,831  | 39,789  | 47,746  |
| 2.5           | 2,546                          | 3,820  | 5,093  | 6,366  | 7,639  | 8,913   | 10,186  | 11,459  | 12,732  | 15,279  | 17,825  | 19,099  | 22,918  | 25,465  | 31,831  | 38,197  |
| 3             | 2,122                          | 3,183  | 4,244  | 5,305  | 6,366  | 7,427   | 8,488   | 9,549   | 10,610  | 12,732  | 14,854  | 15,915  | 19,099  | 21,221  | 26,526  | 31,831  |
| 3.5           | 1,819                          | 2,728  | 3,638  | 4,547  | 5,457  | 6,366   | 7,276   | 8,185   | 9,095   | 10,913  | 12,732  | 13,642  | 16,370  | 18,189  | 22,736  | 27,284  |
| 4             | 1,592                          | 2,387  | 3,183  | 3,979  | 4,775  | 5,570   | 6,366   | 7,162   | 7,958   | 9,549   | 11,141  | 11,937  | 14,324  | 15,915  | 19,894  | 23,873  |
| 4.5           | 1,415                          | 2,122  | 2,829  | 3,537  | 4,244  | 4,951   | 5,659   | 6,366   | 7,074   | 8,488   | 9,903   | 10,610  | 12,732  | 14,147  | 17,684  | 21,221  |
| 5             | 1,273                          | 1,910  | 2,546  | 3,183  | 3,820  | 4,456   | 5,093   | 5,730   | 6,366   | 7,639   | 8,913   | 9,549   | 11,459  | 12,732  | 15,915  | 19,099  |
| 5.5           | 1,157                          | 1,736  | 2,315  | 2,894  | 3,472  | 4,051   | 4,630   | 5,209   | 5,787   | 6,945   | 8,102   | 8,681   | 10,417  | 11,575  | 14,469  | 17,362  |
| 6             | 1,061                          | 1,592  | 2,122  | 2,653  | 3,183  | 3,714   | 4,244   | 4,775   | 5,305   | 6,366   | 7,427   | 7,958   | 9,549   | 10,610  | 13,263  | 15,915  |
| 6.5           | 979                            | 1,469  | 1,959  | 2,449  | 2,938  | 3,428   | 3,918   | 4,407   | 4,897   | 5,876   | 6,856   | 7,346   | 8,815   | 9,794   | 12,243  | 14,691  |
| 7             | 909                            | 1,364  | 1,819  | 2,274  | 2,728  | 3,183   | 3,638   | 4,093   | 4,547   | 5,457   | 6,366   | 6,821   | 8,185   | 9,095   | 11,368  | 13,642  |
| 7.5           | 849                            | 1,273  | 1,698  | 2,122  | 2,546  | 2,971   | 3,395   | 3,820   | 4,244   | 5,093   | 5,942   | 6,366   | 7,639   | 8,488   | 10,610  | 12,732  |
| 8             | 796                            | 1,194  | 1,592  | 1,989  | 2,387  | 2,785   | 3,183   | 3,581   | 3,979   | 4,775   | 5,570   | 5,968   | 7,162   | 7,958   | 9,947   | 11,937  |
| 8.5           | 749                            | 1,123  | 1,498  | 1,872  | 2,247  | 2,621   | 2,996   | 3,370   | 3,745   | 4,494   | 5,243   | 5,617   | 6,741   | 7,490   | 9,362   | 11,234  |
| 9             | 707                            | 1,061  | 1,415  | 1,768  | 2,122  | 2,476   | 2,829   | 3,183   | 3,537   | 4,244   | 4,951   | 5,305   | 6,366   | 7,074   | 8,842   | 10,610  |
| 9.5           | 670                            | 1,005  | 1,340  | 1,675  | 2,010  | 2,345   | 2,681   | 3,016   | 3,351   | 4,021   | 4,691   | 5,026   | 6,031   | 6,701   | 9,377   | 10,052  |
| 10            | 637                            | 955    | 1,273  | 1,592  | 1,910  | 2,228   | 2,546   | 2,865   | 3,183   | 3,820   | 4,456   | 4,775   | 5,730   | 6,366   | 7,958   | 9,549   |
| 11            | 579                            | 868    | 1,157  | 1,447  | 1,736  | 2,026   | 2,315   | 2,604   | 2,894   | 3,472   | 4,051   | 4,341   | 5,209   | 5,787   | 7,234   | 8,681   |
| 12            | 531                            | 796    | 1,061  | 1,326  | 1,592  | 1,857   | 2,122   | 2,387   | 2,653   | 3,183   | 3,714   | 3,979   | 4,775   | 5,305   | 6,631   | 7,958   |
| 13            | 490                            | 735    | 979    | 1,224  | 1,469  | 1,714   | 1,959   | 2,204   | 2,449   | 2,938   | 3,428   | 3,673   | 4,407   | 4,897   | 6,121   | 7,346   |
| 14            | 455                            | 682    | 909    | 1,137  | 1,364  | 1,592   | 1,819   | 2,046   | 2,274   | 2,728   | 3,183   | 3,410   | 4,093   | 4,547   | 5,684   | 6,821   |
| 15            | 424                            | 637    | 849    | 1,061  | 1,273  | 1,485   | 1,698   | 1,910   | 2,122   | 2,546   | 2,971   | 3,183   | 3,820   | 4,244   | 5,305   | 6,366   |
| 16            | 398                            | 597    | 796    | 995    | 1,194  | 1,393   | 1,592   | 1,790   | 1,989   | 2,387   | 2,785   | 2,984   | 3,581   | 3,979   | 4,974   | 5,968   |
| 17            | 374                            | 562    | 749    | 969    | 1,123  | 1,311   | 1,498   | 1,685   | 1,872   | 2,247   | 2,621   | 2,809   | 3,370   | 3,745   | 4,681   | 5,617   |
| 18            | 354                            | 531    | 707    | 884    | 1,061  | 1,238   | 1,415   | 1,592   | 1,768   | 2,122   | 2,476   | 2,653   | 3,183   | 3,537   | 4,421   | 5,305   |
| 19            | 335                            | 503    | 670    | 838    | 1,005  | 1,173   | 1,340   | 1,508   | 1,675   | 2,010   | 2,345   | 2,513   | 3,016   | 3,351   | 4,188   | 5,026   |
| 20            | 318                            | 477    | 637    | 796    | 955    | 1,114   | 1,273   | 1,432   | 1,592   | 1,910   | 2,228   | 2,387   | 2,865   | 3,183   | 3,979   | 4,775   |
| 21            | 303                            | 455    | 606    | 758    | 909    | 1,061   | 1,213   | 1,364   | 1,516   | 1,819   | 2,122   | 2,274   | 2,728   | 3,032   | 3,789   | 4,547   |
| 22            | 289                            | 434    | 579    | 723    | 868    | 1,013   | 1,157   | 1,302   | 1,447   | 1,736   | 2,026   | 2,170   | 2,604   | 2,894   | 3,617   | 4,341   |
| 23            | 277                            | 415    | 554    | 692    | 830    | 969     | 1,107   | 1,246   | 1,384   | 1,661   | 1,938   | 2,076   | 2,491   | 2,768   | 3,460   | 4,152   |
| 24            | 265                            | 398    | 531    | 663    | 796    | 928     | 1,061   | 1,194   | 1,326   | 1,592   | 1,857   | 1,989   | 2,387   | 2,653   | 3,316   | 3,979   |
| 25            | 255                            | 382    | 509    | 637    | 764    | 891     | 1,019   | 1,146   | 1,273   | 1,528   | 1,783   | 1,910   | 2,292   | 2,546   | 3,183   | 3,820   |







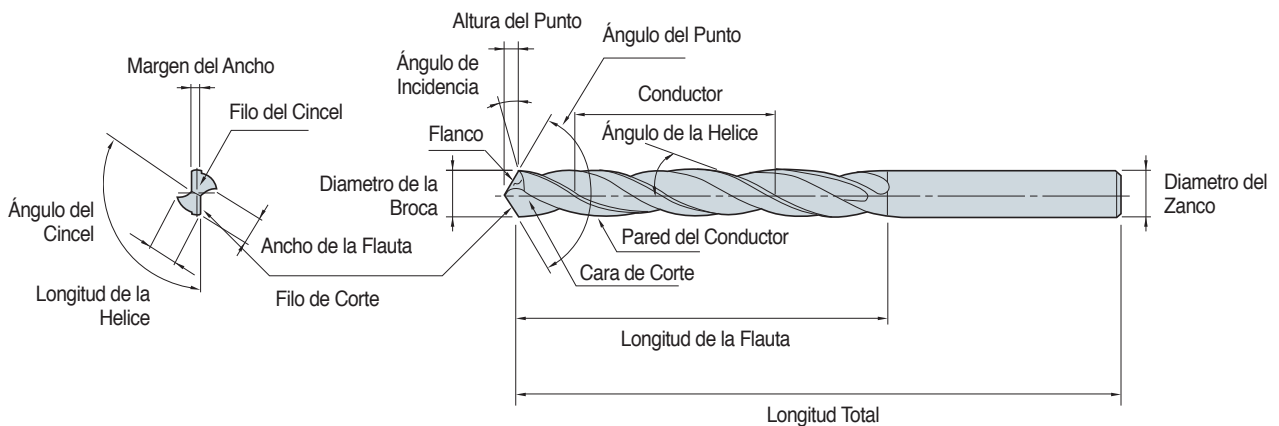
**Fallas en la Herramienta y Solución de Problemas**

| Problemas                    | Razones  | Solución  |        |                |              |                               |                         |                  |                 |                   |         |             |        |             |                       |                         |                              |            |   |
|------------------------------|--|---|--------|----------------|--------------|-------------------------------|-------------------------|------------------|-----------------|-------------------|---------|-------------|--------|-------------|-----------------------|-------------------------|------------------------------|------------|---|
|                              |  | Condición de corte  |        |                |              |                               | Forma de la herramienta |                  |                 |                   |         | Grado       |        | etc         |                       |                         |                              |            |   |
|                              |  | Velocidad de Corte  | Avance | Prof. de corte | Refrigerante | Corte superior corte inferior | Ángulo de incidencia    | Ángulo principal | Long. de Flauta | Numero de Flautas | Afilado | Chip pocket | Dureza | Resistencia | Rigidez de la Máquina | Vibracion de la maquina | Fijacion de la pieza trabajo | Proyeccion |   |
| Daño al Filo de Corte        | Filo Excesivo de la Periferia  | Condición de corte incorrecta   | ↓      | ↑              |              | ●                             |                         |                  |                 |                   |         |             |        |             |                       |                         | ↑                            |            |   |
|                              | Astillamiento  | Condición de corte incorrecta<br>Aumento del borde del inserto<br>Rigidez debil de la herramients<br>Grado incorrecto |        | ↓              |              |                               | ↓                       | ↓                |                 |                   | ●       |             | ↑      |             |                       |                         | ↓                            | ↑          | ↓ |
|                              | Fractura durante la operacion  | Condición de corte incorrecta<br>Carga excesiva del corte<br>Proyeccion excesiva                                      |        | ↓              | ↓            |                               |                         |                  | ↓               |                   |         | ↑           |        |             | ↑                     |                         | ↑                            |            | ↓ |
| Super final pobre            | Adherencia al filo de corte  |   | ↑      | ↑              |              | ●                             |                         |                  | ↑               |                   | ●       |             |        |             |                       |                         |                              |            |   |
|                              | Rechinido  |   | ↓      |                |              |                               | ↓                       |                  | ↓               |                   |         |             |        |             | ↑                     | ↓                       | ↑                            | ↓          |   |
|                              | Rectitud pobre   |   |        | ↓              | ↓            |                               | ↑                       |                  | ↑               | ↓                 |         |             |        |             |                       |                         |                              | ↓          |   |
| Precisión de maquinado pobre | Condición de corte incorrecta<br>Forma incorrecta de la hetta                              |   | ↑      | ↓              |              |                               | ↓                       |                  | ↓               | ↑                 |         |             |        |             | ↑                     | ↓                       |                              | ↓          |   |
| Mala evacuacion de la viruta | Volumen excesivo de corte<br>Cavidad de viruta incorrecta<br>Condición de corte incorrecta |   |        | ↓              | ↓            |                               |                         |                  |                 |                   | ↓       |             | ↑      |             |                       |                         |                              |            |   |

↑ : Incrementa   ↓ : Decrease   ● : Uso   ○ : Uso Correcto



## Forma de las brocas y nomenclatura



## Forma y Características del Corte

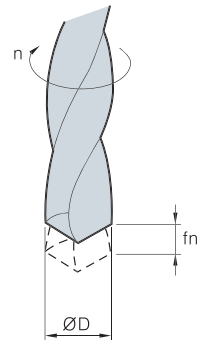
| <b>Ángulo de Hélice</b>     | <p>Juegue con el ángulo de incidencia del filo, si la fuerza de corte aumenta el ángulo de la hélice disminuye.. Por una parte si el ángulo de hélice es demasiado grande la rigidez del taladro disminuye.</p> <p>Manufacturabilidad Pobre ◀ Bajo - Ángulo de Hélice - Alto ▶ Evacuación lisa de la viruta<br/>                 Pieza dura (de acero templado) ◀ Bajo - Ángulo de Hélice - Alto ▶ Material suave (aluminio, etc)</p>  |   |  |                |               |               |  |  |  |               |  |   |                   |
|-----------------------------|--|---|--|----------------|---------------|---------------|--|--|--|---------------|--|---|-------------------|
| <b>Longitud Flauta</b>      | <p>La trayectoria del lubricante de la evacuación y del enfriamiento de la viruta. La longitud demasiado grande de la flauta debilita rigidez del taladro y la longitud demasiado pequeña de la flauta empeora la evacuación de la viruta a la fractura.</p>   |   |  |                |               |               |  |  |  |               |  |   |                   |
| <b>Ángulo de Punto</b>      | <p>El ángulo de punto tiene influencia grande en funcionamiento del corte. Depende principalmente del objeto. En caso de los taladros estándar el ángulo de punto es generalmente 118</p> <p>Disminución de la resistencia del empuje ◀ Bajo - Ángulo de Hélice - Alto ▶ Aumento del aresistencia del empuje<br/>                 Aumento de la torsion y de rebabas en la salida ◀ Bajo - Ángulo de Hélice - Alto ▶ disminución de la torsion y rebabas de salida<br/>                 Material suave (aluminio, etc.) ◀ Bajo - Ángulo de Hélice - Alto ▶ Pieza dura (acero templado)</p>   |   |  |                |               |               |  |  |  |               |  |   |                   |
| <b>Margen</b>               | <p>Mientras que trabajar a máquina el margen es la parte del contacto entre el objeto y el externo del taladro. Evita el doblez desempeña el papel de la guía. Depende de tamaño del taladro</p> <p>Disminución de la fuerza de corte ◀ Pequeño - Margen - Amplio ▶ Incremento de las fuerzas de corte<br/>                 Guia pobre ◀ Pequeño - Margen - Amplio ▶ Buena guia</p>  |   |  |                |               |               |  |  |  |               |  |   |                   |
| <b>Espesor</b>              | <p>Es la parte del centro del taladro y la rigidez del taladro depende de la tela. El taladro necesita el filo, borde del cincel, en la extremidad del taladro porque el taladro hace un agujero al principio de la perforación. Cuando el grueso de la tela es reducción grande es necesario reducir la fuerza de corte</p> <p>Disminución de fuerza de corte ◀ Pequeño - Espesor - Amplio ▶ Aumento de la fuerza de corte<br/>                 Disminución de la rigidez ◀ Pequeño - Espesor - Amplio ▶ Aumento en la rigidez<br/>                 Buena Evacuación de la viruta ◀ Pequeño - Espesor - Amplio ▶ Mala evacuación de las virutas<br/>                 Material suave (aluminio, etc.) ◀ Pequeño - Espesor - Amplio ▶ Pieza dura (acero templado)</p>   |   |  |                |               |               |  |  |  |               |  |   |                   |
| <b>Forma conica Trasera</b> | <p>Tamaño del taladro de diámetro es más pequeño desde el punto de cañara para evitar la fricción entre la periferia de perforación y la pieza de trabajo. La disminución del diámetro dividido por 100mm de longitud de la flauta en general, se convierte en 0.04~0.1mm. En cuanto a los ejercicios de alto rendimiento y los ejercicios de contracción de la pieza del agujero durante la operación tienen la forma cónica de nuevo grande</p>  |   |  |                |               |               |  |  |  |               |  |   |                   |
| <b>Reducción</b>            | <p>En general, los ejercicios de empuje efectos de cincel más del 50% de la longitud del borde de cincel depende de espesor del alma y del ángulo del cincel. Pero si espesor del alma es delgado rigidez de perforación se debilitan. Por lo tanto sin espesor del alma hace que el borde del cincel de un ángulo de inclinación corto. En otras palabras la disminución hace ángulo de inclinación en el cincel, la evacuación de la viruta y el empuje de dealojo mejoren</p> <table border="1"> <thead> <tr> <th>Tipos de</th> <th>Forma del borde</th> <th>Característica</th> <th>Brocas Korloy</th> </tr> </thead> <tbody> <tr> <td><b>Tipo X</b></td> <td></td> <td>Buen centro Alta dureza central<br/>Para Cigüeñales</td> <td>Mach solid drill (MSD)<br/>Vulcan drill (VZD)</td> </tr> <tr> <td><b>Tipo S</b></td> <td></td> <td>Para Uso Amplio Para uso General<br/>facil reafilado</td> <td>Solid drill (SSD)</td> </tr> </tbody> </table> | Tipos de  | Forma del borde                              | Característica | Brocas Korloy | <b>Tipo X</b> |  | Buen centro Alta dureza central<br>Para Cigüeñales | Mach solid drill (MSD)<br>Vulcan drill (VZD) | <b>Tipo S</b> |  | Para Uso Amplio Para uso General<br>facil reafilado | Solid drill (SSD) |
| Tipos de                    | Forma del borde  | Característica                                      | Brocas Korloy                                |                |               |               |  |  |  |               |  |   |                   |
| <b>Tipo X</b>               |  | Buen centro Alta dureza central<br>Para Cigüeñales  | Mach solid drill (MSD)<br>Vulcan drill (VZD) |                |               |               |  |  |  |               |  |   |                   |
| <b>Tipo S</b>               |  | Para Uso Amplio Para uso General<br>facil reafilado | Solid drill (SSD)                            |                |               |               |  |  |  |               |  |   |                   |





**Formulas de Corte**

| Velocidad de Corte  | Avance  | Ángulo Helice  | Tiempo de Maquinado   |
|---|---|--|---|
| $vc = \frac{\pi \cdot D \cdot n}{1000} \text{ (m/min)}$ <ul style="list-style-type: none"> <li>vc: Vel. de corte (m/min)</li> <li>D: Diametro Broca (mm)</li> <li>n: R.P.M. (min<sup>-1</sup>)</li> <li>π: Constante Circular (3.14)</li> </ul> | $fn = \frac{vf}{n} \text{ (mm/rev)}$ <ul style="list-style-type: none"> <li>fn: Avance por revolucion (mm/rev)</li> <li>vf: Avance por minuto (mm/min)</li> <li>n: R.P.M. (min<sup>-1</sup>)</li> </ul> | $\delta = \tan^{-1} \left( \frac{\pi D}{L} \right)$ <ul style="list-style-type: none"> <li>δ: Ángulo helice</li> <li>D: Diametro Broca (mm)</li> <li>L: Lead (mm)</li> <li>π: Constante Circular (3.14)</li> </ul> | $tc = \frac{ld}{n \cdot fn} \text{ (min)}$ <ul style="list-style-type: none"> <li>tc: Tiempo de maquinado (min)</li> <li>n: R.P.M. (min<sup>-1</sup>)</li> <li>ld: Tiempo de barrenado (mm)</li> <li>fn: Avance (mm/rev)</li> </ul> |



| Torsion y Empuje (Calculo de formulas de corte)   |   |   |
|---|---|---|
| $Md = KD^2 \times (0.0631 + 1.686 \times fn) \text{ (kg·cm)}$ $T = 57.95KDfn^{0.85} \text{ (kg)}$ | <ul style="list-style-type: none"> <li>Md: Torsion de corte (kg·cm)</li> <li>T: Empuje de corte (kg)</li> <li>D: Diametro Broca (mm)</li> </ul> | <ul style="list-style-type: none"> <li>fn: Avance por revolucion (mm/rev)</li> <li>K: Coeficiente del material</li> </ul> |

| Pieza de Trabajo (SAE/AISI)      | FuerzaTensil (kgf)              | Dureza (HB) | Coeficiente del material K |
|----------------------------------|---------------------------------|-------------|----------------------------|
| <b>Fundición</b>                 | Fundicion gris                  | 21          | 1.00                       |
|                                  | Fundicion                       | 28          | 1.39                       |
|                                  | Fundicion Ductil                | 35          | 1.88                       |
| <b>Acero General</b>             | 1020 (Acerocarbon C 0.2%)       | 55          | 2.22                       |
|                                  | 1112 (C 0.12, S 0.2%)           | 62          | 1.42                       |
|                                  | 1335 (Mn 1.75%)                 | 63          | 1.45                       |
| <b>Acero cromo de niquel</b>     | 3115 (Ni 1.25, Cr 0.6, Mn 0.5)  | 53          | 1.56                       |
|                                  | 3120 (Ni 1.25, Cr 0.6, Mn 0.7)  | 69          | 2.02                       |
|                                  | 3140                            | 88          | 2.32                       |
| <b>Acero al cromo molibdeno</b>  | 4115 (Cr 0.5, Mo 0.11, Mn 0.8)  | 63          | 1.62                       |
|                                  | 4130 (Cr 0.95, Mo 0.2, Mn 0.5)  | 77          | 2.10                       |
|                                  | 4140 (Cr 0.95, Mo 0.2, Mn 0.85) | 94          | 2.41                       |
| <b>Níquel de acero molibdeno</b> | 4615 (Ni 1.8, Mo 0.25, Mn 0.5)  | 75          | 2.12                       |
|                                  | 4820 (Ni 3.5, Mo 0.25, Mn 0.6)  | 140         | 3.44                       |
| <b>Acero cromado</b>             | 5150 (Cr 0.8, Mn 0.8)           | 95          | 2.46                       |
| <b>Acero Cromo - Vanadio</b>     | 6115 (Cr 0.6, Mn 0.6, V 0.12)   | 58          | 2.08                       |
|                                  | 6120 (Cr 0.8, Mn 0.8, V 0.1)    | 80          | 2.22                       |

| Torsion y Empuje (formula empirica)              |  |   |   |
|--|--|---|---|
| $Md = K_1 d^2 \cdot fn^m$ $T = K_2 d \cdot fn^n$ | <ul style="list-style-type: none"> <li>Md: Torsion de corte (kg·cm)</li> <li>T: Empuje (kg)</li> </ul> | <ul style="list-style-type: none"> <li>fn: Avance (mm/rev)</li> <li>K1, K2, m, n: Valor caracteristico de los datos experimentales</li> </ul> | <ul style="list-style-type: none"> <li>d: Diametr Broca (mm)</li> </ul> |

| Pieza Trabajo               | K1  | m    | K2    | n    |
|-----------------------------|-----|------|-------|------|
| <b>Acero Suave</b>          | 5.9 | 1.00 | 125.0 | 0.88 |
| <b>Acero Rolado</b>         | 3.5 | 1.00 | 55.0  | 0.88 |
| <b>7-3 de Laton</b>         | 2.5 | 0.94 | 44.4  | 0.87 |
| <b>Aluminio</b>             | 1.5 | 0.90 | 33.3  | 0.78 |
| <b>Zinc</b>                 | 1.4 | 0.88 | 27.0  | 0.74 |
| <b>Metal para Armamento</b> | 2.0 | 0.94 | 21.6  | 0.75 |
| <b>Hierro Galvanizado</b>   | 0.3 | 0.57 | 6.4   | 0.55 |



## Fallas y Soluciones

| Problema                                | Causa  | Solución                        |        |                  |                |              |                         |                  |                  |         |                   |                |             |        |                       |                           |      |                              |
|---|--|---------------------------------|--------|------------------|----------------|--------------|-------------------------|------------------|------------------|---------|-------------------|----------------|-------------|--------|-----------------------|---------------------------|------|------------------------------|
|   |  | Condición de Corte              |        |                  |                |              | Forma de la Herramienta |                  |                  |         |                   | Grado          |             | etc    |                       |                           |      |                              |
|   |  | Velocidad Corte                 | Avance | Velocidad Avance | Avance Inicial | Refrigerante | Ángulo Incidencia       | Ángulo del Punto | Ángulo Reducción | Afilado | Tasa ancho flauta | Adelgazamiento | Resistencia | Dureza | Rigidez de la Máquina | Vibraciones de la Máquina | Guía | Sujeción de la Pieza trabajo |
| Azillamiento                            | • Filo demasiado Agudo (Ángulo de incidencia demasiado grande, el Ángulo del borde es demasiado agudo) |                                 |        |                  |                |              | ↓                       |                  | ↓                | ↑       |                   |                | ↑           |        |                       |                           |      |                              |
|   | • Excesiva Velocidad de Corte  | ↓                               |        |                  |                | ●            |                         |                  |                  |         |                   |                |             |        |                       |                           |      |                              |
|   | • Adherencia de material al filo   |                                 |        |                  |                | ●            | ↓                       |                  | ↓                | ↑       |                   |                | ↑           |        |                       |                           |      |                              |
|   | • Vibraciones y rechinidos   | ↓                               |        |                  |                |              |                         |                  |                  |         |                   |                |             | ↑      | ↓                     |                           | ●    |                              |
| Desgaste                                | • Excesiva velocidad de corte (desgaste anormal en el margen)  | ↓                               |        |                  |                | ●            |                         |                  |                  |         |                   |                |             |        |                       |                           |      |                              |
|   | • Velocidad de corte demasiado lenta (Desgaste anormal en el centro)                                   | ↑                               |        |                  |                | ●            |                         |                  |                  |         |                   |                |             |        |                       |                           |      |                              |
| Viruta                                  | • Viruta larga   | ↑                               | ↑      |                  |                | ●            |                         |                  |                  | ↓       |                   |                |             |        |                       |                           |      |                              |
|   | • Con mayor vuelta   | ↑                               | ↑      |                  |                |              |                         |                  |                  |         |                   |                |             |        |                       |                           |      |                              |
|   | • Viruta quemada   | ↑                               |        |                  |                | ●            |                         |                  |                  |         |                   |                |             |        |                       |                           |      |                              |
| Rebabas de la presión del agujero final | • Precisión de la sujeción   |                                 |        |                  | ↓              |              |                         | ↓                |                  | ↓       |                   |                |             | ↑      | ↓                     |                           | ●    |                              |
|   | • Alimentación Excesiva<br>Ángulo de punta afilado   |                                 | ↓      |                  |                |              |                         | ↑                |                  | ↓       |                   |                |             |        |                       |                           |      |                              |
|   | • Velocidad de corte excesiva (conceder grado de la herramienta)                                       | ↑                               |        |                  |                | ●            | ↓                       | ⊙                |                  |         |                   |                | ↑           |        |                       |                           |      |                              |
| Fractura                                | Al Contacto  | • Superficie de acabado pobre   |        |                  | ●              | ↓            |                         |                  |                  |         |                   |                |             |        |                       |                           | ●    |                              |
|   |  | • Rigidez escasa de la máquina  |        |                  |                |              |                         |                  |                  |         |                   |                |             |        | ↑                     |                           |      | ●                            |
|   |  | • Condición de corte inadecuada | ↑      | ↓                |                |              |                         |                  |                  |         |                   |                |             |        |                       |                           |      |                              |
|   | En la parte inferior de agujero  | • Agujero torcido               | ↑      |                  |                |              |                         |                  | ↑                |         |                   | ●              |             |        |                       | ↓                         |      | ●                            |
|   |  | • Obstrucción por virutas       |        | ↓                | ●              |              |                         |                  |                  |         |                   |                | ↑           |        |                       |                           |      |                              |

↑: Incrementa ↓: Decrease ●: Uso ⊙: Uso Correcto



 **Tamaño del agujero para Rosca**

● **Roscas Metricas Gruesas para Tornillo**

| Especificación | Diametro del agujero |
|----------------|----------------------|
| M1 X 0.25      | 0.75                 |
| M1.1 X 0.25    | 0.85                 |
| M1.2 X 0.25    | 0.95                 |
| M1.4 X 0.3     | 1.1                  |
| M1.6 X 0.35    | 1.25                 |
| M1.7 X 0.35    | 1.35                 |
| M1.8 X 0.35    | 1.45                 |
| M2 X 0.4       | 1.6                  |
| M2.2 X 0.45    | 1.75                 |
| M2.3 X 0.4     | 1.9                  |
| M2.5 X 0.45    | 2.1                  |
| M2.6 X 0.45    | 2.2                  |
| M3 X 0.6       | 2.4                  |
| M3 X 0.5       | 2.5                  |
| M3.5 X 0.6     | 2.9                  |
| M4 X 0.75      | 3.25                 |
| M4 X 0.7       | 3.3                  |
| M4.5 X 0.75    | 3.8                  |
| M5 X 0.9       | 4.1                  |
| M5 X 0.8       | 4.2                  |
| M5.5 X 0.9     | 4.6                  |
| M6 X 1         | 5                    |
| M7 X 1         | 6                    |
| M8 X 1.25      | 6.8                  |
| M9 X 1.25      | 7.8                  |
| M10 X 1.5      | 8.5                  |
| M11 X 1.5      | 9.5                  |
| M12 X 1.75     | 10.3                 |
| M14 X 2        | 12                   |
| M16 X 2        | 14                   |
| M18 X 2.5      | 15.5                 |
| M20 X 2.5      | 17.5                 |
| M22 X 2.5      | 19.5                 |
| M24 X 3        | 21                   |
| M27 X 3        | 24                   |
| M30 X 3.5      | 26.5                 |
| M33 X 3.5      | 29.5                 |
| M36 X 4        | 32                   |
| M39 X 4        | 35                   |
| M42 X 4.5      | 37.5                 |
| M45 X 4.5      | 40.5                 |
| M48 X 5        | 43                   |

● **Roscas Metricas Gruesas para Tornillo**

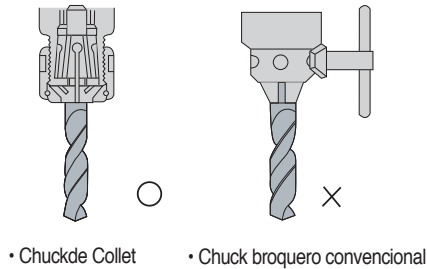
| Especificación | Diametro del agujero |
|----------------|----------------------|
| M2.5 X 0.35    | 2.2                  |
| M3 X 0.35      | 2.7                  |
| M3.5 X 0.35    | 3.2                  |
| M4 X 0.5       | 3.5                  |
| M4.5 X 0.5     | 4                    |
| M5 X 0.5       | 4.5                  |
| M5.5 X 0.5     | 5                    |
| M6 X 0.75      | 5.3                  |
| M7 X 0.75      | 6.3                  |
| M8 X 1         | 7                    |
| M8 X 0.75      | 7.3                  |
| M9 X 1         | 8                    |
| M9 X 0.75      | 8.3                  |
| M10 X 1.25     | 8.8                  |
| M10 X 1        | 9                    |
| M10 X 0.75     | 9.3                  |
| M11 X 1        | 10                   |
| M11 X 0.75     | 10.3                 |
| M12 X 1.5      | 10.5                 |
| M12 X 1.25     | 10.8                 |
| M12 X 1        | 11                   |
| M14 X 1.5      | 12.5                 |
| M14 X 1        | 13                   |
| M15 X 1.5      | 13.5                 |
| M15 X 1        | 14                   |
| M16 X 1.5      | 14.5                 |
| M16 X 1        | 15                   |
| M17 X 1.5      | 15.5                 |
| M17 X 1        | 16                   |
| M18 X 2        | 16                   |
| M18 X 1.5      | 16.5                 |
| M18 X 1        | 17                   |
| M20 X 2        | 18                   |
| M20 X 1.5      | 18.5                 |
| M20 X 1        | 19                   |
| M22 X 2        | 20                   |
| M22 X 1.5      | 20.5                 |
| M22 X 1        | 21                   |
| M24 X 2        | 22                   |
| M24 X 1.5      | 22.5                 |
| M24 X 1        | 23                   |
| M25 X 2        | 23                   |
| M25 X 1.5      | 23.5                 |
| M25 X 1        | 24                   |
| M26 X 1.5      | 24.5                 |
| M27 X 2        | 25                   |



## Precauciones

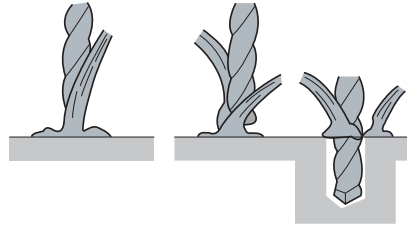
### Selección del Chuck

- Usar adaptador portapinzas, porque tiene agarre es más seguro (El adaptador de perforación general no tiene suficiente poder de agarre)



### Con Refrigeración

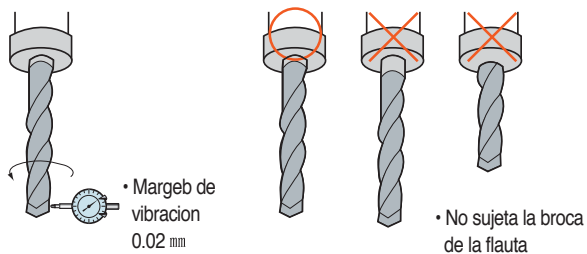
- Debera tener suficiente refrigerante en torno a la entrada del agujero a una presión adecuada
- Presion Estándar de lubricante: 3~5kg/cm<sup>2</sup>, Con un flujo: 2~5 l/min



- Suministre gran cantidad de refrigerante en la entrada del agujero

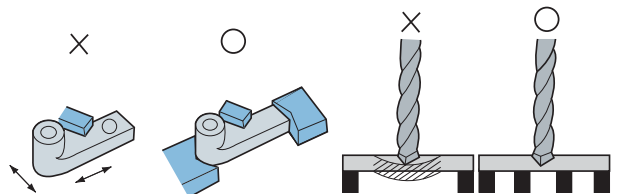
### Montaje de la Broca

- El montaje debe estar dentro de 0.02mm
- La flauta no debiera de sujetarse



### Sujecion de la Pieza de Trabajo

- Para una mejor perforación de alto rendimiento de empuje y fuerza de corte horizontal, la pieza debe sujetarse firmemente para evitar rechinidos



- Una sujecion fuerte es nescesaria (Laterales, superior e inferior)

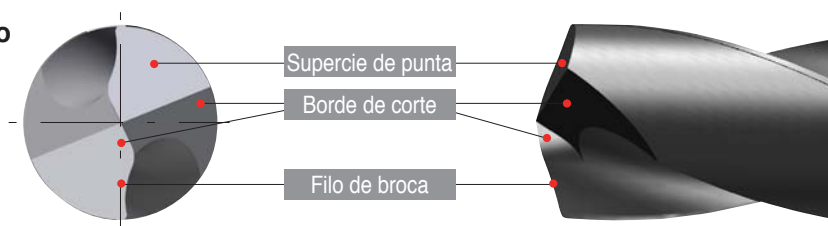
- Fuerza de sujeción es necesaria porque puede provocarse astillamiento por fricción

## Nota

- 1) Para mejor vida del taladro, si el desgaste es pequeño es favorable para ser rectificad
- 2) Los daños y el tamaño de desgaste deben estar dentro de 1.5mm para el rectificad
- 3) Si la broca se ha quebrado, el reafilado sera imposible.
- 4) Solicitud de rectificadon es aceptable o la compra de una maquina de rectificadon.

## Proceso de Re-afilado (MACH drill)

### Procedimiento para el reafilado



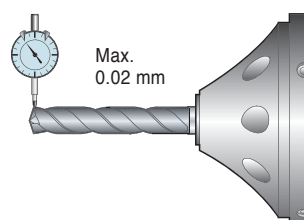
#### 1) Preparación

- Determinación de las zonas rectificadas. compruebe que el filo muestra daños y desgaste Si la fractura se que se encuentra es grande, quitea limando



#### 2) Operacion de rectificadon

- Ejercicios perforación se sujeta a la pinza de sujeción La vibración debe estar dentro de 0.02mm



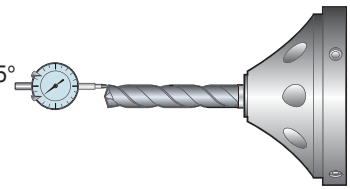


**3) Operación de Rectificado Operación**

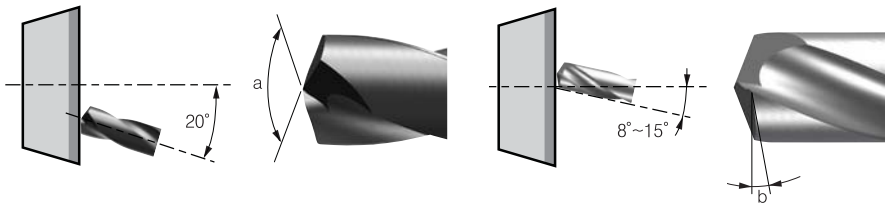
- Compruebe el daño y el desgaste en el punto y quitelo totalmente
- La diferencia de la altura del labio será de 0.02mm

Ángulo de punto (a): 140°

Ángulo de incidencia (b): 8°~15°



La diferencia de la máxima altura del labio. 0.02mm



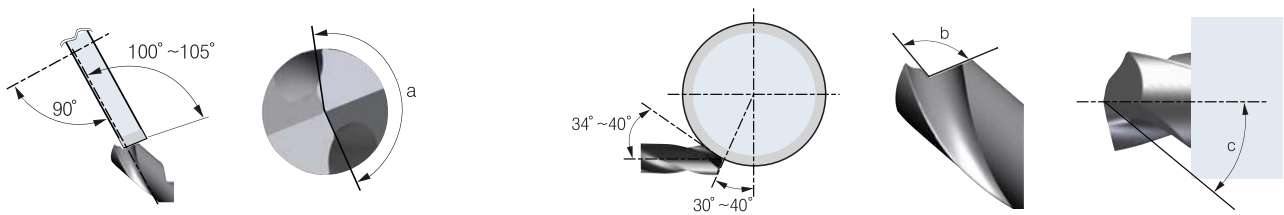
**4) Rectificado Operación de Rectificado - Reducción del punto de pulido**

- Considerando la anchura del filo N/L desde centro de la helice debe tener 0.03~0.08mm de margen axial
- Fije la rueda al eje del taladro en un Ángulo de 34°~40°

Ángulo de reducción (a): 155°~160°

reducción Ángulo (b): 100°~105°

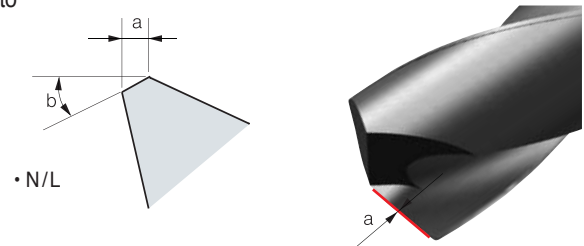
Ángulo Reducción Incidencia (c): 34°~40°



**5) Rectificado - N/L Pulido y Afilado**

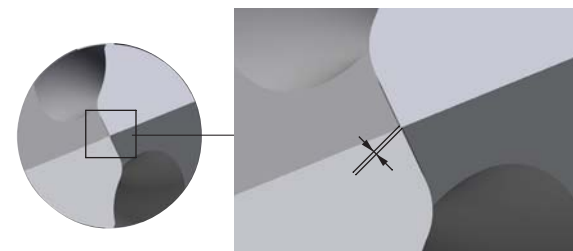
- Usando el cincel diamante afila la anchura plana a lo largo del filo del punto
- Después pula los bordes para enparejar el filo

Anchura N/L (a): 0.05mm~0.16mm / Ángulo N/L (b): 24°~26°



**TIP**

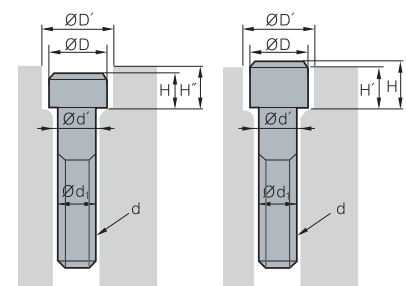
- Marca del punto
- La anchura del punto debe estar debajo de 0.10mm
- Condiciones recomendadas para el afilado
- Rueda diamante: 240~400 Malla
- Cincel Diamante: 400~600 Malla
- Piedra diamante: 800~1500 Malla



**Tamaño de perno Socket hexagonal (Sujecion de Tornillo)**

**Medidas y dimensiones del Tornillo**

| ISO (d)         | M3  | M4  | M5  | M6  | M8  | M10  | M12  | M14  | M16  | M18  | M20  | M22  | M24  | M27 | M30 |
|-----------------|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|-----|-----|
| Ød <sub>t</sub> | 3   | 4   | 5   | 6   | 8   | 10   | 12   | 14   | 16   | 18   | 20   | 22   | 24   | 27  | 30  |
| Ød'             | 3.4 | 4.5 | 5.5 | 6.5 | 8.5 | 11   | 14   | 16   | 18   | 20   | 22   | 24   | 26   | 30  | 33  |
| ØD              | 5.5 | 7   | 8.5 | 10  | 13  | 16   | 18   | 21   | 24   | 27   | 30   | 33   | 36   | 40  | 45  |
| ØD'             | 5   | 8   | 9.5 | 11  | 14  | 17.5 | 20   | 23   | 26   | 29   | 32   | 35   | 39   | 43  | 48  |
| H               | 3   | 4   | 5   | 6   | 8   | 10   | 12   | 14   | 16   | 18   | 20   | 22   | 24   | 27  | 30  |
| H'              | 2.7 | 3.6 | 4.6 | 5.5 | 7.4 | 9.2  | 11.0 | 12.8 | 14.5 | 16.5 | 18.5 | 20.5 | 22.5 | 25  | 28  |
| H''             | 3.3 | 4.4 | 5.4 | 6.5 | 8.6 | 10.8 | 13.0 | 15.2 | 17.5 | 19.5 | 21.5 | 23.5 | 25.5 | 29  | 32  |



## Comparación de Rompevirutas

| APLICACIÓN   |                              | KORLOY          | KYOCERA         | TAEGUTEC          | SUMITOMO   | SANDVIK    | KENNAMETAL      | ISCAR                        | WLATER             | MITSUBISHI         | SECO                 | TUNGALLOY         |                |            |
|--|------------------------------|-----------------|-----------------|-------------------|------------|------------|-----------------|------------------------------|--------------------|--------------------|----------------------|-------------------|----------------|------------|
| NEGATIVO   | P                            | Ultra acabado   | -               | DP (G-Clase)      | -          | FA         | PMC             | FF (G-Clase)                 | SF                 | -                  | PK (G-Clase), FY     | FF1               | TF             |            |
|  |                              |                 | VL              | GP                | FA         | FL, FB     | QF              | UF                           | PF                 | NF3                | FH, FS, SY           | FF2               | NS, ZF         |            |
|  |                              | Acabado         | VF              | PP                | FG         | LU, FE     | PF, XF          | FN                           | NF, SM             | NF4                | FP                   |                   |                | NM, NS, SS |
|  |                              |                 | VB              | -                 | SF         | SU         | 61              | K                            | F3P                | FP5                | LP, SH, SA           | MF2               |                | TS, TSF    |
|  |                              | Medio a acabado | VQ, VC          | HQ, CQ            | MC         | SE         | HM              | LF, CT                       | TF                 | NS6                | C (Cermet)           |                   |                | AS         |
|  |                              |                 | LP              | PQ, CJ            | FC         | SX         | PMC             | -                            | -                  | MP3                | MV                   | MF5               |                | ZM, AM     |
|  | Medio                        | VM, HM          | HK, GS, HS, PS  | MP, MT            | GU (UG)    | QM, SM     | MP, MN          | PP, TF                       | NM4, NP5           | MA, MH             | M3, M5               |                   | TQ, TM         |            |
|  |                              | MP              | PG              | PC                | GE, UX     | PM, XM     | -               | M3P                          | MP5                | MP                 | -                    |                   | DM, Neutro C/B |            |
|  | Desbaste                     | B25             |                 |                   |            |            | -               | RP, MR                       | GN                 | -                  | GM, Neutro C/B       | M5                | TH             |            |
|  |                              | GR              | PT, GT, HT, PH  | RT                | MU, ME, MX | PR, WR     | RN, Neutro C/B  | R3P                          | RP5, NM9           | GH, RP             | MR5, MR6, MR7        |                   | THS            |            |
|  | Mecanizado de trabajo pesado | GH              | PX              | HB, RH, RX        | HG, MP     | PR, XMR    | RH              | NR, HT                       | RP7, NR4, NRF      | HZ                 | R4, R5               |                   | CH             |            |
|  |                              | VH              | -               | HZ, EH            | HP         | QR         | RM              | HR                           | NR8                | HX                 | R6, R7, R8, PR6      |                   | THS, TRS       |            |
| VT   |                              | -               | HT, HY, HD      | HU, HW, HF        | HR         | MM         | T3P             | -                            | HV                 | PR9, R56, R57, R68 |                      | 65, TUS           |                |            |
| Acero de bajo carbono  | Acero suave                  | VL              | XF, XP, XP-T    | SF                | FL         | LC         | -               | -                            | -                  | FY                 | -                    | -                 |                |            |
|  |                              | -               | XQ, XS          | -                 | -          | -          | -               | -                            | -                  | SY                 | -                    | -                 |                |            |
| Alto avance  | Corte de alto avance         | VW              | WP, WF          | WS                | LUW, SEW   | WF, WL     | FW              | WF                           | NF                 | SW                 | FF2, MF2             | AFW, FW           |                |            |
|  |                              | LW              | WQ, WE          | WT                | GUW        | WM, WMX    | MW              | WG                           | NM                 | MW                 | MF5, M3              | ASW, SW           |                |            |
| Aplicación   | Eje (Barra larga)            | SH              | CJ, ST          | FS, VF, FX        | HM         | K          | -               | -                            | -                  | ES                 | UX                   | P, S              |                |            |
|  |                              | KNUX-           | KNMX-           | KNUX-             | -          | KNUX-71    | -               | -                            | -                  | KNMX-19            | -                    | KNMX              |                |            |
| M  | Acero inoxidable             | Acabado         | VP2, MP         | MQ, GU, SK        | EA, SF     | SU, EF     | MF, XF          | FP, FF                       | SF, VL, F3M        | NF4, FM5           | SH, LM               | FF1, MF1          | SS, SF, SA     |            |
|  |                              | Corte medio     | MM              | HU, TK, MS        | MP, EM     | EX, EG, GU | MM, XM, QM, MMC | MP, UP, MS                   | PP, TF, M3M        | NM4, NR4           | MS, GM, MM           | MF3, MF4          | SM             |            |
|  |                              | Desbaste        | RM              | MU                | ET         | MU, HM, EM | MR, XMR, MRR    | RP, P                        | MR, R3M            | RM5, NRS           | MA, ES               | MF5, M5           | S, SH          |            |
| K  | Fundición                    | Acabado         | MP              | Neutro C/B, C, KQ | MT         | UZ         | KF, PMC, XF     | T-20, FN                     | TF                 | NM, MK5            | LK, MA               | M4                | CF             |            |
|  |                              | Corte medio     | B25, MK         | ZS, KG            | RT, KT     | UX, GZ     | KM, XM          | UN, RP                       | GN                 | NM5, RK5           | MK, GK, Neutro C/B   | M5                | CM, Neutro C/B |            |
|  |                              | Desbaste        | -MA, RK         | -MA, GC, KH       | -MA        | -MA        | KR, XMR, KRR    | MR, S-20, -MA                | -MA, NR            | -MA, RK7           | RK, -MA              | MR7               | CH             |            |
| S  | HRSA                         | Ultra acabado   | VP1             | MQ, SK            | EA         | EF         | SF, SGF         | FS (G-Clase)<br>LF (G-Clase) | SF, PF             | NF4                | FJ (G-Clase)         | M1                | SF             |            |
|  |                              | Acabado         | VP2             | TK                | ML         | UP, EG     | 23.SR, XF, SMC  | UP                           | PP                 | NFT                | LS                   | MF1               | HMM            |            |
|  |                              | Corte medio     | VP3             | MS                | EM         | EX         | SM, SMR, XM     | MS, GP, P, UN                | TF                 | NMS, NMT           | MS                   | MF4, MR3          | HRF            |            |
|  |                              | Desbaste        | VP4             | MU                | ET         | MU         | XMR             | RP                           | MR                 | NRS, NRT           | RS, GJ               | MR4               | HRM            |            |
| N  | Aluminio                     | HA              | AH              | ML                | AX         | 23         | GP, MS          | NF, PP                       | FN2, PF2, MN2, PM2 | MJ                 | MF1                  | P                 |                |            |
| POSITIVO   | P<br>M<br>K                  | Aplicación      | Acabado         | VL                | XP, PP     | FA, FX     | FC              | PF, XF                       | 11                 | PF                 | FP4                  | SMG (G-Clase), FV | FF1            | 01         |
|  |                              |                 |                 | VF                | GP         | -          | FB, LU (FP, FK) | UF                           | UF                 | F3P                | FK6                  | SV, FP            | F1             | PSF, PF    |
|  |                              |                 | Corte medio     | HMP               | XQ         | FG         | LB, NF          | PM, XM                       | LF, FP             | 14                 | MP4, FM2, FM4, MK4   | LP                | MF2            | PSS        |
|  |                              |                 |                 | MP                | HQ, GK     | PC, FM     | SU, SC          | UM, PMC                      | MP, T-20           | SM                 | FP6, MM4, FM6, RK4   | MV                | F2, M3         | PS         |
|  | Desbaste                     | C25             | Neutro C/B      | MT                | MU         | PR, UR, XR | MF, GM, -C      | 19                           | RP4, RM4, RK6      | Neutro C/B, MP     | M5                   | PM                |                |            |
| Corte de alto avance   | -                            | WP              | -               | LUW               | WL, WF     | FW         | WF              | PM                           | SW                 | -                  | -                    |                   |                |            |
|  | -                            | -               | WT              | SDW               | WM, WMX    | MW         | WG              | -                            | MW                 | -                  | -                    |                   |                |            |
| M<br>S   | Acero inoxidable para HRSA   | Acabado         | VP1             | CF, GF, GQ        | FG         | FC, FM     | MF, MM, MMC     | 11, UF, LF                   | PF                 | FM4, NM4           | FJ (G-Clase), FM, LM | F1, MF2           | PSF, PSS       |            |
|  |                              | Medio a acabado | VL              | MQ, MF            | SA         | LB, SI     | MR, XR, SMC     | MF                           | SM, M3M            | RM4                | MM, Neutro C/B       | M3, M5            | PS, PM         |            |
| K  | Fundición                    | Corte medio     | MP              | HQ                | PC         | MU         | KF, KM          | LF                           | 17                 | FK6                | MK                   | M3                | CM             |            |
|  |                              | Desbaste        | C25             | GK                | MT         | Neutro C/B | KR              | MF, UF                       | 19                 | MK4, RK6           | Neutro C/B, -MW      | M5                | Neutro C/B     |            |
| N  | Aluminio                     | AK, AR          | AH              | FL                | AW, AG, AY | AL         | HP, LF          | AS, AF                       | PM2                | AZ, FS             | AL                   | AL                |                |            |
| Torneado de barra de alta precisión (La clase de tolerancia G&E) |                              | KF, KM          | FSF, USF, J, A3 | GF, FF, GW        | FY, FX, FZ | K, F, UM   | GH              | LF, RF, XL                   | -                  | F, SR, SS, SM      | UX                   | JS, J10, JRP, JPP |                |            |





Tabla de Grados KORLOY

| Cat. | Grado   | ISO     |         |         |         |         |   | Torneado | Herramientas multifuncionales | Barrenado | Fresado | Endmill | Broca Indexable | Broca Solida | Herramienta Cementada | Capade Recubrimiento |
|------|---------|---------|---------|---------|---------|---------|---|----------|-------------------------------|-----------|---------|---------|-----------------|--------------|-----------------------|----------------------|
|      |         | P       | M       | K       | S       | N       | H |          |                               |           |         |         |                 |              |                       |                      |
| CVD  | NC3215  | P10-P15 |         |         |         |         |   | ●        |                               |           |         |         |                 |              |                       |                      |
| CVD  | NC3225  | P20-P25 |         |         |         |         |   | ●        | ●                             |           |         |         |                 |              |                       |                      |
| CVD  | NC3120  | P20-P25 |         |         |         |         |   | ●        | ●                             |           |         |         |                 |              |                       |                      |
| CVD  | NC3030  | P25-P35 |         |         |         |         |   | ●        | ●                             |           |         |         |                 |              |                       |                      |
| PVD  | PC3030T | P35-P45 | M25-M35 |         |         |         |   |          |                               | ●         |         |         |                 |              |                       |                      |
| CVD  | NC6310  |         |         | K01-K10 |         |         |   | ●        |                               |           |         |         |                 |              |                       |                      |
| CVD  | NC6315  |         |         | K10-K20 |         |         |   | ●        | ●                             |           |         |         |                 |              |                       |                      |
| PVD  | PC8105  |         | M05-M15 |         | S01-S10 |         |   | ●        |                               |           |         |         |                 |              |                       |                      |
| PVD  | PC8110  |         | M10-M20 |         | S05-S15 |         |   | ●        | ●                             |           |         |         |                 |              |                       |                      |
| PVD  | PC8115  |         | M15-M25 |         | S10-S20 |         |   | ●        |                               |           |         |         |                 |              |                       |                      |
| CVD  | NC9115  |         | M10-M20 |         |         |         |   | ●        |                               |           |         |         |                 |              |                       |                      |
| CVD  | NC9125  |         | M20-M30 |         | S10-S20 |         |   | ●        |                               |           |         |         |                 |              |                       |                      |
| CVD  | NC9135  |         | M30-M40 |         | S15-S25 |         |   | ●        |                               |           |         |         |                 |              |                       |                      |
| PVD  | PC9030  |         | M25-M35 |         |         |         |   | ●        | ●                             |           |         |         |                 |              |                       |                      |
| PVD  | PC9070T |         | M25-M35 |         |         |         |   |          |                               | ●         |         |         |                 |              |                       |                      |
| PVD  | PC2005  |         |         |         |         | H01-H10 |   |          |                               | ●         |         |         |                 |              |                       |                      |
| PVD  | PC2010  |         |         |         |         | H05-H15 |   |          |                               | ●         |         |         |                 |              |                       |                      |
| PVD  | PC2015  |         |         |         |         | H10-H20 |   |          |                               | ●         |         |         |                 |              |                       |                      |
| PVD  | PC2505  |         |         |         |         | H01-H10 |   |          |                               | ●         |         |         |                 |              |                       |                      |
| PVD  | PC2510  |         |         |         |         | H05-H15 |   |          |                               | ●         | ●       |         |                 |              |                       |                      |
| PVD  | PC210F  |         |         |         |         | H10-H20 |   |          |                               | ●         |         |         |                 |              |                       |                      |
| CVD  | NCM325  | P30-P40 |         |         |         |         |   |          |                               | ●         |         | ●       |                 |              |                       |                      |
| CVD  | NCM335  | P35-P45 |         |         |         |         |   |          |                               | ●         |         |         |                 |              |                       |                      |
| PVD  | PC3600  | P25-P35 |         |         |         |         |   |          |                               | ●         |         |         |                 |              |                       |                      |
| PVD  | PC3700  | P25-P40 |         |         |         |         |   |          |                               | ●         |         | ●       |                 |              |                       |                      |
| CVD  | NC5330  | P30-P35 | M25-M35 | K15-K25 |         |         |   | ●        | ●                             | ●         |         | ●       |                 |              |                       |                      |
| CVD  | NCM535  | P30-P40 |         | K20-K30 |         |         |   |          |                               | ●         |         | ●       |                 |              |                       |                      |
| CVD  | NCM545  | P40-P50 |         | K30-K40 |         |         |   |          |                               | ●         |         |         |                 |              |                       |                      |

Recubrimiento

## Tabla de Grados KORLOY

















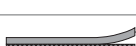

| Cat.              | Grado                     | ISO     |         |         |         |         |         | Torneado | Herramientas multifuncionales | Barrenado | Fresado | Endmill | Broca Indexable | Broca Solida | Herramienta Cementada  | Capade Recubrimiento  |
|-------------------|---------------------------|---------|---------|---------|---------|---------|---------|----------|-------------------------------|-----------|---------|---------|-----------------|--------------|--|---|
|                   |                           | P       | M       | K       | S       | N       | H       |          |                               |           |         |         |                 |              |  |   |
| Recubrimiento     | PVD PC5300                | P30-P40 | M20-M30 | K20-K30 | S15-S25 |         |         | ●        | ●                             | ●         | ●       | ●       |                 |              |  *Recubrimiento Nuevo de TiAlN (Alta Dureza/Resistente a Oxidación)   |   |
|                   | PVD PC5335                | P30-P40 | M20-M30 |         |         |         |         |          |                               |           |         | ●       |                 |              |  *TiAlCrN film (Lubricativa)  |   |
|                   | PVD PC5400                | P35-P45 | M30-M40 | K25-K35 | S25-S35 |         |         | ●        |                               | ●         |         |         |                 |              |  *TiAlCrN film (Lubricativa)  |   |
|                   | PVD PC6510                |         |         | K05-K15 |         |         |         |          |                               | ●         |         | ●       |                 |              |  TiN<br>TiAlN   |   |
|                   | PVD PC9530                |         | M25-M35 |         |         |         |         |          |                               | ●         |         |         |                 |              |  |  TiAlN                                   |
|                   | PVD PC9540                |         | M35-M45 |         | S30-S40 |         |         |          |                               | ●         |         |         |                 |              |  |  Al <sub>2</sub> O <sub>3</sub><br>TiAlN |
| Cermet            | PVD CC1500 <sup>new</sup> | P10-P20 |         | K05-K15 |         |         |         | ●        |                               |           |         |         |                 |              |  *TiAlCrN film (Lubricativa)  |   |
|                   | PVD CC2500 <sup>new</sup> | P20-P30 |         | K10-K15 |         |         |         | ●        |                               |           |         |         |                 |              |  *TiAlCrN film (Lubricativa)  |   |
|                   | CN1500                    | P10-P20 |         | K10-K20 |         |         |         | ●        |                               |           |         |         |                 |              |  |   |
|                   | CN2000                    | P20-P30 |         |         |         |         |         | ●        | ●                             |           | ●       |         |                 |              |  |   |
|                   | CN2500                    | P15-P30 |         | K15-K25 |         |         |         | ●        |                               |           |         |         |                 |              |  |   |
|                   | CN30                      | P25-P35 |         |         |         |         |         |          |                               |           | ●       |         |                 |              |  |   |
| Sin Recubrimiento | ST10                      | P10-P15 |         |         |         |         |         |          |                               | ●         |         |         |                 | ●            |  |   |
|                   | ST20                      | P15-P20 |         |         |         |         |         |          | ●                             |           |         |         |                 | ●            |  |   |
|                   | ST30A                     | P25-P35 |         |         |         |         |         |          | ●                             |           | ●       |         |                 |              |  |   |
|                   | U20                       |         | M25-M30 |         |         |         |         |          |                               |           |         |         |                 | ●            |  |   |
|                   | H01                       |         |         | K05-K10 | S01-S10 | N10-N20 | H05-H10 | ●        | ●                             |           | ●       | ●       | ●               | ●            |  |   |
|                   | H05                       |         |         | K10-K15 | S05-S15 | N15-N25 |         | ●        |                               |           | ●       |         |                 |              |  |   |
|                   | G10E                      |         |         |         | K15-K20 |         |         | ●        |                               |           | ●       |         |                 | ●            |  |   |
| Recubrimiento     | PVD PC203F                |         |         |         |         |         | H05-H15 |          |                               |           |         | ●       |                 |              |  *Recubrimiento Nuevo de TiAlN (Alta Dureza/Resistente a Oxidación) |   |
|                   | PVD PC210C                |         |         |         |         | N10-N20 |         |          |                               |           |         | ●       |                 |              |  CrN  |   |
|                   | PVD PC215F                | P20-P35 |         |         |         |         |         |          |                               |           |         | ●       |                 |              |  *Recubrimiento Nuevo de TiAlN (Alta Dureza/Resistente a Oxidación) |   |
|                   | PVD PC215G                | P15-P30 |         | K15-K30 |         |         |         |          |                               |           |         |         | ●               |              |  TiAlN  |   |
|                   | PVD PC221F                | P35-P45 |         | K35-K45 |         |         |         |          |                               |           |         | ●       |                 |              |  *Recubrimiento Nuevo de TiAlN (Alta Dureza/Resistente a Oxidación) |   |
|                   | PVD PC230F                | P05-P15 | M05-M15 | K05-K15 |         |         |         |          |                               |           |         |         |                 | ●            |  *Recubrimiento Nuevo de TiAlN (Alta Dureza/Resistente a Oxidación) |   |
|                   | PVD PC303S                | P05-P15 |         | K05-K15 |         |         | H05-H15 |          |                               |           |         | ●       |                 |              |  TiMeN<br>TiAlN   |   |
|                   | PVD PC310U                | P10-P20 |         | K10-K20 |         |         | H10-H20 |          |                               |           |         | ●       |                 |              |  TiMeN<br>TiAlN   |   |
|                   | PVD PC315E                | P20-P35 |         | K20-K35 |         |         |         |          |                               |           |         | ●       |                 |              |  AlCrN  |   |
|                   | PVD PC315G                | P15-P30 |         | K15-K30 |         |         |         |          |                               |           |         |         | ●               |              |  TiAlCrN  |   |



Tabla de Grados KORLOY

| Cat.              | Grado                 | ISO     |         |         |         |           |   | Torneado | Herramientas multifuncionales | Barrenado | Fresado | Endmill | Broca Indexable | Broca Solida | Herramienta Cementada | Capade Recubrimiento |
|-------------------|-----------------------|---------|---------|---------|---------|-----------|---|----------|-------------------------------|-----------|---------|---------|-----------------|--------------|-----------------------|----------------------|
|                   |                       | P       | M       | K       | S       | N         | H |          |                               |           |         |         |                 |              |                       |                      |
| Recubrimiento     | PVD PC320             | P20-P35 |         | K20-K35 |         |           |   |          |                               |           |         | ●       |                 |              |                       |                      |
|                   | PVD PC320S            |         | M20-M30 |         | S20-S30 |           |   |          |                               |           |         | ●       |                 |              |                       |                      |
|                   | PVD PC320U            | P01-P10 |         | K05-K10 |         |           |   |          |                               |           |         | ●       |                 |              |                       |                      |
|                   | PVD PC325T <b>new</b> |         |         |         | S20-S30 |           |   |          |                               |           |         |         | ●               |              |                       |                      |
|                   | PVD PC325U            | P20-P35 | M20-M30 | K20-K35 |         |           |   |          |                               |           |         |         | ●               |              |                       |                      |
| Sin Recubrimiento | H01                   |         |         |         |         | N10-N20   |   |          |                               |           |         | ●       |                 |              |                       |                      |
|                   | H05S                  |         |         |         |         | N10-N20   |   |          |                               |           |         | ●       |                 |              |                       |                      |
|                   | FCC                   |         |         | N15-N35 |         |           |   |          |                               |           |         | ●       |                 |              |                       |                      |
|                   | FG2                   | P05-P25 |         |         |         | N05-N25   |   |          |                               |           |         |         | ●               |              |                       |                      |
|                   | FA1                   | P05-P25 |         |         |         | N05-N25   |   |          |                               |           |         |         | ●               |              |                       |                      |
| cBN               | DBN500                |         |         | K05-K15 |         |           |   | ●        |                               |           |         |         |                 |              |                       |                      |
|                   | DBN700A               |         |         | K01-K10 |         |           |   | ●        |                               |           |         |         |                 |              |                       |                      |
|                   | DB7000                | S01-S10 |         |         |         |           |   | ●        |                               |           |         |         |                 |              |                       |                      |
|                   | DB1000                |         |         |         |         | H01-H10   |   | ●        |                               |           |         |         |                 |              |                       |                      |
|                   | DB2000                |         |         |         |         | H05-H15   |   | ●        |                               |           |         |         |                 |              |                       |                      |
|                   | DBNX20                |         |         |         |         | H15-H25   |   | ●        |                               |           |         |         |                 |              |                       |                      |
|                   | DBN250                |         |         |         |         | H15-H25   |   | ●        |                               |           |         |         |                 |              |                       |                      |
|                   | DBN400                |         |         |         |         | H15-H25   |   | ●        |                               |           |         |         |                 |              |                       |                      |
|                   | PVD DNC100 <b>new</b> |         |         |         |         | H01-H10   |   | ●        |                               |           |         |         |                 |              |                       |                      |
|                   | PVD DNC250            |         |         |         |         | H05-H15   |   | ●        |                               |           |         |         |                 |              |                       |                      |
|                   | PVD DNC350            |         |         |         |         | H25-H35   |   | ●        |                               |           |         |         |                 |              |                       |                      |
|                   | PVD DNC400 <b>new</b> |         |         |         |         | H15-H25   |   | ●        |                               |           |         |         |                 |              |                       |                      |
| PCD               | DP90                  |         |         |         |         | N01-N20   |   |          |                               | ●         |         |         |                 |              |                       |                      |
|                   | DP150                 |         |         |         |         | N05-N25   |   |          |                               | ●         |         |         |                 |              |                       |                      |
|                   | DP200                 |         |         |         |         | N10-N30   |   |          |                               | ●         |         |         |                 |              |                       |                      |
| DIA               | CVD ND2100 <b>new</b> |         |         |         |         | N2.5-N7.5 |   | ●        |                               | ●         | ●       |         | ●               |              |                       |                      |
|                   | CVD ND3000 <b>new</b> |         |         |         |         | N01-N05   |   | ●        |                               | ●         | ●       |         |                 |              |                       |                      |
| DLC               | PVD PD1005            |         |         |         |         | N05-N10   |   | ●        |                               | ●         | ●       |         |                 |              |                       |                      |
|                   | PVD PD1010            |         |         |         |         | N10-N15   |   | ●        |                               | ●         | ●       |         |                 |              |                       |                      |





# Comparación de Grados Fresado

## Recubrimiento CVD

| ISO     | KORLOY | SUMITOMO          | KYOCERA           | ISCAR            | SANDVIK                    | SECO  | KENAMETAL                                     | TOSHIBA   | mitsubishi               | HITACHI | VALENITE | WALTER                                       | TAEGUTEC         | NTK | DIJET |  |
|---------|--------|-------------------|-------------------|------------------|----------------------------|---|---|---|--------------------------|---------|----------|--|------------------|-----|-------|--|
| Fresado | P      | NC5330            | ACP100            | IC5100<br>IC5400 | GC4210<br>GC4220<br>GC4230 | MP1500<br>MS2500<br>MP2500<br>MS2500<br>T350M<br>MM4500 | KCPM20<br>KCMP30<br>KC927M                    |   | FH7020<br>F7030<br>T3130 |         |          | WKP25S<br>WKP35S<br>WKP35G                   | TT8515<br>TT7800 |     |       |  |
|         |        | M                 | NC5330<br>NC5340* |                  |                            |   | MP2500<br>MM4500                              |   | T3130<br>F7030           |         |          |  |                  |     |       |  |
|         |        |                   | NC5350*           | ACP400           |                            |   | GC2040  |   |                          |         |          |  |                  |     |       |  |
|         | K      | NC5330<br>NCM535* | ACK200            |                  | IC5100                     |   | MK1500<br>MK2000<br>MS2500<br>T350M<br>MK3000 | KC907M<br>KCK15<br>KC914M<br>KCPK30<br>KC917M<br>KC924M | T1115<br>T1015           | MC5020  |          | WAK15<br>WKK25<br>WKP25S<br>WKP35S<br>WKP35G | TT7515<br>TT6800 |     |       |  |
|         |        | NCM545*           |                   |                  |                            | GC3330<br>GC3040  |   |   |                          |         |          |  |                  |     |       |  |
|         |        |                   |                   |                  |                            |   |   |   |                          |         |          |  |                  |     |       |  |
|         |        |                   |                   |                  |                            |   |   |   |                          |         |          |  |                  |     |       |  |

## Recubrimiento PVD

| ISO     | KORLOY | SUMITOMO                      | KYOCERA                    | ISCAR                    | SANDVIK                                    | SECO                       | KENAMETAL              | TOSHIBA                              | mitsubishi     | HITACHI                                       | VALENITE                                      | WALTER                  | TAEGUTEC                           | NTK                        | DIJET      |                  |
|---------|--------|-------------------------------|----------------------------|--------------------------|--|----------------------------|------------------------|--------------------------------------|----------------|---|---|-------------------------|------------------------------------|----------------------------|------------|------------------|
| Fresado | P      | PC2005*<br>PC2010*<br>PC2015* |                            |                          | P20A                                       |                            |                        |                                      |                | ATH80D<br>PCA08M<br>ACS05E<br>PCA12M<br>PC20M |   |                         |                                    |                            |            |                  |
|         |        | PC2505*<br>PC2510*            |                            |                          | GC1010                                     |                            |                        |                                      | AP20M<br>GP20M | JX1005<br>TB6005<br>JX1020<br>CY9020          |   |                         | TT2510                             |                            | DH102      |                  |
|         |        | PC3600<br>PC3700*             | ACZ310                     | PR730                    | IC903<br>IC908<br>IC950                    |                            | MP3000<br>F25M<br>F30M | KC522M<br>KUC20M                     | GH330          | MP6120  | TB6045  | VC935                   | WKP25                              | TT7070<br>TT7080<br>TT7030 |            | JC5003<br>JC5015 |
|         |        | PC210F                        | ACP200                     | PR830<br>PR630           | IC1008                                     | GC1025<br>GC1030           |                        | KC525M<br>KUC30M                     | AH120          | VP15TF<br>UP20M                               | CY250<br>PTH30E                               |                         |                                    |                            | QM3<br>ZM3 | JC5030<br>JC5040 |
|         |        | PC5300                        | ACP300<br>ACZ350           |                          |  |                            |                        | KC935M<br>KC7140<br>KC720            | AH3135         | MP6130  | JP4160  |                         | WKP35                              | TT8020                     |            |                  |
|         |        | PC5400*                       |                            | PR660                    | IC928                                      | GC1030                     | F40M<br>T60M           |                                      |                | VP30RT  | JM4160<br>PTH40H                              |                         | WKP45                              |                            |            |                  |
|         | M      | PC210F<br>PC5300              | ACM100<br>ACP200           | PR730                    | IC903                                      |                            |                        | KC5510<br>KC7020                     | AH120          |   | JX1020<br>CY9020<br>JX1015<br>TB6020<br>CY250 |                         |                                    | TT9030                     | QM3<br>ZM3 | JC5003<br>JC5015 |
|         |        | PC9530                        | ACM300<br>ACP300<br>ACZ350 | PR630<br>PR660<br>PR1535 | IC250<br>IC928                             | GC1025<br>GC2030<br>GC1030 | F25M<br>F30M           | KC522M<br>KC725M<br>KC735M<br>KC7030 | AH140          | MP7130  | JX1045<br>TB6045                              | VC928<br>VC902<br>VC901 | WQM35<br>WSM35S<br>WSP45<br>WSM45S | TT9080<br>TT8020           |            | JC5030<br>JC5040 |
|         |        | PC5400*<br>PC9540*            |                            | PR660                    | IC328                                      |                            | F40M                   | KC722                                | AH3135         | MP7140  | JX1060<br>TB6060                              |                         |                                    |                            |            |                  |
|         | K      | PC6510                        |                            | PR510<br>PR905           | DT7150<br>IC900<br>IC910<br>IC950<br>IC350 |                            | MK2050                 | KC510M<br>KC915M                     |                | VP10MF<br>VP15TF                              |   | VC903<br>VC928          |                                    | TT6290                     |            | JC5003           |
|         |        | PC5300                        |                            |                          |  |                            |                        | KC520M                               | AH120          | VP20RT  |   | VC902<br>VC901          |                                    | TT6030<br>TT6060           |            | JC5015           |
|         | S      | PC5300<br>PC5400*<br>PC9540*  | AC520U                     | PR620<br>PR660<br>PR1535 | IC328<br>IC408                             | GC1025<br>GC1040<br>S40T   | F40M<br>MS2050         | KC510M<br>KCU30M                     |                | VP15TF<br>VP30RT<br>MP9130                    | ACS05E  |                         | WSM35S<br>WSM45S                   | TT9030<br>TT8020<br>TT8080 |            |                  |

## CERMET

| ISO     | KORLOY | SUMITOMO | KYOCERA | ISCAR  | SANDVIK | SECO  | KENAMETAL | TOSHIBA        | mitsubishi       | HITACHI        | VALENITE | WALTER | TAEGUTEC         | NTK | DIJET |
|---------|--------|----------|---------|--------|---------|-------|-----------|----------------|------------------|----------------|----------|--------|------------------|-----|-------|
| Fresado | P      | CN2000   | T250A   | TN100M |         |       |           | NS540<br>NS740 | NX2525<br>NX4545 | CH550<br>CH570 |          |        | CT3000<br>CT7000 | C50 |       |
|         |        | CN30     |         | TC60M  | IC30N   |       |           | KT195M         |                  |                |          |        |                  |     |       |
|         | M      |          | T250A   |        |         | CT530 |           |                |                  |                |          |        |                  |     |       |
| K       |        |          |         |        |         |       |           |                | NX2525           |                |          |        |                  |     |       |

★ : PVD Cermet Recubierto    ★ : Grado Nuevo



# M

## Información de Productos





## Información de Productos

- M02 Grado
- M02 Holder Externo
- M03 Fine Tools
- M03 Roscado
- M03 Mill-Max
- M04 Cen-Mill
- M04 Jip Drill
- M04 LPD/SPD/NPD

## Grados

| Codigo Metrico ISO |             | Grado Anterior                 | Nuevo Grado |
|--------------------|-------------|--------------------------------|-------------|
| Grados Recubiertos | P           | NC5340                         | NCM535      |
|                    |             | NCM325                         |             |
|                    |             | NCM335                         | NCM545      |
|                    |             | NC5350                         |             |
|                    | M           | PC3530, PC3525, PC3535, PC3500 | PC3600      |
|                    | K           | NC6110, NC6210, NC6215         | NC6315      |
|                    |             | NC6205                         | NC6310      |
|                    | S           | PC8010                         | PC8110      |
|                    | P, M, K, S  | PC8520, PC215K                 | PC5300      |
| PC225F             |             | PC205F                         |             |
| Cermet             | CN1000      | CN1500                         |             |
|                    | CT10, CN200 | CN2000                         |             |

- KORLOY siempre estudia y desarrolla la tecnología de las herramientas de filo de corte y calidades que cubren alta velocidad y condiciones de avance
- KORLOY garantiza mejor rendimiento y administración de amplio rango del inventario para la nueva calidad

## Portaherramientas externo

| Codigo        | Inserto  | Nombre de partes Antiguas |          |       |             |       |                   | Nuevo portaherramientas | Pag. |
|---------------|----------|---------------------------|----------|-------|-------------|-------|-------------------|-------------------------|------|
|               |          | Palanca                   | Tornillo | Placa | Perno Placa | Llave | Llave Perno Placa |                         |      |
| PCBNR□□□□-□19 | CN**1906 | LV6                       | VHX1027  | SC63  | SP6         | HW40L | -                 | PCBNR□□□□-□19N          | B159 |
| PCBNR□□□□-□25 | CN**2509 | LV8                       | VHX1236  | SC83  | SP8         | HW50L | -                 | PCBNR□□□□-□25N          |      |
| PCLNR□□□□-□19 | CN**1906 | LV6                       | VHX1027  | SC63  | SP6         | HW40L | -                 | PCLNR□□□□-□19N          | B160 |
| PCLNR□□□□-□25 | CN**2509 | LV8                       | VHX1236  | SC83  | SP8         | HW50L | -                 | PCLNR□□□□-□25N          |      |
| PSBNR□□□□-□19 | SN**1906 | LV6                       | VHX1027  | SS63  | SP6         | HW40L | -                 | PSBNR□□□□-□19N          | B163 |
| PSBNR□□□□-□25 | SN**2507 | LV8                       | VHX1236  | SS83  | SP8         | HW50L | -                 | PSBNR□□□□-□25N          |      |
| PSDNN□□□□-□19 | SN**1906 | LV6                       | VHX1027  | SS63  | SP6         | HW40L | -                 | PSDNN□□□□-□19N          | B163 |
| PSDNN□□□□-□25 | SN**2507 | LV8                       | VHX1236  | SS83  | SP8         | HW50L | -                 | PSDNN□□□□-□25N          |      |
| PSKNR□□□□-□19 | SN**1906 | LV6                       | VHX1027  | SS63  | SP6         | HW40L | -                 | PSKNR□□□□-□19N          | B164 |
| PSKNR□□□□-□25 | SN**2507 | LV8                       | VHX1236  | SS83  | SP8         | HW50L | -                 | PSKNR□□□□-□25N          |      |
| PSSNR□□□□-□19 | SN**1906 | LV6                       | VHX1027  | SS63  | SP6         | HW40L | -                 | PSSNR□□□□-□19N          | B164 |
| PSSNR□□□□-□25 | SN**2507 | LV8                       | VHX1236  | SS83  | SP8         | HW50L | -                 | PSSNR□□□□-□25N          |      |

- Viejas piezas no son intercambiables en el holder nuevo
- Buen rendimiento en uso y práctica El nuevo tipo de portas dan mejor calidad de servicio

| Codigo  | Inserto  | Nombre de partes Antiguas |          |       |                    | Nuevo portaherramientas | Pag. |
|---|----------|---------------------------|----------|-------|--------------------|-------------------------|------|
|   |          | Brida                     | Tornillo | Huasa | Otros              |                         |      |
| WTENN□□□□-□16<br>(Designación del tipo anterior: MTEEN) | TN**1604 | CMH5R1                    | MHX0523  | WA4   | Igual que el resto | WTEEN□□□□-□16           | B167 |
| WTJNR□□□□-□16<br>(Designación del tipo anterior: MTJNR) | TN**1604 | CMH5R1                    | MHX0523  | WA4   | Igual que el resto | WTJNR□□□□-□16           | B167 |
| WTXNR□□□□-□16<br>(Designación del tipo anterior: MTXNR) | TN**1604 | CMH5R1                    | MHX0523  | WA4   | Igual que el resto | WTXNR□□□□-□16           | B167 |

- Viejas piezas no son intercambiables en la porta nueva
- Práctica del nuevo tipo de portas dan mejor calidad de servicio





**Fine tools**

| Codigo | Inserto    |                     | Nombre de partes Antiguas |       | Nuevo portaherramientas | Pag. |
|--------|------------|---------------------|---------------------------|-------|-------------------------|------|
|        |            |                     | Tornillo                  | Llave |                         |      |
| FTIH   | FTIH08**** | FTG08, FTT08, FTF08 | PTKA02508                 | TW08P | NFTIH                   | C67  |
|        | FTIH11**** | FTG11, FTT11, FTF11 | PTKA03510                 | TW15P |                         |      |
|        | FTIH14**** | FTG14, FTT14, FTF14 | PTKA0412                  | TW15P |                         |      |
|        | FTIH16**** | FTG16, FTT16, FTF16 | PTKA0512                  | TW20P |                         |      |

- Insertos antiguos y partes no son intercambiables en la herramienta nueva
- El buen uso y funcionamiento práctico de la herramienta (Fine Tool) da mejor calidad de servicio al cliente

**Roscado**

| Codigo | Inserto  |          | Nombre de partes Antiguas |                |        |           |         | Nuevo portaherramientas | Pag.     |       |
|--------|----------|----------|---------------------------|----------------|--------|-----------|---------|-------------------------|----------|-------|
|        |          |          | Brida                     | Tornillo Brida | Placa  | Tornillo  | Candado |                         |          | Llave |
| ETH    | ~ETH3**R | ECTR3*** | CH5R3                     | CHX0513        | ST32C1 | SHX0310   | CR04    | HW20L,HW25L             | ER(L)H** | D31   |
|        | ~ETH4**R | ECTR4*** | CH6R4                     | CHX0621        | ST42C1 | SHX0310   | CR05    | HW20L,HW30L             |          |       |
| ITH    | ~ITH2**R | ICTR2*** | CH5R3                     | CHX0513        | ST32C1 | FTKA02565 | CR04    | TW07P                   | IR(L)H** | D32   |
|        | ~ITH3**R | ICTR3*** | CH5R3                     | CHX0513        | ST32C1 | SHX0310   | CR04    | TW15P,HW20L,HW25L       |          |       |
|        | ~ITH4**R | ICTR4*** | CH6R4                     | CHX0621        | ST42C1 | SHX0310   | CR05    | HW20L,HW30L             |          |       |

- Insertos antiguos y partes no son intercambiables en la herramienta nueva
- El buen uso y funcionamiento práctico de la herramienta (Fine Tool) da mejor calidad de servicio al cliente

**Mill-Max**

| Codigo        | Inserto  | Nombre de partes Antiguas           |          |                                   |                   |       | Nuevo portaherramientas | Pag. |
|---------------|----------|-------------------------------------|----------|-----------------------------------|-------------------|-------|-------------------------|------|
|               |          | Cartucho                            | Cuña     | Tornillo Cuña                     | Tornillo Cartucho | Llave |                         |      |
| AD(ADM)4000   | SD**1203 | LAS4R/L                             | WASR/L   | WTX0817                           | LTX0512           | TW25  | ADN(ADNM)4000           | E44  |
| AD(ADM)5000   | SD**1504 | LAS5R/L                             | WASR/L   | WTX0817                           | LTX0512           | TW25  | ADN(ADNM)5000+          | E45  |
| ADN(ADNM)5000 | SD**1504 | LADN5R/L                            | WEPN5R/L | DHA0821F                          | LTX0514           | HW40  |                         | E45  |
| EP(EPM)4000   | SP**1203 | LES4R/L<br>LES4R1/L1 (Ø80 ~ Ø100)   | WESR/L   | WTX0817<br>WTX0813 (Ø80 ~ Ø100)   | LTX0512           | TW25  | EPN(EPNM)4000           | E50  |
| EP(EPM)5000   | SP**1504 | LES5R/L<br>LES5R1/L1 (Ø80 ~ Ø100)   | WESR/L   | WTX0817<br>WTX0813 (Ø80 ~ Ø100)   | LTX0512           | TW25  | EPN(EPNM)5000+          | E51  |
| EPN(EPNM)5000 | SP**1504 | LEPN5R/L<br>LEPN5R1/L1 (Ø80 ~ Ø100) | WEPN5R/L | DHA0821F<br>DHA0817F (Ø80 ~ Ø100) | LTX0514           | HW40  |                         | E51  |
| PP(PPM)4000   | TP**2204 | LPT4R/L<br>LPT4R1/L1 (Ø80 ~ Ø100)   | WESR/L   | WTX0817<br>WTX0813 (Ø80 ~ Ø100)   | LTX0512           | TW25  | PPN(PPNM)4000           | E53  |

- Los insertos y sus partes antiguas no son intercambiables
- Buen rendimiento y el uso conveniente de los nuevos cortadores mill-max brindan mejor calidad y servicio al cliente



## Cen-Mill

| Codigo                  | Inserto  |                              | Nombre de partes Antiguas     |                         | Cortador Nuevo                   | Pag.      |
|-------------------------|--|------------------------------|-------------------------------|-------------------------|----------------------------------|-----------|
|                         |  |                              | Tornillo                      | Llave                   |                                  |           |
| HE                      | Ø25  | MCMT080308EN<br>ZCMT080308ER | FTNA0307                      | TW09P                   | AMS****M                         | E175~E177 |
|                         | Ø32, 40, 50                                      | MCMT09T308EN<br>ZCMT09T308ER | FTNA0408                      | TW15P                   |                                  |           |
| LE (LEM)                | LOCX1205ZZ                                       |                              | FTNB0411                      | TW15S                   | AMC****M                         | E162~E164 |
| SE                      | Ø25  | MPMT090308                   | FTNA0408                      | TW15S                   | AMS****MH                        | E178~E179 |
|                         | Ø32, 40  | MPMT120408                   | FTNA0513                      | TW20S                   |                                  |           |
| TM                      | MIT100,150,200,300,400<br>MET100,150,200,300,400 |                              | FTNB0411 (TM632R)<br>FTNA0513 | TW15L (TM632R)<br>TW20L | TMS(I)                           | D49       |
| PM                      | EDCW1604ZDF/TR                                   |                              | FTNA0513                      | TW20L                   | RM4Z                             | E108~E109 |
| CE<br>(Código cambiado) | SPG(M)N1203**                                    |                              |                               |                         | CE45-****R-S32<br>(Nuevo código) | E338~E340 |

- Los insertos y sus partes antiguas no son intercambiables
- Nuevo producto: Alpha-mill y su característico filo cuvo brinda garantía un amplio rango en maquinado y un buen rendimiento
- Buen rendimiento y el uso conveniente de los nuevos cortadores brindan mejor calidad y servicio al cliente

## Jip Drill

| Codigo | Inserto |                | Nombre de partes Antiguas |       | Cortador Nuevo      | Pag.    |
|--------|---------|----------------|---------------------------|-------|---------------------|---------|
|        |         |                | Tornillo                  | Llave |                     |         |
| JD     | ~JD200  | WCMT030208-C20 | FTNA02565                 | TW07P | K□D<br>(KING-DRILL) | G12~G26 |
|        | ~JD250  | WCMT040208-C20 |                           |       |                     |         |
|        | ~JD300  | WCMT050308-C20 | FTNA0307                  | TW09P |                     |         |
|        | ~JD410  | WCMT06T308-C20 | FTGA03508                 |       |                     |         |
|        | ~JD580  | WCMT080408-C20 | FTNA0408                  | TW15P |                     |         |

- Los insertos y sus partes antiguas no son intercambiables
- Buen rendimiento y el uso conveniente de las nuevas brocas indexables brindan mejor calidad y servicio al cliente

## LPD/SPD/NPD

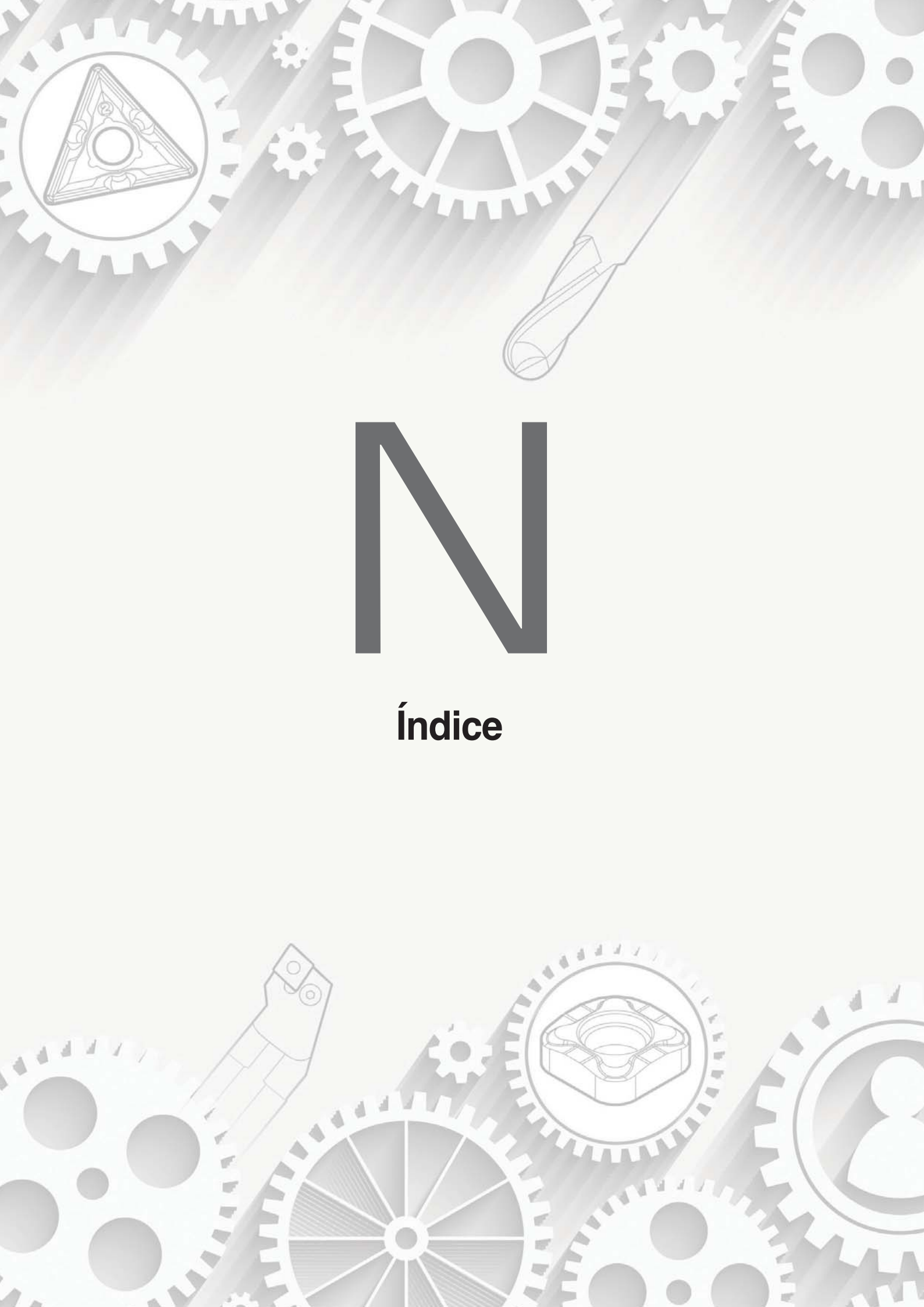
| Codigo | Inserto |                              | Nombre de partes Antiguas |       | Cortador Nuevo      | Pag.    |
|--------|---------|------------------------------|---------------------------|-------|---------------------|---------|
|        |         |                              | Tornillo                  | Llave |                     |         |
| LPD    | ~LPD135 | LPMT040203-DF                | FTNA0204                  | TW06P | K□D<br>(KING-DRILL) | G12~G26 |
| SPD    | ~SPD155 | SPM(E)T050203-DM, DF, DS, DA | FTNA0204                  | TW06P |                     |         |
|        | ~SPD195 | SPM(E)T060204-DM, DS, DR, DA | FTKA02206S                | TW07S |                     |         |
|        | ~SPD225 | SPM(E)T070204-DM, DS, DR, DA | FTKA02565                 | TW07S |                     |         |
| NPD    | ~NPD245 | NPM(E)T222408-DM, DS, DR, DA | FTKA02565                 | TW07S |                     |         |
|        | ~NPD285 | NPM(E)T252808-DM, DS, DR, DA | FTKA0307                  | TW09S |                     |         |
|        | ~NPD325 | NPM(E)T293208-DM, DS, DR, DA | FTKA0307                  | TW09S |                     |         |
|        | ~NPD405 | NPM(E)T334008-DM, DS, DR, DA | FTKA03508                 | TW15S |                     |         |
|        | ~NPD505 | NPM(E)T415008-DM, DS, DR, DA | FTKA0410                  | TW15S |                     |         |
|        | ~NPD605 | NPM(E)T516012-DM, DS, DR, DA | FTNC04511                 | TW20S |                     |         |

- Los insertos y sus partes antiguas no son intercambiables
- Buen rendimiento y el uso conveniente de las nuevas brocas indexables brindan mejor calidad y servicio al cliente









# N

## Índice

# N Índice por artículo

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**I J**

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| Sistema de Brida (Cartuchos)                   | Torneado               | B232 |
| Sistema de Brida (Porta herramientas)          | Torneado               | B169 |
| Sistema de Brida Doble (Barras para Interior)  | Torneado               | B195 |
| Sistema de Brida Doble (Porta herramientas)    | Torneado               | B154 |
| Sistema de Codificación (ISO)                  | Torneado               | B191 |
| Sistema de Codificación de Cartuchos (ISO)     | Torneado               | B230 |
| Sistema de Codificación de Insertos de Roscado | Roscado                | D02  |
| Sistema de Codificación Externo/Interno        | Roscado                | D02  |
| Sistema de Grados                              | Grados & Rompevirutas  | A02  |
| Sistema de Palanca (Barras para Interior)      | Torneado               | B197 |
| Sistema de Palanca (Porta herramientas)        | Torneado               | B159 |
| Sistema Modular                                | Herramientales         | I 69 |
| Sistema Multi-trabe (Porta herramientas)       | Torneado               | B171 |
| Sistema Multi-trabe (Barras para Interior)     | Torneado               | B202 |
| SMB  | Herramientales         | I 67 |
| SMH  | Herramientales         | I 68 |
| Solución en Maquinado de Engranés              | Ejemplos de Maquinados | J02  |
| Solución en Rodamientos                        | Torneado               | B141 |
| Solución Industria Aeronautica                 | Ejemplos de Maquinados | J14  |
| Solución Industria Ferroviaria                 | Ejemplos de Maquinados | J08  |
| Solución Industria Maritima                    | Ejemplos de Maquinados | J04  |
| Solución Maquinado de Rodamientos              | Ejemplos de Maquinados | J12  |
| Solución Maquinado de Rodillos                 | Ejemplos de Maquinados | J07  |
| Solución para el Desarrollo Industrial         | Ejemplos de Maquinados | J13  |
| Solución Tuberia Industrial                    | Ejemplos de Maquinados | J10  |
| Stopper  | Partes                 | K07  |
| Stub ACME                                      | Roscado                | D25  |
| Super Endmill                                  | Endmills               | F46  |



**T U**

|   |                               |             |
|---|-------------------------------|-------------|
| <b>Tabla de Conversión materiales</b>                 | Información Técnica           | <b>L07</b>  |
| <b>Tabla de Grados KORLOY</b>                         | Información Técnica           | <b>L37</b>  |
| <b>Tabla informativa herramientas para engranajes</b> | Fresado                       | <b>E404</b> |
| <b>Tabla para Calculo de Dureza</b>                   | Información Técnica           | <b>L08</b>  |
| <b>Tank Mill</b>                                      | Fresado                       | <b>E299</b> |
| <b>Taper Bits</b>                                     | Herramienta Cementada         | <b>H13</b>  |
| <b>TCA adaptador de machos</b>                        | Herramientales                | <b>I 42</b> |
| <b>T-Cortador (TFE)</b>                               | Fresado                       | <b>E343</b> |
| <b>TER adaptador para machos</b>                      | Herramientales                | <b>I 43</b> |
| <b>Tipo de cartucho KGT</b>                           | Herramientas multifuncionales | <b>C40</b>  |
| <b>Tipo de cartucho MGT</b>                           | Herramientas multifuncionales | <b>C41</b>  |
| <b>Tipo de lama para tronzado</b>                     | Herramientas multifuncionales | <b>C24</b>  |
| <b>Tipos de Cortadores Cementados</b>                 | Herramienta Cementada         | <b>H14</b>  |
| <b>Top Solid Drill</b>                                | Brocas                        | <b>G102</b> |
| <b>Tornillo</b>                                       | Partes                        | <b>K05</b>  |
| <b>TP2P</b>   | Fresado                       | <b>E303</b> |
| <b>TPDB Plus</b>                                      | Brocas                        | <b>G38</b>  |
| <b>TPDB-H</b>   | Brocas                        | <b>G47</b>  |
| <b>TPDC</b>   | Brocas                        | <b>G31</b>  |
| <b>Tuerca</b>   | Partes                        | <b>K05</b>  |
| <b>Turbo Mill</b>                                     | Fresado                       | <b>E56</b>  |
| <b>UNJ (Constante Unificación Roscado)</b>            | Roscado                       | <b>D26</b>  |

**V**

|                     |          |            |
|---------------------|----------|------------|
| <b>V Endmill</b>    | Endmills | <b>F16</b> |
| <b>Vulcan Drill</b> | Brocas   | <b>G89</b> |

**W**

|                   |         |             |
|-------------------|---------|-------------|
| <b>Washer</b>     | Partes  | <b>K07</b>  |
| <b>Wind Mill</b>  | Fresado | <b>E384</b> |
| <b>With Worth</b> | Roscado | <b>D18</b>  |
| <b>WPDC</b>       | Brocas  | <b>G55</b>  |

**Z**

|                   |          |            |
|-------------------|----------|------------|
| <b>Z Endmill</b>  | Endmills | <b>F20</b> |
| <b>Z+ Endmill</b> | Endmills | <b>F75</b> |

# N Índice por denominación

## A

|               |                                 |          |
|---------------|---------------------------------|----------|
| AD(ADM)4000   | Mill-Max                        | M03      |
| AD(ADM)5000   | Mill-Max                        | M03      |
| ADKA          | Insertos Fresado                | E04      |
| ADKT-ML       | Insertos Fresado (Alpha Mill-X) | E04      |
| ADKT-MM       | Insertos Fresado (Alpha Mill-X) | E04      |
| ADLT          | Insertos Fresado (Tank Mill)    | E04      |
| ADN(ADNM)5000 | Mill Max                        | M03      |
| ADN(M)4000    | Mill Max                        | E44      |
| ADN(M)5000+   | Mill Max Plus                   | E45      |
| ADS4000       | Turbo Mill                      | E56      |
| ADS5000       | Turbo Mill                      | E57      |
| AE(M)4000     | Mill Max                        | E46      |
| AE(M)5000     | Mill Max                        | E47      |
| AFE3000       | A+ Endmill (Plano Corto)        | F109     |
| AFE3000       | A+ Endmill (Plano)              | F110     |
| AFE3000       | A+ Endmill (Plano Largo)        | F111~112 |
| AFO(M)4000    | Double Mill                     | E59      |
| AFO(M)5000    | Double Mill                     | E60      |
| AMC(M)1000S   | Alpha Mill                      | E154     |
| AMC(M)1000SE  | Alpha Mill                      | E160     |
| AMC(M)1500S   | Alpha Mill                      | E155     |
| AMC(M)2000M   | Alpha Mill                      | E162     |
| AMC(M)2000S   | Alpha Mill                      | E156     |
| AMC(M)2000SE  | Alpha Mill                      | E160     |
| AMC(M)3000M   | Alpha Mill                      | E163     |
| AMC(M)3000S   | Alpha Mill                      | E157     |
| AMC(M)3000SE  | Alpha Mill                      | E161     |
| AMC(M)3000S-K | Alpha Mill                      | E158     |
| AMC(M)4000M   | Alpha Mill                      | E164     |
| AMC(M)4000S   | Alpha Mill                      | E159     |
| AMM1000       | Alpha Mill                      | E180     |
| AMM1500       | Alpha Mill                      | E181     |
| AMM2000       | Alpha Mill                      | E182     |
| AMS1000M      | Alpha Mill                      | E175     |
| AMS1000MH     | Alpha Mill                      | E178     |
| AMS1000S      | Alpha Mill                      | E165     |
| AMS1000SE     | Alpha Mill                      | E173     |
| AMS1500M      | Alpha Mill                      | E175     |
| AMS1500MH     | Alpha Mill                      | E178     |
| AMS1500S      | Alpha Mill                      | E166     |
| AMS2000M      | Alpha Mill                      | E176     |
| AMS2000MH     | Alpha Mill                      | E179     |
| AMS2000S      | Alpha Mill                      | E168     |
| AMS2000SE     | Alpha Mill                      | E173     |
| AMS3000MH     | Alpha Mill                      | E179     |

## A

|            |                               |      |
|------------|-------------------------------|------|
| AMS3000S   | Alpha Mill                    | E169 |
| AMS3000SE  | Alpha Mill                    | E174 |
| AMS3000S-K | Alpha Mill                    | E170 |
| AMS4000M   | Alpha Mill                    | E177 |
| AMS4000S   | Alpha Mill                    | E171 |
| AMXCM      | Alpha Mill-X                  | E145 |
| AMXS       | Alpha Mill-X                  | E146 |
| APBE2000   | A+ Endmill (Esférico)         | F108 |
| APD(M)-A   | Aero Mill                     | E136 |
| APD(M)-PB  | Aero Mill-Plus                | E137 |
| APFE2000   | A+ Endmill (Plano)            | F105 |
| APFE3000   | A+ Endmill (Plano)            | F105 |
| API        | Inserto para Roscado          | D29  |
| APKT       | Insertos Fresado (Alpha Mill) | E04  |
| APKT-MA    | Insertos Fresado (Alpha Mill) | E04  |
| APKT-MA2   | Insertos Fresado (Alpha Mill) | E04  |
| APKT-MA3   | Insertos Fresado (Alpha Mill) | E04  |
| APKT-MF    | Insertos Fresado (Alpha Mill) | E04  |
| APKT-MM    | Insertos Fresado (Alpha Mill) | E04  |
| APKT-MM1   | Insertos Fresado (Alpha Mill) | E05  |
| APLFE2000  | A+ Endmill (Plano Largo)      | F107 |
| APLFE3000  | A+ Endmill (Plano Largo)      | F107 |
| APLT       | Insertos Fresado (Tank Mill)  | E05  |
| APMFE2000  | A+ Endmill (Medio Plana)      | F106 |
| APMFE3000  | A+ Endmill (Medio Plana)      | F106 |
| APMT-MA    | Insertos Fresado (Alpha Mill) | E05  |
| APMT-MF    | Insertos Fresado (Alpha Mill) | E05  |
| APMT-ML    | Insertos Fresado (Alpha Mill) | E05  |
| APMT-MM    | Insertos Fresado (Alpha Mill) | E05  |
| APMT-MN    | Insertos Fresado (Alpha Mill) | E06  |
| APRE3000   | A+ Endmill (Desbaste)         | F113 |

## B

|              |  |      |
|--------------|--|------|
| BAMPR/L-XAF  | Insertos Fresado (Aero Mill)   | E06  |
| BAMPR/L-XAW  | Insertos Fresado (Aero Mill)   | E06  |
| BAMPR/L-XAWR | Insertos Fresado (Aero Mill)   | E06  |
| BDS          | Brocas (Burnishing Drill)  | G101 |
| BDT          | Brocas (Step Burnishing Drill)   | G101 |
| BF           | Insertos para Herramientas multifuncionales (Herramientas para Ranurado) | C69  |
| BFE          | BFE  | E323 |
| BLK          | Herramientales (Blank Tool)  | I 81 |
| BRE          | BRE  | E327 |
| BT           | Herramienta Cementada (Corona de Boreado)                                | H13  |
| BT30         | Herramientales BT (Modular)  | E205 |



## B

|                      |                                   |             |
|----------------------|-----------------------------------|-------------|
| <b>BT30 AM1000</b>   | Herramientales BT (Filo Multiple) | <b>E194</b> |
| <b>BT30 AM1000HS</b> | Herramientales BT (Filo Simple)   | <b>E184</b> |
| <b>BT30 AM1500</b>   | Herramientales BT (Filo Multiple) | <b>E195</b> |
| <b>BT30 AM2000</b>   | Herramientales BT (Filo Multiple) | <b>E196</b> |
| <b>BT40</b>          | Herramientales BT (Modular)       | <b>E205</b> |
| <b>BT40 AM1000</b>   | Herramientales BT (Filo Multiple) | <b>E194</b> |
| <b>BT40 AM1500</b>   | Herramientales BT (Filo Multiple) | <b>E195</b> |
| <b>BT40 AM1500HS</b> | Herramientales BT (Filo Simple)   | <b>E185</b> |
| <b>BT40 AM2000</b>   | Herramientales BT (Filo Multiple) | <b>E196</b> |
| <b>BT40 AM2000HS</b> | Herramientales BT (Filo Simple)   | <b>E186</b> |
| <b>BT50</b>          | Herramientales BT (Modular)       | <b>E205</b> |
| <b>BT50 AM3000</b>   | Herramientales BT (Filo Multiple) | <b>E197</b> |
| <b>BT50 AM3000HS</b> | Herramientales BT (Filo Simple)   | <b>E187</b> |
| <b>BT50 AM4000</b>   | Herramientales BT (Filo Multiple) | <b>E198</b> |
| <b>BT50 AM4000HS</b> | Herramientales BT (Filo Simple)   | <b>E188</b> |
| <b>BT50 HAT4000</b>  | Herramientales BT (Filo Multiple) | <b>E199</b> |
| <b>BT-FMA</b>        | Herramientales (Damping pro)      | <b>I 76</b> |
| <b>BT-FMC</b>        | Herramientales (Damping pro)      | <b>I 77</b> |

## C

|                 |  |             |
|-----------------|--|-------------|
| <b>CBE2000</b>  | Endmill (C-Max_ Esférico)                                    | <b>F42</b>  |
| <b>CBNE2000</b> | Endmill (C-Max_ Esférico de Cuello Largo)                    | <b>F42</b>  |
| <b>CCDR4000</b> | Composite Router Endmill (Plano)                             | <b>F52</b>  |
| <b>CCDR6000</b> | Composite Router Endmill (Plano)                             | <b>F52</b>  |
| <b>CCET</b>     | Insertos para Torneado_Positivo (Barra Int. C/Zanco Carburo) | <b>B66</b>  |
| <b>CCET-KF</b>  | Insertos (Auto Tools, Tipo ISO)                              | <b>B119</b> |
| <b>CCET-KF</b>  | Insertos (Auto Tools, Tipo ISO)                              | <b>B66</b>  |
| <b>CCET-KM</b>  | Insertos (Auto Tools, Tipo ISO)                              | <b>B119</b> |
| <b>CCET-KM</b>  | Insertos (Auto Tools, Tipo ISO)                              | <b>B66</b>  |
| <b>CCGT-AK</b>  | Insertos para Aluminio_Positivo (Sistema con tornillo)       | <b>B91</b>  |
| <b>CCGT-AR</b>  | Insertos para Aluminio_Positivo (Sistema con tornillo)       | <b>B91</b>  |
| <b>CCGT-KF</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)       | <b>B67</b>  |
| <b>CCGT-KM</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)       | <b>B68</b>  |
| <b>CCGT-VP1</b> | Insertos (Auto Tools, Tipo ISO)                              | <b>B119</b> |
| <b>CCGT-VP1</b> | Insertos para Torneado_Positivo (Sistema con tornillo)       | <b>B67</b>  |
| <b>CCHR4000</b> | Composite Router Endmill (Plano)                             | <b>F53</b>  |
| <b>CCHR6000</b> | Composite Router Endmill (Plano)                             | <b>F53</b>  |
| <b>CCLNR/L</b>  | Porta Cerámico   | <b>B185</b> |
| <b>CCLR4000</b> | Composite Router Endmill (Plano)                             | <b>F55</b>  |
| <b>CCMT</b>     | Insertos PCD_Positivo  | <b>B102</b> |
| <b>CCMT-C25</b> | Insertos para Torneado_Positivo (Sistema con tornillo)       | <b>B69</b>  |
| <b>CCMT-HMP</b> | Insertos para Torneado_Positivo (Sistema con tornillo)       | <b>B69</b>  |
| <b>CCMT-MP</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)       | <b>B69</b>  |
| <b>CCMT-VF</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)       | <b>B68</b>  |

## C

|                     |  |             |
|---------------------|--|-------------|
| <b>CCMT-VL</b>      | Insertos para Torneado_Positivo (Sistema con tornillo)                     | <b>B68</b>  |
| <b>CCMT-VP1</b>     | Insertos para Torneado_Positivo (Sistema con tornillo)                     | <b>B68</b>  |
| <b>CCMW</b>         | Insertos para cBN_Positivo (Reaffables)                                    | <b>B101</b> |
| <b>CCR2000</b>      | Composite Router Endmill (Plano)   | <b>F54</b>  |
| <b>CCRR6000</b>     | Composite Router Endmill (Plano)   | <b>F56</b>  |
| <b>CCRR8000</b>     | Composite Router Endmill (Plano)   | <b>F56</b>  |
| <b>CCT</b>          | Herramienta para Chaflánes   | <b>E342</b> |
| <b>CD</b>           | Inserto de Brocas (Broca Centro)   | <b>G54</b>  |
| <b>CDEW-NAF</b>     | Insertos Fresado (Aero Mill)   | <b>E06</b>  |
| <b>CDEW-NAW</b>     | Insertos Fresado (Aero Mill)   | <b>E07</b>  |
| <b>CDEW-XAF</b>     | Insertos Fresado (Aero Mill)   | <b>E07</b>  |
| <b>CDEW-XAW</b>     | Insertos Fresado (Aero Mill)   | <b>E07</b>  |
| <b>CDEW-XCF</b>     | Insertos Fresado (Aero Mill)   | <b>E07</b>  |
| <b>CDH</b>          | Inserto de Brocas (Broca Centro)   | <b>G54</b>  |
| <b>CE</b>           | Herramienta para Chaflán (Interno & Fronta)                                | <b>E338</b> |
| <b>CE</b>           | Herramienta para Chaflán (Chaflán largo)                                   | <b>E339</b> |
| <b>CE</b>           | Herramienta multifuncional de chaflán                                      | <b>E340</b> |
| <b>CE</b>           | Cen-mill   | <b>M04</b>  |
| <b>CET</b>          | Herramienta para Chaflánes   | <b>E341</b> |
| <b>CFE2000</b>      | Endmill (C-Max_Plano)  | <b>F41</b>  |
| <b>CFNE2000</b>     | Endmill (C-Max_Planode Cuello Largo)                                       | <b>F41</b>  |
| <b>CJ</b>           | Herramienta Cementada (Chuck jaws)   | <b>H11</b>  |
| <b>CKFNR/L...RW</b> | Solución en Rodamientos  | <b>B144</b> |
| <b>CKGNR...RW</b>   | Solución en Rodamientos  | <b>B144</b> |
| <b>CKJNR/L</b>      | Portainsero (Sistema de Brida)   | <b>B169</b> |
| <b>CKNNR/L</b>      | Portainsero (Sistema de Brida)   | <b>B169</b> |
| <b>CKUNR/L</b>      | Barras para Interior (Sistema de Brida)                                    | <b>B201</b> |
| <b>CMSNR/L...B</b>  | Solución en Rodamientos  | <b>B141</b> |
| <b>CMSNR/L...F</b>  | Solución en Rodamientos  | <b>B141</b> |
| <b>CNGG-VP1</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B28</b>  |
| <b>CNGG-VP3</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B28</b>  |
| <b>CNHQ</b>         | Insertos Fresado (Side milling cutter_Tangential type)                     | <b>E07</b>  |
| <b>CNMA</b>         | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B28</b>  |
| <b>CNMA</b>         | Insertos para cBN_Negativo   | <b>B101</b> |
| <b>CNMG-B25</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B32</b>  |
| <b>CNMG-GR</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B33</b>  |
| <b>CNMG-HA</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B29</b>  |
| <b>CNMG-HM</b>      | Insertos para Torneado_Negativo  | <b>B30</b>  |
| <b>CNMG-LP</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B29</b>  |
| <b>CNMG-LW</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B32</b>  |
| <b>CNMG-MK</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B30</b>  |
| <b>CNMG-MM</b>      | Insertos para Torneado (Save Turn)   | <b>B105</b> |
| <b>CNMG-MM</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B31</b>  |
| <b>CNMG-MP</b>      | Insertos para Torneado (Save Turn)   | <b>B105</b> |
| <b>CNMG-MP</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B31</b>  |

# N Índice por denominación

## C

|                     |  |             |
|---------------------|--|-------------|
| <b>CNMG-RK</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B33</b>  |
| <b>CNMG-RM</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B33</b>  |
| <b>CNMG-VB</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B28</b>  |
| <b>CNMG-VC</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B29</b>  |
| <b>CNMG-VF</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B28</b>  |
| <b>CNMG-VL</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B29</b>  |
| <b>CNMG-VM</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B32</b>  |
| <b>CNMG-VP1</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B28</b>  |
| <b>CNMG-VP2</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B30</b>  |
| <b>CNMG-VP3</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B32</b>  |
| <b>CNMG-VP4</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B34</b>  |
| <b>CNMG-VQ</b>      | Insertos para Torneado (Save Turn)   | <b>B105</b> |
| <b>CNMG-VQ</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B30</b>  |
| <b>CNMG-VR</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B34</b>  |
| <b>CNMG-VW</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B29</b>  |
| <b>CNMM</b>         | Insertos PCD_Negativo  | <b>B102</b> |
| <b>CNMM-GH</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B35</b>  |
| <b>CNMM-GR</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B34</b>  |
| <b>CNMM-HA</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B34</b>  |
| <b>CNMM-VH</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B35</b>  |
| <b>CNMM-VT</b>      | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B35</b>  |
| <b>CNMX</b>         | Insertos PCD_Negativo  | <b>B102</b> |
| <b>CPGT</b>         | Insertos para Torneado_Positivo (Sistema con tornillo)                     | <b>B70</b>  |
| <b>CPGT-HMP</b>     | Insertos para Torneado_Positivo (Sistema con tornillo)                     | <b>B70</b>  |
| <b>CPM</b>          | Herramientales (CPM)   | <b>I 18</b> |
| <b>CPMH</b>         | Insertos Fresado (T-Cutter)  | <b>E07</b>  |
| <b>CPMT</b>         | Insertos Fresado (T-Cutter)  | <b>E07</b>  |
| <b>CPMT</b>         | Insertos PCD_Positivo  | <b>B102</b> |
| <b>CPMT-C25</b>     | Insertos para Torneado_Positivo (Sistema con tornillo)                     | <b>B70</b>  |
| <b>CPMT-VF</b>      | Insertos para Torneado_Positivo (Sistema con tornillo)                     | <b>B70</b>  |
| <b>CPMT-VL</b>      | Insertos para Torneado_Positivo (Sistema con tornillo)                     | <b>B70</b>  |
| <b>CRDNN</b>        | Insertos para Porta Cerámico   | <b>B185</b> |
| <b>CRE2000</b>      | Endmill (C-Max Radio)  | <b>F43</b>  |
| <b>CRGNR/L</b>      | Insertos para Porta Cerámico   | <b>B185</b> |
| <b>CRNE2000</b>     | Endmill (C-Max_Esférico de Cuello Largo)                                   | <b>F43</b>  |
| <b>CSBNR/L...BS</b> | Solución en Rodamientos  | <b>B145</b> |
| <b>CSDNN</b>        | Insertos para Porta Cerámico   | <b>B185</b> |
| <b>CSDPN</b>        | Portainserto (Sistema de Brida)  | <b>B169</b> |
| <b>CSGNR/L...RW</b> | Solución en Rodamientos  | <b>B144</b> |
| <b>CSKNR/L</b>      | Insertos para Porta Cerámico   | <b>B186</b> |
| <b>CSKNR/L...BS</b> | Solución en Rodamientos  | <b>B145</b> |
| <b>CSKPR/L</b>      | Portainserto (Sistema de Brida)  | <b>B170</b> |
| <b>CSKPR/L</b>      | Barras para Interior (Sistema de Brida)                                    | <b>B201</b> |
| <b>CSKPR/L</b>      | Cartuchos (Sistema de Brida)   | <b>B232</b> |
| <b>CSKPR/L...B</b>  | Solución en Rodamientos  | <b>B143</b> |

## C

|                     |   |             |
|---------------------|---|-------------|
| <b>CTFNR/L</b>      | Insertos para Porta Cerámico            | <b>B186</b> |
| <b>CTFPR/L</b>      | Portainserto (Sistema de Brida)         | <b>B170</b> |
| <b>CTFPR/L</b>      | Barras para Interior (Sistema de Brida) | <b>B201</b> |
| <b>CTFPR/L</b>      | Cartuchos (Sistema de Brida)            | <b>B232</b> |
| <b>CTGNR/L</b>      | Insertos para Porta Cerámico            | <b>B186</b> |
| <b>CTGNR/L...BS</b> | Solución en Rodamientos                 | <b>B145</b> |
| <b>CTGPR/L</b>      | Portainserto (Sistema de Brida)         | <b>B170</b> |
| <b>CTSPR/L</b>      | Cartuchos (Sistema de Brida)            | <b>B232</b> |
| <b>CTTPR/L</b>      | Cartuchos (Sistema de Brida)            | <b>B233</b> |
| <b>CTWPR/L</b>      | Cartuchos (Sistema de Brida)            | <b>B233</b> |

## D

|                 |  |                  |
|-----------------|--|------------------|
| <b>DB</b>       | Insertos para Herramientas multifuncionales (Herramientas para Ranurado)     | <b>C68</b>       |
| <b>DBC</b>      | Herramientales (DBC)   | <b>I 65</b>      |
| <b>DBE2000</b>  | D Endmill (Esférico)   | <b>F34~35</b>    |
| <b>DBE4000</b>  | D Endmill (Esférico)   | <b>F36</b>       |
| <b>DBH</b>      | Portainserto para Herramientas multifuncionales (Herramientas para Ranurado) | <b>C68</b>       |
| <b>DC</b>       | Insertos para Herramientas multifuncionales (Herramientas para Ranurado)     | <b>C68</b>       |
| <b>DC</b>       | Herramientales   | <b>I 21</b>      |
| <b>DCBNR/L</b>  | Portainserto (Sistema de Brida Doble)  | <b>B154</b>      |
| <b>DCET-KF</b>  | Insertos (Auto Tools, Tipo ISO)  | <b>B119</b>      |
| <b>DCET-KF</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)                       | <b>B71</b>       |
| <b>DCET-KM</b>  | Insertos (Auto Tools, Tipo ISO)  | <b>B119</b>      |
| <b>DCET-KM</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)                       | <b>B71</b>       |
| <b>DCGT-AK</b>  | Insertos para Aluminio_Positivo (Sistema con tornillo)                       | <b>B92</b>       |
| <b>DCGT-AR</b>  | Insertos para Aluminio_Positivo (Sistema con tornillo)                       | <b>B92</b>       |
| <b>DCGT-KF</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)                       | <b>B71</b>       |
| <b>DCGT-KM</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)                       | <b>B72</b>       |
| <b>DCGT-MS</b>  | Insertos (Auto Tools, Tipo ISO)  | <b>B119</b>      |
| <b>DCGT-VP1</b> | Insertos (Auto Tools, Tipo ISO)  | <b>B119</b>      |
| <b>DCGT-VP1</b> | Insertos para Torneado_Positivo (Sistema con tornillo)                       | <b>B72</b>       |
| <b>DCGW</b>     | Insertos para cBN_Positivo (Reafilables)                                     | <b>B101</b>      |
| <b>DCKNR/L</b>  | Portainserto (Sistema de Brida Doble)  | <b>B154</b>      |
| <b>DCLNR/L</b>  | Portainserto (Sistema de Brida Doble)  | <b>B154</b>      |
| <b>DCLNR/L</b>  | Barras para Interior (Sistema de Brida Doble)                                | <b>B195</b>      |
| <b>DCLNR/L</b>  | Herramienta con Sistema HSK  | <b>B220, 224</b> |
| <b>DCLNR/L</b>  | Herramienta con Sistema KM   | <b>B226</b>      |
| <b>DCMNN</b>    | Herramienta con Sistema HSK  | <b>B220</b>      |
| <b>DCMNN</b>    | Herramienta con Sistema KM   | <b>B226</b>      |
| <b>DCMT</b>     | Insertos PCD_Positivo  | <b>B102</b>      |
| <b>DCMT-C25</b> | Insertos para Torneado_Positivo (Sistema con tornillo)                       | <b>B73</b>       |
| <b>DCMT-HMP</b> | Insertos para Torneado_Positivo (Sistema con tornillo)                       | <b>B73</b>       |
| <b>DCMT-MP</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)                       | <b>B73</b>       |
| <b>DCMT-VF</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)                       | <b>B72</b>       |



## D

|                 |   |                |
|-----------------|---|----------------|
| <b>DCMT-VL</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)  | <b>B73</b>     |
| <b>DCMT-VP1</b> | Insertos para Torneado_Positivo (Sistema con tornillo)  | <b>B73</b>     |
| <b>DCS</b>      | Herramientales  | <b>I 21</b>    |
| <b>DDJNR/L</b>  | Portainsero (Sistema de Brida Doble)  | <b>B155</b>    |
| <b>DDJNR/L</b>  | Herramienta con Sistema HSK   | <b>B220</b>    |
| <b>DDJNR/L</b>  | Herramienta con Sistema KM  | <b>B226</b>    |
| <b>DDNNN</b>    | Herramienta con Sistema HSK   | <b>B220</b>    |
| <b>DDNNN</b>    | Herramienta con Sistema KM  | <b>B227</b>    |
| <b>DDUNR/L</b>  | Barras para Interior (Sistema de Brida Doble)   | <b>B195</b>    |
| <b>DF</b>       | Cortador Lateral  | <b>E381</b>    |
| <b>DFE2000</b>  | D Endmill (Plano)   | <b>F32</b>     |
| <b>DFE4000</b>  | D Endmill (Plano)   | <b>F33</b>     |
| <b>DHE</b>      | Herramientales (Serie DHE)  | <b>I 07~09</b> |
| <b>DNGG-VP1</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B36</b>     |
| <b>DNGG-VP3</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B36</b>     |
| <b>DNMA</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B36</b>     |
| <b>DNMA</b>     | Insertos para cBN_Negativo(Reafilables)   | <b>B101</b>    |
| <b>DNMG-B25</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B41</b>     |
| <b>DNMG-GR</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B41</b>     |
| <b>DNMG-HA</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B37</b>     |
| <b>DNMG-HM</b>  | Insertos para Torneado_Negativo   | <b>B39</b>     |
| <b>DNMG-LP</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B38</b>     |
| <b>DNMG-LW</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B40</b>     |
| <b>DNMG-MK</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B39</b>     |
| <b>DNMG-MM</b>  | Insertos para Torneado (Save Turn)  | <b>B105</b>    |
| <b>DNMG-MM</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B39</b>     |
| <b>DNMG-MP</b>  | Insertos para Torneado (Save Turn)  | <b>B105</b>    |
| <b>DNMG-MP</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B39</b>     |
| <b>DNMG-RK</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B41</b>     |
| <b>DNMG-RM</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B42</b>     |
| <b>DNMG-VB</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B36</b>     |
| <b>DNMG-VC</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B38</b>     |
| <b>DNMG-VF</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B37</b>     |
| <b>DNMG-VL</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B37</b>     |
| <b>DNMG-VM</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B40</b>     |
| <b>DNMG-VP1</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B37</b>     |
| <b>DNMG-VP2</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B38</b>     |
| <b>DNMG-VP3</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B40</b>     |
| <b>DNMG-VP4</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B42</b>     |
| <b>DNMG-VQ</b>  | Insertos para Torneado (Save Turn)  | <b>B105</b>    |
| <b>DNMG-VQ</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B38</b>     |
| <b>DNMG-VR</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B42</b>     |
| <b>DNMG-VW</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B37</b>     |
| <b>DNMM</b>     | Insertos PCD_Positivo   | <b>B102</b>    |
| <b>DNMX</b>     | Insertos PCD_Positivo   | <b>B102</b>    |

## D

|                |   |                |
|----------------|---|----------------|
| <b>DNMX-SH</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca, Herramienta con Sistema HSK) | <b>B42</b>     |
| <b>DNMX-SR</b> | Insertos para Torneado_Negativo   | <b>B42</b>     |
| <b>DSBNR/L</b> | Portainsero (Sistema de Brida Doble)  | <b>B155</b>    |
| <b>DSC</b>     | Herramientales (Serie DSC)  | <b>I 11~16</b> |
| <b>DSDNN</b>   | Portainsero (Sistema de Brida Doble)  | <b>B156</b>    |
| <b>DSK</b>     | Herramientales (Serie DSK)  | <b>I 32~33</b> |
| <b>DSKNR/L</b> | Portainsero (Sistema de Brida Doble)  | <b>B156</b>    |
| <b>DSKNR/L</b> | Barras para Interior (Sistema de Brida Doble)   | <b>B195</b>    |
| <b>DSSNR/L</b> | Portainsero (Sistema de Brida Doble)  | <b>B156</b>    |
| <b>DST</b>     | Herramientales (Serie DST)  | <b>I 38~39</b> |
| <b>DTFNR/L</b> | Portainsero (Sistema de Brida Doble)  | <b>B157</b>    |
| <b>DTFNR/L</b> | Barras para Interior (Sistema de Brida Doble)   | <b>B196</b>    |
| <b>DTGNR/L</b> | Portainsero (Sistema de Brida Doble)  | <b>B157</b>    |
| <b>DTN</b>     | Herramientales (Serie DTN )   | <b>I 41</b>    |
| <b>DVJNR/L</b> | Portainsero (Sistema de Brida Doble)  | <b>B157</b>    |
| <b>DVVNN</b>   | Portainsero (Sistema de Brida Doble)  | <b>B158</b>    |
| <b>DWLNR/L</b> | Portainsero (Sistema de Brida Doble)  | <b>B158</b>    |
| <b>DWLNR/L</b> | Barras para Interior (Sistema de Brida Doble)   | <b>B196</b>    |

## E

|                        |  |               |
|------------------------|--|---------------|
| <b>EF(M)4000</b>       | Mill-max   | <b>E48</b>    |
| <b>EH</b>              | Herramientas multifuncionales (Herramientas para Tronzado) | <b>C71</b>    |
| <b>EN(M)4000</b>       | Mill-Max   | <b>E49</b>    |
| <b>EP(M)4000</b>       | Mill-Max   | <b>M03</b>    |
| <b>EP(M)5000</b>       | Mill-Max   | <b>M03</b>    |
| <b>EPN(M)4000</b>      | Mill-Max   | <b>E50</b>    |
| <b>EPN(M)5000</b>      | Mill-Max   | <b>M03</b>    |
| <b>EPN(M)5000+</b>     | Mill Max Plus  | <b>E51</b>    |
| <b>ER</b>              | Herramientales (ER Collet)                                 | <b>I 35</b>   |
| <b>ER(L)</b>           | Inserto para Roscado                                       | <b>D10~30</b> |
| <b>ER(L)H</b>          | Roscado para Portainsero Externo (Sistema con tornillo)    | <b>D31</b>    |
| <b>ER(L)H-C</b>        | Roscado para Portainsero Externo (Sistema de Brida)        | <b>D31</b>    |
| <b>ER(M)</b>           | Inserto para Roscado                                       | <b>D10~13</b> |
| <b>ESB</b>             | Herramientas para Tronzado (Insertos)                      | <b>C71</b>    |
| <b>ESDP</b>            | ESD Plus   | <b>G93~97</b> |
| <b>EV2525R/L-105-3</b> | Herramienta con Sistema HSK                                | <b>B225</b>   |
| <b>EV2525R/L-112</b>   | Herramienta con Sistema HSK                                | <b>B225</b>   |
| <b>EV2525R/L-115</b>   | Herramienta con Sistema HSK                                | <b>B225</b>   |
| <b>EXT</b>             | Herramientales (Sistema Modular)                           | <b>I 72</b>   |

## F

|            |                               |             |
|------------|-------------------------------|-------------|
| <b>FBB</b> | Herramientales (FBB Cartucho) | <b>I 64</b> |
| <b>FBC</b> | Herramientales (FBC)          | <b>I 63</b> |

# N Índice por denominación

## F

|                      |                                    |                |
|----------------------|------------------------------------|----------------|
| <b>FBH</b>           | Herramientales (Serie FBH)         | <b>I 58~60</b> |
| <b>FGD</b>           | Insertos MGT                       | <b>C27</b>     |
| <b>FGHH</b>          | Portainsero MGT (Ranurado Frontal) | <b>C36</b>     |
| <b>FGM</b>           | Insertos MGT                       | <b>C27</b>     |
| <b>FGVH</b>          | Portainsero MGT (Ranurado Frontal) | <b>C37</b>     |
| <b>FMA</b>           | Herramientales (Serie FMA)         | <b>I 46</b>    |
| <b>FMAC(M)3000</b>   | Future Mill                        | <b>E222</b>    |
| <b>FMAC(M)3000-A</b> | Future Mill (Cuerpo Aluminio)      | <b>E224</b>    |
| <b>FMAC(M)4000</b>   | Future Mill                        | <b>E223</b>    |
| <b>FMAC(M)4000-A</b> | Future Mill (Cuerpo Aluminio)      | <b>E225</b>    |
| <b>FMAS3000</b>      | Future Mill                        | <b>E226</b>    |
| <b>FMAS4000</b>      | Future Mill                        | <b>E227</b>    |
| <b>FMC</b>           | Herramientales (Serie FMC)         | <b>I 47~48</b> |
| <b>FME4000</b>       | Endmill (F-Endmill_Estándar)       | <b>F26</b>     |
| <b>FMLE4000</b>      | Endmill (F-Endmill_Largo)          | <b>F26</b>     |
| <b>FMM</b>           | Insertos MGT                       | <b>C27</b>     |
| <b>FMPC(M)3000</b>   | Future Mill                        | <b>E228</b>    |
| <b>FMPC(M)3000-A</b> | Future Mill (Cuerpo Aluminio)      | <b>E230</b>    |
| <b>FMPC(M)4000</b>   | Future Mill                        | <b>E229</b>    |
| <b>FMPC(M)4000-A</b> | Future Mill (Cuerpo Aluminio)      | <b>E231</b>    |
| <b>FMPS3000</b>      | Future Mill                        | <b>E232</b>    |
| <b>FMPS4000</b>      | Future Mill                        | <b>E233</b>    |
| <b>FMRC(M)3000</b>   | Future Mill                        | <b>E234</b>    |
| <b>FMRC(M)4000</b>   | Future Mill                        | <b>E235</b>    |
| <b>FMRC(M)4000</b>   | Future Mill_P-Positive             | <b>E249</b>    |
| <b>FMRC(M)5000</b>   | Future Mill                        | <b>E236</b>    |
| <b>FMRC(M)5000</b>   | Future Mill_P-Positive             | <b>E250</b>    |
| <b>FMRC(M)6000</b>   | Future Mill                        | <b>E237</b>    |
| <b>FMRC(M)6000</b>   | Future Mill_P-Positive             | <b>E251</b>    |
| <b>FMRCM3000</b>     | Future Mill_P-Positive             | <b>E248</b>    |
| <b>FMRM1000</b>      | Future Mill                        | <b>E244</b>    |
| <b>FMRM1500</b>      | Future Mill                        | <b>E244</b>    |
| <b>FMRM2000</b>      | Future Mill                        | <b>E245</b>    |
| <b>FMRM2500</b>      | Future Mill                        | <b>E245</b>    |
| <b>FMRM2500</b>      | Future Mill_P-Positive             | <b>E256</b>    |
| <b>FMRM3000</b>      | Future Mill                        | <b>E246</b>    |
| <b>FMRM3000</b>      | Future Mill_P-Positive             | <b>E257</b>    |
| <b>FMRM4000</b>      | Future Mill                        | <b>E247</b>    |
| <b>FMRM4000</b>      | Future Mill_P-Positive             | <b>E258</b>    |
| <b>FMRM5000</b>      | Future Mill                        | <b>E247</b>    |
| <b>FMRM5000</b>      | Future Mill_P-Positive             | <b>E259</b>    |
| <b>FMRS1000</b>      | Future Mill                        | <b>E238</b>    |
| <b>FMRS1500</b>      | Future Mill                        | <b>E238</b>    |
| <b>FMRS2000</b>      | Future Mill                        | <b>E239</b>    |
| <b>FMRS2500</b>      | Future Mill                        | <b>E239</b>    |

## F

|                 |                        |             |
|-----------------|------------------------|-------------|
| <b>FMRS2500</b> | Future Mill_P-Positive | <b>E252</b> |
| <b>FMRS3000</b> | Future Mill            | <b>E240</b> |
| <b>FMRS3000</b> | Future Mill_P-Positive | <b>E253</b> |
| <b>FMRS4000</b> | Future Mill            | <b>E241</b> |
| <b>FMRS4000</b> | Future Mill_P-Positive | <b>E254</b> |
| <b>FMRS5000</b> | Future Mill            | <b>E242</b> |
| <b>FMRS5000</b> | Future Mill_P-Positive | <b>E255</b> |
| <b>FMRS6000</b> | Future Mill            | <b>E243</b> |
| <b>FMRS6000</b> | Future Mill_P-Positive | <b>E255</b> |

## G

|              |  |                |
|--------------|--|----------------|
| <b>GBE</b>   | GBE (Filo Simple type)   | <b>E324</b>    |
| <b>GBEM</b>  | GBE (Modular type)   | <b>E326</b>    |
| <b>GBE-M</b> | GBE (Filo Multiple type)   | <b>E325</b>    |
| <b>GERC</b>  | Herramientales (Collet GERC)   | <b>I 35</b>    |
| <b>GFIK</b>  | Herramientas multifuncionales (Herramientas para Ranurado)               | <b>C70</b>     |
| <b>GFIP</b>  | Herramientas multifuncionales (Herramientas para Ranurado)               | <b>C69</b>     |
| <b>GFT</b>   | Herramientas multifuncionales (Herramientas para Ranurado)               | <b>C69</b>     |
| <b>GH</b>    | Insertos para Herramientas multifuncionales (Herramientas para Ranurado) | <b>C70</b>     |
| <b>GO</b>    | Insertos para Herramientas multifuncionales (Herramientas para Ranurado) | <b>C70</b>     |
| <b>GR</b>    | Insertos para Herramientas multifuncionales (Herramientas para Ranurado) | <b>C70</b>     |
| <b>GS</b>    | Insertos para Herramientas multifuncionales (Herramientas para Ranurado) | <b>C70</b>     |
| <b>GSK</b>   | Herramientales (Serie GSK)   | <b>I 29~30</b> |
| <b>GW</b>    | Insertos para Herramientas multifuncionales (Herramientas para Ranurado) | <b>C69</b>     |

## H

|                    |  |             |
|--------------------|--|-------------|
| <b>HAVE</b>        | HAVE (Múltiples Filos)                     | <b>E331</b> |
| <b>HAVE</b>        | HAVE (Filo único)                          | <b>E332</b> |
| <b>HBRE</b>        | Broca de abordar                           | <b>G121</b> |
| <b>HC</b>          | Herramientales (Collet Chuck)              | <b>I 35</b> |
| <b>HDDCM7000</b>   | Mill Max Heavy                             | <b>E55</b>  |
| <b>HDDCM9000</b>   | Mill Max Heavy                             | <b>E55</b>  |
| <b>HE</b>          | Cen-Mill                                   | <b>M04</b>  |
| <b>HECN</b>        | Insertos Fresado (Cortador de Alto Avance) | <b>E07</b>  |
| <b>HFMDCM-LN06</b> | HFMD                                       | <b>E266</b> |
| <b>HFMDM-LN06</b>  | HFMD modular                               | <b>E267</b> |
| <b>HFMS-LN06</b>   | HFMD Mango                                 | <b>E264</b> |
| <b>HFMM</b>        | HFM modular                                | <b>E275</b> |
| <b>HFMS1000</b>    | HFM Mango                                  | <b>E273</b> |
| <b>HPEN</b>        | Insertos Fresado (Cortador de Alto Avance) | <b>E07</b>  |
| <b>HPEN-WC</b>     | Insertos Fresado (Cortador de Alto Avance) | <b>E07</b>  |
| <b>HRAG</b>        | Herramientales (Serie Cabeza Angular)      | <b>I 52</b> |
| <b>HRMC(M)13</b>   | HRM  | <b>E292</b> |





## H

|                     |                                    |      |
|---------------------|------------------------------------|------|
| HRMC(M)15           | HRM                                | E293 |
| HRMDC(M)09          | HRMDouble                          | E281 |
| HRMDC(M)13          | HRMDouble                          | E282 |
| HRMDC(M)16          | HRMDouble                          | E283 |
| HRMDM 06            | HRMDouble                          | E289 |
| HRMDM 09            | HRMDouble                          | E290 |
| HRMDM 13            | HRMDouble                          | E291 |
| HRMDS06             | HRMDouble                          | E284 |
| HRMDS09             | HRMDouble                          | E285 |
| HRMDS13             | HRMDouble                          | E287 |
| HRMM08              | HRM                                | E297 |
| HRMM10              | HRM                                | E298 |
| HRMM13              | HRM                                | E298 |
| HRMS 08             | HRM                                | E294 |
| HRMS 10             | HRM                                | E294 |
| HRMS 13             | HRM                                | E295 |
| HRMS 15             | HRM                                | E296 |
| HSK100A             | Herramientales HSK (Modular)       | E206 |
| HSK100A AM3000      | Herramientales HSK (Filo Multiple) | E203 |
| HSK100A AM4000      | Herramientales HSK (Filo Multiple) | E204 |
| HSK63A              | Herramientales HSK (Modular)       | E206 |
| HSK63A AM1000       | Herramientales HSK (Filo Multiple) | E200 |
| HSK63A AM1000HS     | Herramientales HSK (Filo Simple)   | E189 |
| HSK63A AM1500       | Herramientales HSK (Filo Multiple) | E201 |
| HSK63A AM1500HS     | Herramientales HSK (Filo Simple)   | E190 |
| HSK63A AM2000       | Herramientales HSK (Filo Multiple) | E202 |
| HSK63A AM2000HS     | Herramientales HSK (Filo Simple)   | E191 |
| HSK63A AM3000HS     | Herramientales HSK (Filo Simple)   | E192 |
| HSK63A AM4000HS     | Herramientales HSK (Filo Simple)   | E193 |
| HSK63A/100A PAX5000 | Pro-X Mill                         | E362 |
| HSK-FMA             | Herramientales (Damping pro)       | I 78 |
| HSK-FMC             | Herramientales (Damping pro)       | I 79 |
| HSK-XD19            | Pro-V Mill                         | E370 |
| HT                  | Herramientales                     | I 81 |

## I

## J

|           |  |     |
|-----------|--|-----|
| IG        | Multi functional Insert (Grooving Tools) | C68 |
| IGH       | Multi functional holder (Grooving Tools) | C68 |
| IPBE2000  | Endmill (I+ Endmill_Esférico)            | F64 |
| IPBE4000  | Endmill (I+ Endmill_Esférico)            | F66 |
| IPFE2000  | Endmill (I+ Endmill_Plano)               | F60 |
| IPFE4000  | Endmill (I+ Endmill_Plano)               | F62 |
| IPLBE2000 | Endmill (I+ Endmill_Esférico Largo)      | F65 |
| IPLFE2000 | Endmill (I+ Endmill_Plano Largo)         | F61 |

## I

## J

|           |   |        |
|-----------|---|--------|
| IPLFE4000 | Endmill (I+ Endmill_Plano Largo)              | F63    |
| IPLRE2000 | Endmill (I+ Endmill_Radio Largo)              | F69    |
| IPLRE4000 | Endmill (I+ Endmill_Radio Largo)              | F71    |
| IPRE2000  | Endmill (I+ Endmill_Radio)                    | F67~68 |
| IPRE4000  | Endmill (I+ Endmill_Radio)                    | F70    |
| IR(L)     | Inserto para Roscado                          | D10~30 |
| IR(L)H    | Thread Internal Holder (Sistema con Tornillo) | D32    |
| IR(L)H-C  | Thread Internal Holder (Sistema con Brida)    | D32    |
| IR(M)     | Inserto para Roscado                          | D10~11 |
| IRB       | Rima Indexable (Orificio de Relleno)          | G115   |
| IRT       | Indexable Reamer (Throughout hole)            | G114   |
| JD        | Jip drill                                     | M04    |

## G

|              |  |        |
|--------------|--|--------|
| K2D          | KING DRILL-2D  | G12~13 |
| K2D          | KING DRILL (Para el sistema de refrigerante perforante)-2D                       | G22    |
| K2D          | KING DRILL (para taladrado de diámetro grande)-2D                                | G26    |
| K3D          | KING DRILL-3D  | G14~16 |
| K3D          | KING DRILLKING DRILL (Para el sistema de refrigerante perforante)-3D             | G23    |
| K3D          | KING DRILL (para taladrado de diámetro grande)-3D                                | G26    |
| K3D*         | KING DRILL (Materiales marcados puede mecanizar grifo de agujero fundamental)-3D | G14~15 |
| K4D          | KING DRILL-4D  | G17~18 |
| K4D          | KING DRILL (Para el sistema de refrigerante perforante)-4D                       | G24    |
| K4D          | KING DRILL (para taladrado de diámetro grande)-4D                                | G26    |
| K5D          | KING DRILL-5D  | G19~20 |
| KAC          | Herramientales (Serie Cabeza Angular)  | I 56   |
| KAG          | Herramientales (Serie Cabeza Angular)  | I 54   |
| KAH          | Herramientales (Serie Cabeza Angular)  | I 55   |
| KCER/L       | Herramientas multifuncionales (Cartucho KGT)                                     | C40    |
| KCFR/L       | Herramientas multifuncionales (Cartucho KGT)                                     | C40    |
| KCP          | Herramientales   | I 82   |
| KCR          | Escariador de cermet   | G120   |
| KEL-ANN      | Insertos Fresado (Storm Mill)  | E08    |
| KEL-MF       | Insertos Fresado (Herramientas para engranajes)                                  | E08    |
| KEL-QNN      | Insertos Fresado (Storm Mill)  | E08    |
| KGDS         | Gun Drill (De Labio Simple)  | G108   |
| KGDT         | Gun Drill (De doble labio)   | G109   |
| KGEHR/L      | Herramientas multifuncionales (Portainsero KGT)                                  | C14    |
| KGEHR/L-D00A | Herramientas multifuncionales (Portainsero KGT)                                  | C16    |
| KGEHR/L-D00B | Herramientas multifuncionales (Portainsero KGT)                                  | C16    |
| KGEHR/L-DOOA | Portainsero (Auto Tools, Tipo KGT)   | B128   |
| KGEHR/L-DOOB | Portainsero (Auto Tools, Tipo KGT)   | B128   |
| KGEHR/L-T00  | Herramientas multifuncionales (Portainsero KGT)                                  | C17    |
| KGEUR/L      | Herramientas multifuncionales (Portainsero KGT)                                  | C19    |

# N Índice por denominación

## K

|                    |   |             |
|--------------------|---|-------------|
| <b>KGEVR/L-T00</b> | Herramientas multifuncionales (Portainsero KGT)         | <b>C18</b>  |
| <b>KGFHR/L</b>     | Herramientas multifuncionales (Portainsero KGT)         | <b>C21</b>  |
| <b>KGFVR/L</b>     | Herramientas multifuncionales (Portainsero KGT)         | <b>C20</b>  |
| <b>KGGN-A</b>      | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C13</b>  |
| <b>KGGN-B</b>      | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C13</b>  |
| <b>KGGN-R</b>      | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C13</b>  |
| <b>KGIUR/L</b>     | Herramientas multifuncionales (Portainsero KGT)         | <b>C22</b>  |
| <b>KGIVR/L</b>     | Herramientas multifuncionales (Portainsero KGT)         | <b>C23</b>  |
| <b>KGMI-T</b>      | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C12</b>  |
| <b>KGML-LP</b>     | Insertos (Auto Tools, Tipo KGT)                         | <b>B129</b> |
| <b>KGML-LP</b>     | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C13</b>  |
| <b>KGML-RP</b>     | Insertos (Auto Tools, Tipo KGT)                         | <b>B129</b> |
| <b>KGML-RP</b>     | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C13</b>  |
| <b>KGMN-C</b>      | Insertos (Auto Tools, Tipo KGT)                         | <b>B129</b> |
| <b>KGMN-L</b>      | Insertos (Auto Tools, Tipo KGT)                         | <b>B128</b> |
| <b>KGMN-L</b>      | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C12</b>  |
| <b>KGMN-R</b>      | Insertos (Auto Tools, Tipo KGT)                         | <b>B128</b> |
| <b>KGMN-R</b>      | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C12</b>  |
| <b>KGMN-T</b>      | Insertos (Auto Tools, Tipo KGT)                         | <b>B128</b> |
| <b>KGMN-T</b>      | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C12</b>  |
| <b>KGMR-LP</b>     | Insertos (Auto Tools, Tipo KGT)                         | <b>B128</b> |
| <b>KGMR-LP</b>     | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C12</b>  |
| <b>KGMR-RP</b>     | Insertos (Auto Tools, Tipo KGT)                         | <b>B129</b> |
| <b>KGMR-RP</b>     | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C12</b>  |
| <b>KGTB</b>        | Sistema KGT para tronzado                               | <b>C24</b>  |
| <b>KHU</b>         | Herramientales (Serie Cabeza Angular)                   | <b>I 53</b> |
| <b>KMB</b>         | Herramientales (KMB)                                    | <b>I 66</b> |
| <b>KM-DCLNR/L</b>  | Herramienta con Sistema KM                              | <b>B229</b> |
| <b>KNB</b>         | Insertos para Herramientas multifuncionales (K Notch)   | <b>C56</b>  |
| <b>KNG</b>         | Insertos para Herramientas multifuncionales (K Notch)   | <b>C56</b>  |
| <b>KNG</b>         | Insertos para Herramientas multifuncionales (K Notch)   | <b>C57</b>  |
| <b>KNGP</b>        | Insertos para Herramientas multifuncionales (K Notch)   | <b>C56</b>  |
| <b>KNGP</b>        | Insertos para Herramientas multifuncionales (K Notch)   | <b>C57</b>  |
| <b>KNR</b>         | Insertos para Herramientas multifuncionales (K Notch)   | <b>C57</b>  |
| <b>KNRP</b>        | Insertos para Herramientas multifuncionales (K Notch)   | <b>C57</b>  |
| <b>KNSR</b>        | Insertos para Herramientas multifuncionales (K Notch)   | <b>C58</b>  |
| <b>KNT</b>         | Insertos para Herramientas multifuncionales (K Notch)   | <b>C56</b>  |
| <b>KNUX-11</b>     | Insertos para Torneado_Negativo (Sistema de Brida)      | <b>B43</b>  |
| <b>KNUX-12</b>     | Insertos para Torneado_Negativo (Sistema de Brida)      | <b>B43</b>  |
| <b>KRGN-A</b>      | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C13</b>  |
| <b>KRMI-C</b>      | Insertos (Auto Tools, Tipo KGT)                         | <b>B129</b> |
| <b>KRMN-C</b>      | Insertos para Herramientas multifuncionales (Serie KGT) | <b>C12</b>  |
| <b>KSPB</b>        | Herramientas multifuncionales (Saw Man-X_Bloque)        | <b>C64</b>  |

## L

|                                   |   |             |
|-----------------------------------|---|-------------|
| <b>LBE08/10/12/16/20/25/30/32</b> | Láser Mill (Esférico Tipo R Zanco Carburo)      | <b>E318</b> |
| <b>LBE08/10/12/16/20/25/30/32</b> | Láser Mill (Esférico R, Zanco Acero)            | <b>E319</b> |
| <b>LBE12/16/20/25/30/32</b>       | Láser Mill (Esférico Tipo R, Zanco Acero)       | <b>E319</b> |
| <b>LBE-MHD</b>                    | Láser Mill (Tipo Modular)                       | <b>E322</b> |
| <b>LBH</b>                        | Insertos Fresado (Láser Mill)                   | <b>E08</b>  |
| <b>LBH-KF</b>                     | Insertos Fresado (Láser Mill)                   | <b>E08</b>  |
| <b>LBH-KH</b>                     | Insertos Fresado (Láser Mill)                   | <b>E08</b>  |
| <b>LBS</b>                        | Insertos Fresado (Láser Mill)                   | <b>E09</b>  |
| <b>LCF</b>                        | Insertos Fresado (Láser Mill)                   | <b>E09</b>  |
| <b>LDET</b>                       | Insertos Fresado (Plo-L Mill)                   | <b>E10</b>  |
| <b>LE(M)</b>                      | Gen-mill  | <b>M04</b>  |
| <b>LFH</b>                        | Insertos Fresado (Láser Mill)                   | <b>E09</b>  |
| <b>LNCS</b>                       | Insertos Fresado (Rich Mill)                    | <b>E10</b>  |
| <b>LNE</b>                        | Insertos Fresado (Herramientas para engranajes) | <b>E10</b>  |
| <b>LNEX-MA</b>                    | Insertos Fresado (Rich Mill)                    | <b>E11</b>  |
| <b>LNEX-MF</b>                    | Insertos Fresado (Rich Mill)                    | <b>E11</b>  |
| <b>LNEX-MM</b>                    | Insertos Fresado (Rich Mill)                    | <b>E11</b>  |
| <b>LNKT</b>                       | Insertos Fresado (TP2P)                         | <b>E10</b>  |
| <b>LNMX-MF</b>                    | Insertos Fresado (Rich Mill)                    | <b>E11</b>  |
| <b>LNMX-MF</b>                    | Insertos Fresado (HFMD)                         | <b>E11</b>  |
| <b>LNMX-ML</b>                    | Insertos Fresado (HFMD)                         | <b>E11</b>  |
| <b>LNMX-MM</b>                    | Insertos Fresado (Rich Mill)                    | <b>E11</b>  |
| <b>LNMX-MM</b>                    | Insertos Fresado (HFMD)                         | <b>E11</b>  |
| <b>LPD</b>                        | LPD   | <b>M04</b>  |
| <b>LPEW</b>                       | Insertos Fresado (HFM)                          | <b>E11</b>  |
| <b>LPMT-MF</b>                    | Insertos Fresado (HFM)                          | <b>E12</b>  |
| <b>LPMW</b>                       | Insertos Fresado (HFM)                          | <b>E12</b>  |
| <b>LR</b>                         | Insertos Fresado (Láser Mill)                   | <b>E09</b>  |
| <b>LRE10/12</b>                   | Láser Mill (Radio Tipo R, Zanco Acero)          | <b>E321</b> |
| <b>LRE10/12/16/20/25/30/32</b>    | Láser Mill (Esférico Tipo R, Zanco Carburo)     | <b>E320</b> |
| <b>LRE12/16/25/30/32</b>          | Láser Mill (Esquina Tipo R, Zanco Acero)        | <b>E321</b> |
| <b>LRH</b>                        | Insertos Fresado (Láser Mill)                   | <b>E09</b>  |
| <b>LXET-MA</b>                    | Insertos Fresado (Plo-L Mill)                   | <b>E12</b>  |
| <b>LXET-ML</b>                    | Insertos Fresado (Plo-L Mill)                   | <b>E12</b>  |

## M

|                        |   |             |
|------------------------|---|-------------|
| <b>MAH</b>             | Herramientales (Serie Cabeza Angular)             | <b>I 51</b> |
| <b>MAPD000HR/L-Z0</b>  | Aero Mill-Mini                                    | <b>E140</b> |
| <b>MAPDS000HR/L-Z0</b> | Aero Mill-Mini                                    | <b>E139</b> |
| <b>MAT</b>             | Adaptador Modular (Zanco de Acero)                | <b>E371</b> |
| <b>MAT-C</b>           | Adaptador Modular (Zanco de Carburo Cementado)    | <b>E372</b> |
| <b>MBBR</b>            | Micro Boreado de Carburo (MSB)_Torneado Posterior | <b>B133</b> |
| <b>MBCR</b>            | Micro Boreado de Carburo (MSB)_Copiado            | <b>B132</b> |
| <b>MBFR</b>            | Micro Boreado de Carburo (MSB)_Chaflán            | <b>B133</b> |



## M

|                   |   |                |
|-------------------|---|----------------|
| <b>MBR</b>        | Micro Boreado de Carburo (MSB)_Interior                               | <b>B132</b>    |
| <b>MC</b>         | Insertos para Herramientas multifuncionales (Solución en Rodamientos) | <b>B141</b>    |
| <b>MCER/L</b>     | Herramienta con Sistema HSK (Cartuchos)                               | <b>B223</b>    |
| <b>MCER/L</b>     | Herramienta con Sistema KM (Cartuchos)                                | <b>B229</b>    |
| <b>MCER/L</b>     | Herramientas multifuncionales (Cartucho MGT)                          | <b>C41</b>     |
| <b>MCFR/L</b>     | Herramienta con Sistema HSK (Cartuchos)                               | <b>B224</b>    |
| <b>MCFR/L</b>     | Herramientas multifuncionales (Cartucho MGT)                          | <b>C41</b>     |
| <b>MCHR/L</b>     | Herramienta con Sistema HSK   | <b>B223</b>    |
| <b>MCHR/L</b>     | Herramienta con Sistema KM  | <b>B228</b>    |
| <b>MCHR/L</b>     | Herramientas multifuncionales (Portainsero MGT)                       | <b>C39</b>     |
| <b>MCKNR/L</b>    | Portainsero (Sistema Multi-trabe)                                     | <b>B171</b>    |
| <b>MCLNR/L</b>    | Portainsero (Sistema Multi-trabe)                                     | <b>B171</b>    |
| <b>MCLNR/L</b>    | Barras para Interior (Sistema Multi-trabe)                            | <b>B202</b>    |
| <b>MCMNN</b>      | Portainsero (Sistema Multi-trabe)                                     | <b>B171</b>    |
| <b>MCRNR/L</b>    | Portainsero (Sistema Multi-trabe)                                     | <b>B172</b>    |
| <b>MCVR/L</b>     | Herramientas multifuncionales (Portainsero MGT)                       | <b>C39</b>     |
| <b>MD</b>         | Herramientales (Sistema Modular)                                      | <b>I 70~71</b> |
| <b>MDJNR/L</b>    | Portainsero (Sistema Multi-trabe)                                     | <b>B172</b>    |
| <b>MDNNN</b>      | Portainsero (Sistema Multi-trabe)                                     | <b>B172</b>    |
| <b>MDQNR/L</b>    | Portainsero (Sistema Multi-trabe)                                     | <b>B173</b>    |
| <b>MDUNR/L</b>    | Barras para Interior (Sistema Multi-trabe)                            | <b>B202</b>    |
| <b>MFMN</b>       | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)       | <b>C27</b>     |
| <b>MGEHR/L</b>    | Portainsero (Auto Tools-MGT Type)                                     | <b>B129</b>    |
| <b>MGEHR/L</b>    | Herramientas multifuncionales (Portainsero MGT)                       | <b>C30</b>     |
| <b>MGEHR/L</b>    | Herramientas multifuncionales (Portainsero Llantas de Aluminio MGT)   | <b>C44</b>     |
| <b>MGEHR/L-15</b> | Herramientas multifuncionales (Portainsero Llantas de Aluminio MGT)   | <b>C44</b>     |
| <b>MGEUR/L</b>    | Herramientas multifuncionales (Portainsero MGT)                       | <b>C31</b>     |
| <b>MGEVR/L</b>    | Herramientas multifuncionales (Portainsero MGT)                       | <b>C32</b>     |
| <b>MGEXR/L</b>    | Herramientas multifuncionales (Portainsero Llantas de Aluminio MGT)   | <b>C45</b>     |
| <b>MGFHR/L</b>    | Herramientas multifuncionales (Portainsero MGT)                       | <b>C35</b>     |
| <b>MGFR</b>       | Micro Boreado de Carburo (MSB)_Ranurado Frontal                       | <b>B135</b>    |
| <b>MGFVR/L</b>    | Herramientas multifuncionales (Portainsero MGT)                       | <b>C35</b>     |
| <b>MGGN-A</b>     | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)       | <b>C28</b>     |
| <b>MGGN-M</b>     | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)       | <b>C27</b>     |
| <b>MGIUR/L</b>    | Herramientas multifuncionales (Portainsero MGT)                       | <b>C33</b>     |
| <b>MGIUR/L-MR</b> | Herramientas multifuncionales (Portainsero Llantas de Aluminio MGT)   | <b>C44</b>     |
| <b>MGIUR/L-MV</b> | Herramientas multifuncionales (Portainsero Llantas de Aluminio MGT)   | <b>C45</b>     |
| <b>MGIVR/L</b>    | Herramientas multifuncionales (Portainsero MGT)                       | <b>C34</b>     |
| <b>MGIXR/L-MR</b> | Herramientas multifuncionales (Portainsero Llantas de Aluminio MGT)   | <b>C45</b>     |
| <b>MGML-PS</b>    | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)       | <b>C29</b>     |
| <b>MGML-PT</b>    | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)       | <b>C29</b>     |
| <b>MGMN-G</b>     | Insertos (Herramientas para Torno Automático Tipo MGT)                | <b>B129</b>    |
| <b>MGMN-G</b>     | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)       | <b>C27</b>     |
| <b>MGMN-L</b>     | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)       | <b>C28</b>     |
| <b>MGMN-M</b>     | Insertos (Herramientas para Torno Automático Tipo MGT)                | <b>B129</b>    |

## M

|                  |  |               |
|------------------|--|---------------|
| <b>MGMN-M</b>    | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)  | <b>C27</b>    |
| <b>MGMN-R</b>    | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)  | <b>C28</b>    |
| <b>MGMN-T</b>    | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)  | <b>C28</b>    |
| <b>MGMR/L-PS</b> | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)  | <b>C29</b>    |
| <b>MGMR/L-PT</b> | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)  | <b>C29</b>    |
| <b>MGR</b>       | Micro Boreado de Carburo (MSB)_Ranurado Ciadrado                 | <b>B134</b>   |
| <b>MGRR</b>      | Micro Boreado de Carburo (MSB)_Ranurado Redonde                  | <b>B135</b>   |
| <b>MLD</b>       | Mach long Solid Drill Plus                                       | <b>G84~86</b> |
| <b>MPMT</b>      | Insertos Fresado   | <b>E13</b>    |
| <b>MRGN-A</b>    | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)  | <b>C29</b>    |
| <b>MRGN-A</b>    | Herramientas multifuncionales (Insertos Llantas de Aluminio MGT) | <b>C43</b>    |
| <b>MRMN-M</b>    | Insertos para Herramientas multifuncionales (Cartucho MGT, MGT)  | <b>C29</b>    |
| <b>MSBNR/L</b>   | Portainsero (Sistema Multi-trabe)                                | <b>B173</b>   |
| <b>MSDNN</b>     | Portainsero (Sistema Multi-trabe)                                | <b>B173</b>   |
| <b>MSDP(H)</b>   | Mach Solid Drill Plus  | <b>G59~63</b> |
| <b>MSDP-5C</b>   | Mach Solid Drill Plus CFRP                                       | <b>G72</b>    |
| <b>MSDPH-S</b>   | Mach Solid Drill Plus-S  | <b>G66~69</b> |
| <b>MSFD-2P</b>   | Mach Solid flat Drill  | <b>G76~78</b> |
| <b>MSFDH-3P</b>  | Mach Solid flat Drill  | <b>G79~81</b> |
| <b>MSKNR/L</b>   | Portainsero (Sistema Multi-trabe)                                | <b>B174</b>   |
| <b>MSKNR/L</b>   | Barras para Interior (Sistema Multi-trabe)                       | <b>B202</b>   |
| <b>MSRNR/L</b>   | Portainsero (Sistema Multi-trabe)                                | <b>B174</b>   |
| <b>MSSNR/L</b>   | Portainsero (Sistema Multi-trabe)                                | <b>B175</b>   |
| <b>MT</b>        | Herramientas multifuncionales (Torneado Multiple)                | <b>B139</b>   |
| <b>MTENN</b>     | Portainsero (Sistema Multi-trabe)                                | <b>B175</b>   |
| <b>MTFNR/L</b>   | Portainsero (Sistema Multi-trabe)                                | <b>B175</b>   |
| <b>MTFNR/L</b>   | Barras para Interior (Sistema Multi-trabe)                       | <b>B203</b>   |
| <b>MTGNR/L</b>   | Portainsero (Sistema Multi-trabe)                                | <b>B176</b>   |
| <b>MTJNR/L</b>   | Portainsero (Sistema Multi-trabe)                                | <b>B176</b>   |
| <b>MTR</b>       | Micro Boreado de Carburo (MSB)_Roscado                           | <b>B136</b>   |
| <b>MVGN</b>      | Herramientas multifuncionales (Insertos Llantas de Aluminio MGT) | <b>C43</b>    |
| <b>MVJNR/L</b>   | Portainsero (Sistema Multi-trabe)                                | <b>B176</b>   |
| <b>MVQNR/L</b>   | Portainsero (Sistema Multi-trabe)                                | <b>B177</b>   |
| <b>MVUNR/L</b>   | Barras para Interior (Sistema Multi-trabe)                       | <b>B203</b>   |
| <b>MVVNN</b>     | Portainsero (Sistema Multi-trabe)                                | <b>B177</b>   |
| <b>MWLNRL</b>    | Portainsero (Sistema Multi-trabe)                                | <b>B177</b>   |
| <b>MWLNRL</b>    | Barras para Interior (Sistema Multi-trabe)                       | <b>B203</b>   |

## N

|                |   |            |
|----------------|---|------------|
| <b>NFTFR/L</b> | Insertos para Herramientas multifuncionales (Fine Tools)    | <b>C67</b> |
| <b>NFTGR/L</b> | Insertos para Herramientas multifuncionales (Fine Tools)    | <b>C66</b> |
| <b>NFTIH</b>   | Herramientas multifuncionales (Portainsero para Fine Tools) | <b>C67</b> |
| <b>NFTTR/L</b> | Insertos para Herramientas multifuncionales (Fine Tools)    | <b>C66</b> |
| <b>NPD</b>     | NPD   | <b>M04</b> |

# N Índice por denominación

## N

|                |   |             |
|----------------|---|-------------|
| <b>NPM</b>     | Herramientales (Serie NPM)                      | <b>I 20</b> |
| <b>NU-CCGW</b> | Insertos para cBN Positivo (Múltiples Esquinas) | <b>B99</b>  |
| <b>NU-CNGA</b> | Insertos para cBN Negativo (Múltiples Esquinas) | <b>B98</b>  |
| <b>NU-CNMA</b> | Insertos para cBN Negativo (Múltiples Esquinas) | <b>B98</b>  |
| <b>NU-DCGW</b> | Insertos para cBN Positivo (Múltiples Esquinas) | <b>B99</b>  |
| <b>NU-DNGA</b> | Insertos para cBN Negativo (Múltiples Esquinas) | <b>B98</b>  |
| <b>NU-SNGA</b> | Insertos para cBN Negativo (Múltiples Esquinas) | <b>B98</b>  |
| <b>NU-TCGW</b> | Insertos para cBN Positivo (Múltiples Esquinas) | <b>B99</b>  |
| <b>NU-TNGA</b> | Insertos para cBN Negativo (Múltiples Esquinas) | <b>B98</b>  |
| <b>NU-TPGB</b> | Insertos para cBN Positivo (Múltiples Esquinas) | <b>B100</b> |
| <b>NU-TPGN</b> | Insertos para cBN Positivo (Múltiples Esquinas) | <b>B100</b> |
| <b>NU-TPGW</b> | Insertos para cBN Positivo (Múltiples Esquinas) | <b>B100</b> |
| <b>NU-VBGW</b> | Insertos para cBN Positivo (Múltiples Esquinas) | <b>B100</b> |
| <b>NU-VCGW</b> | Insertos para cBN Positivo (Múltiples Esquinas) | <b>B100</b> |
| <b>NU-VNGA</b> | Insertos para cBN Negativo (Múltiples Esquinas) | <b>B98</b>  |

## O

|                |                                  |             |
|----------------|----------------------------------|-------------|
| <b>OFCN</b>    | Insertos Fresado (Double Mill)   | <b>E13</b>  |
| <b>OFCW</b>    | Insertos Fresado (Double Mill)   | <b>E13</b>  |
| <b>OFKR-MA</b> | Insertos Fresado (Double Mill)   | <b>E13</b>  |
| <b>OFKR-MF</b> | Insertos Fresado (Double Mill)   | <b>E13</b>  |
| <b>OFKR-MM</b> | Insertos Fresado (Double Mill)   | <b>E13</b>  |
| <b>OFKT-MA</b> | Insertos Fresado (Double Mill)   | <b>E13</b>  |
| <b>OFKT-MF</b> | Insertos Fresado (Double Mill)   | <b>E13</b>  |
| <b>OFKT-MM</b> | Insertos Fresado (Double Mill)   | <b>E14</b>  |
| <b>ONHX-MA</b> | Insertos Fresado (Rich Mill)     | <b>E14</b>  |
| <b>ONHX-MF</b> | Insertos Fresado (Rich Mill)     | <b>E14</b>  |
| <b>ONHX-ML</b> | Insertos Fresado (Rich Mill)     | <b>E14</b>  |
| <b>ONHX-MM</b> | Insertos Fresado (Rich Mill)     | <b>E14</b>  |
| <b>ONHX-W</b>  | Insertos Fresado (Rich Mill)     | <b>E14</b>  |
| <b>ONMX-MF</b> | Insertos Fresado (Rich Mill)     | <b>E14</b>  |
| <b>ONMX-MM</b> | Insertos Fresado (Rich Mill)     | <b>E14</b>  |
| <b>ORC</b>     | Cortador O- Ring                 | <b>E334</b> |
| <b>ORG</b>     | Insertos Fresado (O-Ring Cutter) | <b>E14</b>  |

## P

|                   |                              |             |
|-------------------|------------------------------|-------------|
| <b>PAC(M)2000</b> | Pro-A Mill                   | <b>E354</b> |
| <b>PAC(M)4000</b> | Pro-A Mill                   | <b>E354</b> |
| <b>PALCM</b>      | Pro-L Mill                   | <b>E363</b> |
| <b>PALS</b>       | Pro-L Mill (Filo único)      | <b>E364</b> |
| <b>PALS</b>       | Pro-L Mill (Múltiples Filos) | <b>E366</b> |
| <b>PAM2000</b>    | Pro-A Mill                   | <b>E356</b> |
| <b>PAS2000</b>    | Pro-A Mill                   | <b>E355</b> |

## P

|                    |   |             |
|--------------------|---|-------------|
| <b>PAS4000</b>     | Pro-A Mill                                | <b>E355</b> |
| <b>PAVCM-XD19</b>  | Pro-V Mill                                | <b>E368</b> |
| <b>PAVS-XD19</b>   | Pro-V Mill                                | <b>E369</b> |
| <b>PAXC(M)5000</b> | Pro-X Mill                                | <b>E357</b> |
| <b>PAXC(M)6000</b> | Pro-X Mill                                | <b>E358</b> |
| <b>PAXM5000</b>    | Pro-X Mill                                | <b>E361</b> |
| <b>PAXS5000</b>    | Pro-X Mill                                | <b>E359</b> |
| <b>PAXS6000</b>    | Pro-X Mill                                | <b>E360</b> |
| <b>PBAC(M)5000</b> | Power Buster                              | <b>E65</b>  |
| <b>PBE2000</b>     | H Endmill (Esférico)                      | <b>F12</b>  |
| <b>PBPCM6000</b>   | Power Buster                              | <b>E67</b>  |
| <b>PBX100</b>      | Herramienta Cementada (Auto Tool Bits)    | <b>H10</b>  |
| <b>PBZC(M)5000</b> | Power Buster                              | <b>E66</b>  |
| <b>PCBNR/L</b>     | Portainsero (Save Turn)                   | <b>B106</b> |
| <b>PCBNR/L</b>     | Portainsero (Sistema de Palanca)          | <b>B159</b> |
| <b>PCKNR/L</b>     | Portainsero (Sistema de Palanca)          | <b>B159</b> |
| <b>PCLNR</b>       | Portainsero (KHP)                         | <b>B189</b> |
| <b>PCLNR/L</b>     | Portainsero (Save Turn)                   | <b>B106</b> |
| <b>PCLNR/L</b>     | Barras para Interior (Save Turn)          | <b>B109</b> |
| <b>PCLNR/L</b>     | Portainsero (Sistema de Palanca)          | <b>B160</b> |
| <b>PCLNR/L</b>     | Barras para Interior (Sistema de Palanca) | <b>B197</b> |
| <b>PCLNR/L</b>     | Herramienta con Sistema HSK               | <b>B221</b> |
| <b>PCLNR/L</b>     | Herramienta con Sistema KM                | <b>B227</b> |
| <b>PCMNN</b>       | Herramienta con Sistema HSK               | <b>B221</b> |
| <b>PCMNN</b>       | Herramienta con Sistema KM                | <b>B227</b> |
| <b>PDD</b>         | PCD Cortador frontal                      | <b>G103</b> |
| <b>PDE1000</b>     | Endmill (Endmills PCD_ Plano)             | <b>F115</b> |
| <b>PDE2000</b>     | Endmill (Endmills PCD_ Plano)             | <b>F115</b> |
| <b>PDF</b>         | PCD Cortador frontal                      | <b>E141</b> |
| <b>PDJNR</b>       | Portainsero (KHP)                         | <b>B189</b> |
| <b>PDJNR/L</b>     | Portainsero (Save Turn)                   | <b>B106</b> |
| <b>PDJNR/L</b>     | Portainsero (Sistema de Palanca)          | <b>B160</b> |
| <b>PDJNR/L</b>     | Herramienta con Sistema HSK               | <b>B221</b> |
| <b>PDJNR/L</b>     | Herramienta con Sistema KM                | <b>B228</b> |
| <b>PDNNN</b>       | Herramienta con Sistema HSK               | <b>B221</b> |
| <b>PDNNN</b>       | Herramienta con Sistema KM                | <b>B228</b> |
| <b>PDNNR/L</b>     | Portainsero (Save Turn)                   | <b>B107</b> |
| <b>PDNNR/L</b>     | Portainsero (Sistema de Palanca)          | <b>B161</b> |
| <b>PDQNR/L</b>     | Portainsero (Save Turn)                   | <b>B107</b> |
| <b>PDR</b>         | Rima PCD                                  | <b>G119</b> |
| <b>PDSNR/L</b>     | Barras para Interior (Sistema de Palanca) | <b>B197</b> |
| <b>PDUNR/L</b>     | Barras para Interior (Save Turn)          | <b>B109</b> |
| <b>PDUNR/L</b>     | Barras para Interior (Sistema de Palanca) | <b>B198</b> |
| <b>PDZNR/L</b>     | Barras para Interior (Save Turn)          | <b>B110</b> |
| <b>PES2000</b>     | Turbo Mill                                | <b>E58</b>  |



## P

|                       |  |             |
|-----------------------|--|-------------|
| <b>PES3000</b>        | Turbo Mill   | <b>E58</b>  |
| <b>PES4000</b>        | Turbo Mill   | <b>E58</b>  |
| <b>PF(M)4000</b>      | Mill-Max   | <b>E52</b>  |
| <b>PH</b>             | Herramientas multifuncionales (Herramientas para Tronzado)               | <b>C71</b>  |
| <b>PM</b>             | Cen-Mill   | <b>M04</b>  |
| <b>PNEJ</b>           | Cortador Lateral   | <b>E15</b>  |
| <b>PNEJ-C</b>         | Cortador Lateral   | <b>E15</b>  |
| <b>PNH4000</b>        | Cortador de Alto Avance  | <b>E395</b> |
| <b>PNH5000</b>        | Cortador de Alto Avance  | <b>E395</b> |
| <b>POB</b>            | Insertos para Herramientas multifuncionales (Herramientas para Tronzado) | <b>C71</b>  |
| <b>PP(M)4000</b>      | Mill-Max   | <b>M03</b>  |
| <b>PPH4000</b>        | Cortador de Alto Avance  | <b>E396</b> |
| <b>PPN(M)4000</b>     | Mill-Max   | <b>E53</b>  |
| <b>PRDCN</b>          | Portainsero (Sistema de Palanca)   | <b>B162</b> |
| <b>PRDCN</b>          | Herramienta con Sistema HSK  | <b>B222</b> |
| <b>PRE4000</b>        | H Endmill (Radio)  | <b>F13</b>  |
| <b>PRGCR/L</b>        | Portainsero (Sistema de Palanca)   | <b>B162</b> |
| <b>PRGCR/L</b>        | Herramienta con Sistema HSK  | <b>B222</b> |
| <b>PSBNR/L</b>        | Portainsero (Save Turn)  | <b>B107</b> |
| <b>PSBNR/L</b>        | Portainsero (Sistema de Palanca)   | <b>B163</b> |
| <b>PSDNN</b>          | Portainsero (Save Turn)  | <b>B108</b> |
| <b>PSDNN</b>          | Portainsero (Sistema de Palanca)   | <b>B163</b> |
| <b>PSKNR/L</b>        | Portainsero (Save Turn)  | <b>B108</b> |
| <b>PSKNR/L</b>        | Barras para Interior (Save Turn)   | <b>B110</b> |
| <b>PSKNR/L</b>        | Portainsero (Sistema de Palanca)   | <b>B164</b> |
| <b>PSKNR/L</b>        | Barras para Interior (Sistema de Palanca)                                | <b>B199</b> |
| <b>PSSNR</b>          | Portainsero (KHP)  | <b>B189</b> |
| <b>PSSNR/L</b>        | Portainsero (Save Turn)  | <b>B108</b> |
| <b>PSSNR/L</b>        | Portainsero (Sistema de Palanca)   | <b>B164</b> |
| <b>PT</b>             | Tap Series (Macho entrada corregida)                                     | <b>D70</b>  |
| <b>PTFNR/L</b>        | Portainsero (Sistema de Palanca)   | <b>B165</b> |
| <b>PTFNR/L</b>        | Barras para Interior (Sistema de Palanca)                                | <b>B199</b> |
| <b>PTGNR/L</b>        | Portainsero (Sistema de Palanca)   | <b>B165</b> |
| <b>PTTNR/L</b>        | Portainsero (Sistema de Palanca)   | <b>B166</b> |
| <b>Pull Stud Bolt</b> | Herramientales (Pernos de Retención)                                     | <b>I 83</b> |
| <b>PWLNR</b>          | Portainsero (KHP)  | <b>B190</b> |
| <b>PWLNR/L</b>        | Portainsero (Save Turn)  | <b>B109</b> |
| <b>PWLNR/L</b>        | Barras para Interior (Save Turn)   | <b>B110</b> |
| <b>PWLNR/L</b>        | Portainsero (Sistema de Palanca)   | <b>B166</b> |
| <b>PWLNR/L</b>        | Barras para Interior (Sistema de Palanca)                                | <b>B200</b> |
| <b>PXL(S)</b>         | Pro-XL Mill  | <b>E367</b> |

## Q

|             |   |             |
|-------------|---|-------------|
| <b>QCGT</b> | Insertos para Herramientas multifuncionales (Torneado Multiple) | <b>B139</b> |
| <b>QCMT</b> | Insertos para Herramientas multifuncionales (Torneado Multiple) | <b>B139</b> |

## R

|                      |  |             |
|----------------------|--|-------------|
| <b>RAFCEB</b>        | Cortador Lateral (Tipo Radial-Full Cortador Lateral)   | <b>E377</b> |
| <b>RAFCEP</b>        | Cortador Lateral (Tipo Radial-Full Cortador Lateral)   | <b>E377</b> |
| <b>RAHCEB</b>        | Cortador Lateral (Tipo Radial-Cortador Medio)          | <b>E378</b> |
| <b>RAHCEP</b>        | Cortador Lateral (Tipo Radial-Cortador Medio)          | <b>E378</b> |
| <b>RB</b>            | Herramienta Cementada (Placa cuadrada)                 | <b>H05</b>  |
| <b>RC</b>            | Insertos Fresado (BFE)                                 | <b>E15</b>  |
| <b>RCGT-AK</b>       | Insertos para Aluminio_Positivo (Sistema con tornillo) | <b>B93</b>  |
| <b>RCGT-AR</b>       | Insertos para Aluminio_Positivo (Sistema con tornillo) | <b>B93</b>  |
| <b>RCMT-VM</b>       | Insertos para Torneado_Positivo (Sistema de Palanca)   | <b>B74</b>  |
| <b>RCMX</b>          | Insertos para Torneado_Positivo (Sistema de Palanca)   | <b>B74</b>  |
| <b>RDC</b>           | Herramientales (Sistema Modular)                       | <b>I 73</b> |
| <b>RDCT-MA</b>       | Insertos Fresado (Future Mill)                         | <b>E15</b>  |
| <b>RDHW</b>          | Insertos Fresado (Future Mill)                         | <b>E15</b>  |
| <b>RDKT-MF</b>       | Insertos Fresado (Future Mill)                         | <b>E15</b>  |
| <b>RDKT-ML</b>       | Insertos Fresado (Future Mill)                         | <b>E16</b>  |
| <b>RDKT-MM</b>       | Insertos Fresado (Future Mill)                         | <b>E16</b>  |
| <b>RDKW</b>          | Insertos Fresado (Future Mill)                         | <b>E16</b>  |
| <b>REKR-MM</b>       | Insertos Fresado (Double Mill)                         | <b>E16</b>  |
| <b>RI</b>            | Brocas (Rimas Indexables de Placa)                     | <b>G113</b> |
| <b>RM16AC(M)6000</b> | Rich Mill  | <b>E130</b> |
| <b>RM16AC(M)8000</b> | Rich Mill  | <b>E131</b> |
| <b>RM3PC(M)3000</b>  | Rich Mill  | <b>E89</b>  |
| <b>RM3PC(M)4000</b>  | Rich Mill  | <b>E90</b>  |
| <b>RM3PC(M)5000</b>  | Rich Mill  | <b>E91</b>  |
| <b>RM3PM3000</b>     | Rich Mill  | <b>E94</b>  |
| <b>RM3PM4000</b>     | Rich Mill  | <b>E94</b>  |
| <b>RM3PS3000</b>     | Rich Mill  | <b>E92</b>  |
| <b>RM3PS4000</b>     | Rich Mill  | <b>E93</b>  |
| <b>RM4PC(M)3000</b>  | Rich Mill  | <b>E95</b>  |
| <b>RM4PC(M)4000</b>  | Rich Mill  | <b>E96</b>  |
| <b>RM4PFCB3000</b>   | Rich Mill  | <b>E97</b>  |
| <b>RM4PFCB4000</b>   | Rich Mill  | <b>E98</b>  |
| <b>RM4PFCP3000</b>   | Rich Mill  | <b>E101</b> |
| <b>RM4PFCP4000</b>   | Rich Mill  | <b>E102</b> |
| <b>RM4PHCB3000</b>   | Rich Mill  | <b>E99</b>  |
| <b>RM4PHCB4000</b>   | Rich Mill  | <b>E100</b> |
| <b>RM4PHCP3000</b>   | Rich Mill  | <b>E103</b> |
| <b>RM4PHCP4000</b>   | Rich Mill  | <b>E104</b> |
| <b>RM4PM3000</b>     | Rich Mill  | <b>E107</b> |
| <b>RM4PS3000</b>     | Rich Mill  | <b>E105</b> |

# N Índice por denominación

## R

|                      |   |                |
|----------------------|---|----------------|
| <b>RM4PS4000</b>     | Rich Mill   | <b>E106</b>    |
| <b>RM4ZC(M)3000</b>  | Rich Mill   | <b>E108</b>    |
| <b>RM4ZC(M)4000</b>  | Rich Mill   | <b>E108</b>    |
| <b>RM4ZM3000</b>     | Rich Mill   | <b>E109</b>    |
| <b>RM4ZS3000</b>     | Rich Mill   | <b>E109</b>    |
| <b>RM6PC(M)-WN08</b> | Rich Mill   | <b>E111</b>    |
| <b>RM6PCM-WN04</b>   | Rich Mill   | <b>E110</b>    |
| <b>RM6PM</b>         | Rich Mill   | <b>E114</b>    |
| <b>RM6PS-WN04</b>    | Rich Mill   | <b>E112</b>    |
| <b>RM6PS-WN08</b>    | Rich Mill   | <b>E113</b>    |
| <b>RM8AC(M)4000</b>  | Rich Mill   | <b>E115</b>    |
| <b>RM8AC(M)5000</b>  | Rich Mill   | <b>E117</b>    |
| <b>RM8EC(M)4000</b>  | Rich Mill   | <b>E119</b>    |
| <b>RM8EC(M)5000</b>  | Rich Mill   | <b>E121</b>    |
| <b>RM8QC(M)4000</b>  | Rich Mill   | <b>E123</b>    |
| <b>RMH8AC(M)4000</b> | Rich Mill   | <b>E116</b>    |
| <b>RMH8AC(M)5000</b> | Rich Mill   | <b>E118</b>    |
| <b>RMH8EC(M)4000</b> | Rich Mill   | <b>E120</b>    |
| <b>RMH8EC(M)5000</b> | Rich Mill   | <b>E122</b>    |
| <b>RMH8QC(M)4000</b> | Rich Mill   | <b>E124</b>    |
| <b>RMT8A(M)4000</b>  | Rich Mill   | <b>E125</b>    |
| <b>RMT8A(M)5000</b>  | Rich Mill   | <b>E126</b>    |
| <b>RMT8E(M)4000</b>  | Rich Mill   | <b>E127</b>    |
| <b>RMT8E(M)5000</b>  | Rich Mill   | <b>E128</b>    |
| <b>RMT8Q(M)4000</b>  | Rich Mill   | <b>E129</b>    |
| <b>RNMG-B25</b>      | Insertos para Torneado_Negativo   | <b>B43</b>     |
| <b>RPAE</b>          | R+ Endmill (Filo dentado para desbaste de aluminio)                         | <b>F97</b>     |
| <b>RPAE3000</b>      | R+ Endmill (Desbaste)   | <b>F113</b>    |
| <b>RPCT-MA</b>       | Insertos Fresado (Future Mill P-Positive)                                   | <b>E16</b>     |
| <b>RPE-FF</b>        | R+ Endmill (Fresa enteriza de paso estrecho para desbaste)                  | <b>F100</b>    |
| <b>RPE-FP</b>        | R+ Endmill (Fresa enteriza de paso estrecho para desbaste)                  | <b>F101</b>    |
| <b>RPE-FP-H</b>      | R+ Endmill (Fresa enteriza de paso estrecho para desbaste)                  | <b>F97</b>     |
| <b>RPE-FP-L</b>      | R+ Endmill (Fresa enteriza de paso estrecho para desbaste)                  | <b>F99</b>     |
| <b>RPE-RG</b>        | R+ Endmill (Fresa enteriza de cuatro fillos de corte para desbaste)         | <b>F100</b>    |
| <b>RPE-RG</b>        | R+ Endmill (Fresa enteriza de desbaste)                                     | <b>F102</b>    |
| <b>RPE-RG</b>        | R+ Endmill (Fresa enteriza estándar para desbaste)                          | <b>F99</b>     |
| <b>RPET-ML</b>       | Insertos Fresado (Future Mill P-Positive)                                   | <b>E16</b>     |
| <b>RPE-XG</b>        | R+ Endmill (Fresa enteriza para acabado y desbaste)                         | <b>F98</b>     |
| <b>RPLE-FP-H</b>     | R+ Endmill (Fresa enteriza de vástago largo de paso estrecho para desbaste) | <b>F98</b>     |
| <b>RPMT-MF</b>       | Insertos Fresado (Future Mill P-Positive)                                   | <b>E16</b>     |
| <b>RPMT-MM</b>       | Insertos Fresado (Future Mill P-Positive)                                   | <b>E16</b>     |
| <b>RPMW</b>          | Insertos Fresado (Future Mill P-Positive)                                   | <b>E16</b>     |
| <b>RT</b>            | Tap Series (Macho de laminación)  | <b>D67, 72</b> |
| <b>RT</b>            | Herramienta Cementada (Anillos)   | <b>H07</b>     |

## S

|                 |   |                |
|-----------------|---|----------------|
| <b>SBBR/L</b>   | Insertos (Auto Tools, Tipo Blade)                         | <b>B122</b>    |
| <b>SBCR/L</b>   | Insertos (Auto Tools, Tipo Blade)                         | <b>B123</b>    |
| <b>SBGR/L</b>   | Insertos (Auto Tools, Tipo Blade)                         | <b>B122</b>    |
| <b>SBHR/L</b>   | Portainsero (Auto Tools, Tipo Blade)                      | <b>B122</b>    |
| <b>SBHR/L-X</b> | Portainsero (Auto Tools, Tipo Blade)                      | <b>B122</b>    |
| <b>SBR/L</b>    | Insertos (Herramientas para Torno Automático Tipo FG T)   | <b>B125</b>    |
| <b>SBTR/L</b>   | Insertos (Auto Tools, Tipo Blade)                         | <b>B122</b>    |
| <b>SC</b>       | Herramientales (Limpiador de husillo)                     | <b>I 82</b>    |
| <b>SCACR/L</b>  | Portainsero (Herramientas para Torno Automático Tipo ISO) | <b>B113</b>    |
| <b>SCACR/L</b>  | Portainsero (Sistema con tornillo)                        | <b>B178</b>    |
| <b>SCGT-AK</b>  | Insertos para Aluminio_Positivo (Sistema con tornillo)    | <b>B94</b>     |
| <b>SCGT-AR</b>  | Insertos para Aluminio_Positivo (Sistema con tornillo)    | <b>B94</b>     |
| <b>SCKN</b>     | Insertos Fresado (Mill Max Heavy)                         | <b>E17</b>     |
| <b>SCLCR/L</b>  | Portainsero (Herramientas para Torno Automático Tipo ISO) | <b>B113</b>    |
| <b>SCLCR/L</b>  | Portainsero (Auto Tools_KHP)                              | <b>B118</b>    |
| <b>SCLCR/L</b>  | Portainsero (Sistema con tornillo)                        | <b>B178</b>    |
| <b>SCLCR/L</b>  | Barras para Interior (Sistema con tornillo)               | <b>B204</b>    |
| <b>SCLCR/L</b>  | Barras Compactas  | <b>B214</b>    |
| <b>SCLPR/L</b>  | Barras para Interior (Sistema con tornillo)               | <b>B205</b>    |
| <b>SCMT</b>     | Insertos PCD_Positivo                                     | <b>B102</b>    |
| <b>SCMT-C25</b> | Insertos para Torneado_Positivo (Sistema con tornillo)    | <b>B75</b>     |
| <b>SCMT-HMP</b> | Insertos para Torneado_Positivo (Sistema con tornillo)    | <b>B75</b>     |
| <b>SCMT-MP</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)    | <b>B75</b>     |
| <b>SCMT-VF</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)    | <b>B74</b>     |
| <b>SCMT-VL</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)    | <b>B75</b>     |
| <b>SCR/L</b>    | Insertos (Herramientas para Torno Automático Tipo FG T)   | <b>B125</b>    |
| <b>SCRH</b>     | Drill (Rimas para Cono)                                   | <b>G117</b>    |
| <b>SCRS</b>     | Drill (Rimas para Cono)                                   | <b>G117</b>    |
| <b>SDACR/L</b>  | Portainsero (Sistema con tornillo)                        | <b>B178</b>    |
| <b>SDC</b>      | Herramientales (Serie SDC)                                | <b>I 24~28</b> |
| <b>SDCN</b>     | Insertos Fresado (Mill-max, Cortador de Alto Avance)      | <b>E17</b>     |
| <b>SDET-MA</b>  | Insertos Fresado (Future Mill)                            | <b>E17</b>     |
| <b>SDET-MF</b>  | Insertos Fresado (Future Mill)                            | <b>E17</b>     |
| <b>SDET-MM</b>  | Insertos Fresado (Future Mill)                            | <b>E17</b>     |
| <b>SDJCR/L</b>  | Portainsero (Herramientas para Torno Automático Tipo ISO) | <b>B113</b>    |
| <b>SDJCR/L</b>  | Portainsero (Auto Tools-KHP)                              | <b>B118</b>    |
| <b>SDJCR/L</b>  | Portainsero (Sistema con tornillo)                        | <b>B179</b>    |
| <b>SDKN-CM</b>  | Insertos Fresado (Mill-Max)                               | <b>E17</b>     |
| <b>SDKN-MU</b>  | Insertos Fresado (Mill-Max)                               | <b>E18</b>     |
| <b>SDKN-SU</b>  | Insertos Fresado (Mill-Max, Turbo Mill)                   | <b>E18</b>     |
| <b>SDKR-MX</b>  | Insertos Fresado (Mill-Max, Turbo Mill)                   | <b>E18</b>     |
| <b>SDMT-MM</b>  | Insertos Fresado (Tank Mill, GBE)                         | <b>E18</b>     |
| <b>SDNCN</b>    | Portainsero (Herramientas para Torno Automático Tipo ISO) | <b>B114</b>    |
| <b>SDNCN</b>    | Portainsero (Sistema con tornillo)                        | <b>B179</b>    |
| <b>SDQCR/L</b>  | Barras para Interior (Sistema con tornillo)               | <b>B206</b>    |



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|                 |  |                |
|-----------------|--|----------------|
| <b>SDUCR/L</b>  | Barras para Interior (Sistema con tornillo)            | <b>B207</b>    |
| <b>SDXT-MA</b>  | Insertos Fresado (Future Mill)                         | <b>E18</b>     |
| <b>SDXT-MF</b>  | Insertos Fresado (Future Mill)                         | <b>E18</b>     |
| <b>SDXT-MM</b>  | Insertos Fresado (Future Mill)                         | <b>E18</b>     |
| <b>SDZCR/L</b>  | Barras para Interior (Sistema con tornillo)            | <b>B208</b>    |
| <b>SE</b>       | Cen-mill   | <b>M04</b>     |
| <b>SECA</b>     | Insertos Fresado                                       | <b>E18</b>     |
| <b>SECN</b>     | Insertos Fresado (Mill-Max)                            | <b>E19</b>     |
| <b>SEET-MA</b>  | Insertos Fresado (Future Mill)                         | <b>E19</b>     |
| <b>SEET-MF</b>  | Insertos Fresado (Future Mill)                         | <b>E19</b>     |
| <b>SEET-MM</b>  | Insertos Fresado (Future Mill)                         | <b>E19</b>     |
| <b>SEEW</b>     | Insertos Fresado (Future Mill)                         | <b>E19</b>     |
| <b>SEEW-W</b>   | Insertos Fresado (Future Mill)                         | <b>E19</b>     |
| <b>SEKN-SU</b>  | Insertos Fresado (Mill-Max)                            | <b>E19</b>     |
| <b>SEKR-MX</b>  | Insertos Fresado (Mill-Max)                            | <b>E20</b>     |
| <b>SEMN</b>     | Insertos Fresado (Mill-Max)                            | <b>E20</b>     |
| <b>SEXT-MF</b>  | Insertos Fresado (Future Mill)                         | <b>E20</b>     |
| <b>SEXT-MM</b>  | Insertos Fresado (Future Mill)                         | <b>E20</b>     |
| <b>SEXT-MR</b>  | Insertos Fresado (Future Mill)                         | <b>E20</b>     |
| <b>SFCN</b>     | Insertos Fresado (Mill-Max)                            | <b>E20</b>     |
| <b>SGBR/L</b>   | Insertos (Herramientas para Torno Automático Tipo FGT) | <b>B126</b>    |
| <b>SGR/L</b>    | Insertos (Herramientas para Torno Automático Tipo FGT) | <b>B126</b>    |
| <b>SK-FMC</b>   | Herramientales (Damping pro)                           | <b>I 80</b>    |
| <b>SL</b>       | Mangas   | <b>B136</b>    |
| <b>SLA</b>      | Herramientales (Serie SLA)                             | <b>I 44~45</b> |
| <b>SMB</b>      | Herramientales (SMB)                                   | <b>I 67</b>    |
| <b>SMBB</b>     | Herramientales multifuncionales(Saw Man_ Block)        | <b>C60</b>     |
| <b>SMBB</b>     | Herramientales multifuncionales(Saw Man-X_ Block)      | <b>C64</b>     |
| <b>SMH</b>      | Herramientales (SMH)                                   | <b>I 68</b>    |
| <b>SNCF-MF</b>  | Insertos Fresado (Rich Mill)                           | <b>E20</b>     |
| <b>SNCF-MM</b>  | Insertos Fresado (Rich Mill)                           | <b>E21</b>     |
| <b>SNCN</b>     | Insertos Fresado (Mill-max, Cortador de Alto Avance)   | <b>E21</b>     |
| <b>SNEF</b>     | Insertos Fresado (Cortador de Alto Avance)             | <b>E21</b>     |
| <b>SNEU-MF</b>  | Insertos Fresado (Shave Mill)                          | <b>E21</b>     |
| <b>SNEU-TBW</b> | Insertos Fresado (Shave Mill)                          | <b>E22</b>     |
| <b>SNEU-WMF</b> | Insertos Fresado (Shave Mill)                          | <b>E22</b>     |
| <b>SNEW</b>     | Insertos Fresado (Aero Mill-Mini)                      | <b>E22</b>     |
| <b>SNEW-NAF</b> | Insertos Fresado (Aero Mill-Mini)                      | <b>E22</b>     |
| <b>SNEW-XAF</b> | Insertos Fresado (Aero Mill-Mini)                      | <b>E22</b>     |
| <b>SNEX</b>     | Insertos Fresado (Cube Mill)                           | <b>E22</b>     |
| <b>SNEX-CU1</b> | Insertos Fresado (Cube Mill)                           | <b>E22</b>     |
| <b>SNEX-MA</b>  | Insertos Fresado (Rich Mill)                           | <b>E22</b>     |
| <b>SNEX-MF</b>  | Insertos Fresado (Rich Mill)                           | <b>E23</b>     |
| <b>SNEX-ML</b>  | Insertos Fresado (Rich Mill)                           | <b>E22</b>     |
| <b>SNEX-MM</b>  | Insertos Fresado (Rich Mill)                           | <b>E23</b>     |

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|                 |  |             |
|-----------------|--|-------------|
| <b>SNEX-W</b>   | Insertos Fresado (Rich Mill)   | <b>E24</b>  |
| <b>SNGA</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B44</b>  |
| <b>SNGG</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B44</b>  |
| <b>SNGG-VP3</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B44</b>  |
| <b>SNGN</b>     | Insertos para Torneado_Negativo (Porta Cerámico)                           | <b>B45</b>  |
| <b>SNGX</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B45</b>  |
| <b>SNHT-WX</b>  | Insertos Fresado (Wind Mill)   | <b>E23</b>  |
| <b>SNKN</b>     | Insertos Fresado (Mill-Max)  | <b>E23</b>  |
| <b>SNMA</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B45</b>  |
| <b>SNMA</b>     | cBN Insert_Negativo(Regrinding)  | <b>B101</b> |
| <b>SNMF-MF</b>  | Insertos Fresado (Rich Mill)   | <b>E20</b>  |
| <b>SNMF-MM</b>  | Insertos Fresado (Rich Mill)   | <b>E21</b>  |
| <b>SNMG-B25</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B49</b>  |
| <b>SNMG-GR</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B49</b>  |
| <b>SNMG-HA</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B46</b>  |
| <b>SNMG-HM</b>  | Insertos para Torneado_Negativo  | <b>B47</b>  |
| <b>SNMG-LP</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B46</b>  |
| <b>SNMG-MK</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B47</b>  |
| <b>SNMG-MM</b>  | Insertos para Torneado (SaveE Turn)  | <b>B105</b> |
| <b>SNMG-MM</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B47</b>  |
| <b>SNMG-MP</b>  | Insertos para Torneado (SaveE Turn)  | <b>B105</b> |
| <b>SNMG-MP</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B48</b>  |
| <b>SNMG-RK</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B49</b>  |
| <b>SNMG-RM</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B50</b>  |
| <b>SNMG-VB</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B46</b>  |
| <b>SNMG-VC</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B46</b>  |
| <b>SNMG-VF</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B46</b>  |
| <b>SNMG-VL</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B46</b>  |
| <b>SNMG-VM</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B48</b>  |
| <b>SNMG-VP2</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B46</b>  |
| <b>SNMG-VP3</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B48</b>  |
| <b>SNMG-VP4</b> | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B50</b>  |
| <b>SNMG-VQ</b>  | Insertos para Torneado (Save Turn)   | <b>B105</b> |
| <b>SNMG-VQ</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B47</b>  |
| <b>SNMG-VR</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B50</b>  |
| <b>SNMM-GH</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B51</b>  |
| <b>SNMM-GR</b>  | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B50</b>  |
| <b>SNMM-VH</b>  | Insertos para Torneado_Negativo (Sistema de Palanca)                       | <b>B51</b>  |
| <b>SNMM-VT</b>  | Insertos para Torneado_Negativo (Sistema de Palanca)                       | <b>B51</b>  |
| <b>SNMN</b>     | Insertos para Torneado_Negativo (Ceramic Holde)                            | <b>B52</b>  |
| <b>SNMX</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe / Sistema de Palanca) | <b>B52</b>  |
| <b>SNMX-MF</b>  | Insertos Fresado (Rich Mill)   | <b>E23</b>  |
| <b>SNMX-MM</b>  | Insertos Fresado (Rich Mill)   | <b>E23</b>  |
| <b>SNUN</b>     | Insertos para Torneado_Negativo (Porta Cerámico)                           | <b>B52</b>  |
| <b>SP</b>       | Insertos para Herramientales multifuncionales (Solución en Rodamientos)    | <b>B146</b> |

# N Índice por denominación

## S

|                    |   |                |
|--------------------|---|----------------|
| <b>SP</b>          | Insertos para Herramientas multifuncionales (Saw Man)   | <b>C59</b>     |
| <b>SP</b>          | Tap series (Macho helicoidal)                           | <b>D66, 71</b> |
| <b>SPB</b>         | Herramientas multifuncionales (Saw Man_Bloque)          | <b>C60</b>     |
| <b>SPB(M)</b>      | Cortador Lateral  | <b>E380</b>    |
| <b>SPB-S</b>       | Herramientas multifuncionales (Solución en Rodamientos) | <b>B146</b>    |
| <b>SPB-S</b>       | Herramientas multifuncionales (Saw Man_Bloque)          | <b>C60</b>     |
| <b>SPCN</b>        | Insertos Fresado (Mill-Max)                             | <b>E24</b>     |
| <b>SPD</b>         | SPD   | <b>M04</b>     |
| <b>SPEN-WC</b>     | Insertos Fresado (Shave Mill Ultra)                     | <b>E24</b>     |
| <b>SPET-ND</b>     | Inserto de Brocas                                       | <b>G04</b>     |
| <b>SPEX</b>        | Insertos Fresado  | <b>E24</b>     |
| <b>SPFE4000</b>    | S+ Endmill (Plano)                                      | <b>F91</b>     |
| <b>SPFN</b>        | Insertos Fresado (Cortador Lateral)                     | <b>E25</b>     |
| <b>SPGA</b>        | Insertos para Torneado_Positivo                         | <b>B76</b>     |
| <b>SPGH</b>        | Herramientas multifuncionales (Solución en Rodamientos) | <b>B143</b>    |
| <b>SPGN</b>        | Insertos para Torneado_Positivo                         | <b>B103</b>    |
| <b>SPGN</b>        | Insertos PCD_Positivo                                   | <b>B76</b>     |
| <b>SPGR</b>        | Herramientas multifuncionales (Solución en Rodamientos) | <b>B143</b>    |
| <b>SPGR-F</b>      | Insertos para Torneado_Positivo (Sistema de Brida)      | <b>B76</b>     |
| <b>SPGR-M</b>      | Insertos para Torneado_Positivo (Sistema de Brida)      | <b>B77</b>     |
| <b>SPGT</b>        | Insertos para Torneado_Positivo (Sistema con tornillo)  | <b>B77</b>     |
| <b>SPGW</b>        | Insertos PCD_Positivo                                   | <b>B102</b>    |
| <b>SPH</b>         | Herramientas multifuncionales (Saw Man_Portainsero)     | <b>C61</b>     |
| <b>SPH-S</b>       | Herramientas multifuncionales (Saw Man_Portainsero)     | <b>C61</b>     |
| <b>SPKN-MU</b>     | Insertos Fresado (Mill-Max)                             | <b>E25</b>     |
| <b>SPKN-SU</b>     | Insertos Fresado (Mill-Max)                             | <b>E25</b>     |
| <b>SPKR-MX</b>     | Insertos Fresado (Mill-Max)                             | <b>E25</b>     |
| <b>SPLFE4000</b>   | S+ Endmill (Plano Largo)                                | <b>F91</b>     |
| <b>SPMN</b>        | Insertos Fresado (Herramienta para Chafán)              | <b>E25</b>     |
| <b>SPMR-F</b>      | Insertos para Torneado_Positivo (Sistema de Brida)      | <b>B77</b>     |
| <b>SPMR-M</b>      | Insertos para Torneado_Positivo (Sistema de Brida)      | <b>B77</b>     |
| <b>SPMT</b>        | Insertos Fresado (Tank Mill, GBE, Herramentales BT)     | <b>E25</b>     |
| <b>SPMT-KC</b>     | Insertos Fresado (Herramienta para Chafán)              | <b>E25</b>     |
| <b>SPMT-LD</b>     | Inserto de Brocas                                       | <b>G04</b>     |
| <b>SPMT-MM</b>     | Insertos Fresado (Tank Mill, GBE)                       | <b>E25</b>     |
| <b>SPMT-PD</b>     | Inserto de Brocas (KING DRILL)                          | <b>G04</b>     |
| <b>SPMT-VF</b>     | Insertos para Torneado_Positivo (Sistema de Brida)      | <b>B77</b>     |
| <b>SPMT-VL</b>     | Insertos para Torneado_Positivo                         | <b>B77</b>     |
| <b>SPP(M)</b>      | Cortador Lateral  | <b>E379</b>    |
| <b>SPS</b>         | Cortador Lateral  | <b>E381</b>    |
| <b>SPUN</b>        | Insertos para Torneado_Positivo                         | <b>B77</b>     |
| <b>SR</b>          | Tap series (Macho de laminación helicoidal)             | <b>D68, 73</b> |
| <b>SR</b>          | Herramienta Cementada (Barra Redonda)                   | <b>H07</b>     |
| <b>SRCPR/L...B</b> | Solución en Rodamientos                                 | <b>B142</b>    |
| <b>SRDCN</b>       | Portainsero (Sistema con tornillo)                      | <b>B179</b>    |

## S

|                    |   |                |
|--------------------|---|----------------|
| <b>SRES4000</b>    | Super Endmill (Radio)                                     | <b>F46~50</b>  |
| <b>SRGCR</b>       | Portainsero (KHP)   | <b>B190</b>    |
| <b>SRGCR/L</b>     | Portainsero (Sistema con tornillo)                        | <b>B180</b>    |
| <b>SRGPR/L...E</b> | Solución en Rodamientos                                   | <b>B142</b>    |
| <b>SRGPR/L...F</b> | Solución en Rodamientos                                   | <b>B142</b>    |
| <b>SSBCR/L</b>     | Portainsero (Sistema con tornillo)                        | <b>B180</b>    |
| <b>SSBEA2000</b>   | Endmill (Endmills para Aluminio_Esférico)                 | <b>F39</b>     |
| <b>SSDCN</b>       | Portainsero (Sistema con tornillo)                        | <b>B180</b>    |
| <b>SSDP</b>        | Brocas de Carburo (SSDP)                                  | <b>G99~100</b> |
| <b>SSEA2000</b>    | Endmill (Endmills para Aluminio_Plano)                    | <b>F38</b>     |
| <b>SSEA3000</b>    | Endmill (Endmills para Aluminio_Plano)                    | <b>F38</b>     |
| <b>SSKCR/L</b>     | Portainsero (Sistema con tornillo)                        | <b>B181</b>    |
| <b>SSKCR/L</b>     | Barras para Interior (Sistema con tornillo)               | <b>B208</b>    |
| <b>SSKCR/L</b>     | Cartuchos (Sistema con tornillo)                          | <b>B234</b>    |
| <b>SSKPR/L</b>     | Barras para Interior (Sistema con tornillo)               | <b>B208</b>    |
| <b>SSKPR/L...B</b> | Solución en Rodamientos                                   | <b>B143</b>    |
| <b>SSSCR/L</b>     | Portainsero (Sistema con tornillo)                        | <b>B181</b>    |
| <b>SSSCR/L</b>     | Cartuchos (Sistema con tornillo)                          | <b>B234</b>    |
| <b>ST</b>          | Tap series (Macho recto)                                  | <b>D65, 69</b> |
| <b>ST</b>          | Herramienta Cementada (Helices)                           | <b>H08</b>     |
| <b>STACR/L</b>     | Portainsero (Herramientas para Torno Automático Tipo ISO) | <b>B114</b>    |
| <b>STACR/L</b>     | Portainsero (Sistema con tornillo)                        | <b>B181</b>    |
| <b>STFCR/L</b>     | Portainsero (Sistema con tornillo)                        | <b>B182</b>    |
| <b>STFCR/L</b>     | Barras para Interior (Sistema con tornillo)               | <b>B209</b>    |
| <b>STFCR/L</b>     | Cartuchos (Sistema con tornillo)                          | <b>B234</b>    |
| <b>STFPR/L</b>     | Barras para Interior (Sistema con tornillo)               | <b>B210</b>    |
| <b>STGCR/L</b>     | Portainsero (Sistema con tornillo)                        | <b>B182</b>    |
| <b>STLBR/L</b>     | Barras Compactas  | <b>B214</b>    |
| <b>STMD2L</b>      | Endmills Roscado en Fresado (ISO Métrico / UN)            | <b>D59~60</b>  |
| <b>STMD3T</b>      | Endmills Roscado en Fresado (ISO Métrico / UN)            | <b>D57~58</b>  |
| <b>STMHC</b>       | Endmills Roscado en Fresado (ISO Métrico)                 | <b>D51~54</b>  |
| <b>STMHCC</b>      | Endmills Roscado en Fresado (ISO Métrico)                 | <b>D55</b>     |
| <b>STMHCD</b>      | Endmills Roscado en Fresado (ISO Métrico)                 | <b>D56</b>     |
| <b>STMHCR</b>      | Endmills Roscado en Fresado (ISO Métrico)                 | <b>D55</b>     |
| <b>STR/L</b>       | Insertos (Herramientas para Torno Automático Tipo FGT)    | <b>B126</b>    |
| <b>STTCR/L</b>     | Portainsero (Sistema con tornillo)                        | <b>B182</b>    |
| <b>STTCR/L</b>     | Cartuchos (Sistema con tornillo)                          | <b>B235</b>    |
| <b>STUBR/L</b>     | Barras Compactas  | <b>B214</b>    |
| <b>STUPR/L</b>     | Barras Compactas  | <b>B215</b>    |
| <b>STWCR/L</b>     | Cartuchos (Sistema con tornillo)                          | <b>B235</b>    |
| <b>STWPR/L</b>     | Barras para Interior (Sistema con tornillo)               | <b>B211</b>    |
| <b>SVABR/L</b>     | Portainsero (Sistema con tornillo)                        | <b>B183</b>    |
| <b>SVACR/L</b>     | Portainsero (Herramientas para Torno Automático Tipo ISO) | <b>B114</b>    |
| <b>SVAPR/L</b>     | Portainsero (Herramientas para Torno Automático Tipo ISO) | <b>B115</b>    |
| <b>SVHBR/L</b>     | Portainsero (Sistema con tornillo)                        | <b>B183</b>    |





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|-------------------|---|-------------|
| <b>SVJBR</b>      | Portainsero (KHP)   | <b>B190</b> |
| <b>SVJBR/L</b>    | Portainsero (Herramientas para Torno Automático Tipo ISO) | <b>B115</b> |
| <b>SVJBR/L</b>    | Portainsero (Sistema con tornillo)                        | <b>B183</b> |
| <b>SVJCR/L</b>    | Portainsero (Herramientas para Torno Automático Tipo ISO) | <b>B115</b> |
| <b>SVJCR/L</b>    | Portainsero (Auto Tools-KHP)                              | <b>B118</b> |
| <b>SVJCR/L</b>    | Portainsero (Sistema con tornillo)                        | <b>B184</b> |
| <b>SVJCR/L</b>    | Barras para Interior (Sistema con tornillo)               | <b>B211</b> |
| <b>SVJPR/L</b>    | Portainsero (Herramientas para Torno Automático Tipo ISO) | <b>B116</b> |
| <b>SVM4000</b>    | Shave Mill  | <b>E397</b> |
| <b>SVM4000</b>    | Shave Mill  | <b>E397</b> |
| <b>SVPBR/L</b>    | Herramienta con Sistema HSK                               | <b>B222</b> |
| <b>SVQBR/L</b>    | Barras para Interior (Sistema con tornillo)               | <b>B211</b> |
| <b>SVQCR/L</b>    | Barras para Interior (Sistema con tornillo)               | <b>B212</b> |
| <b>SVUBR/L</b>    | Barras para Interior (Sistema con tornillo)               | <b>B212</b> |
| <b>SVUCR/L</b>    | Barras para Interior (Sistema con tornillo)               | <b>B212</b> |
| <b>SVUM6000</b>   | Shave Mill Ultra  | <b>E398</b> |
| <b>SVUM6000-B</b> | Shave Mill Ultra  | <b>E399</b> |
| <b>SVVBN</b>      | Portainsero (Sistema con tornillo)                        | <b>B184</b> |
| <b>SVVBN</b>      | Herramienta con Sistema HSK                               | <b>B222</b> |
| <b>SVVCN</b>      | Portainsero (Sistema con tornillo)                        | <b>B184</b> |
| <b>SVVPN</b>      | Portainsero (Herramientas para Torno Automático Tipo ISO) | <b>B116</b> |
| <b>SWLCR/L</b>    | Barras para Interior (Sistema con tornillo)               | <b>B213</b> |
| <b>SWUBR/L</b>    | Barras Compactas  | <b>B216</b> |
| <b>SXGNR/L</b>    | Portainsero (Herramientas para Torno Automático Tipo FG1) | <b>B125</b> |

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|-----------------|--|---------------|
| <b>TAFCB</b>    | Cortador Lateral (Tipo Tangencial-Full Cortador Lateral)                 | <b>E375</b>   |
| <b>TAFCP</b>    | Cortador Lateral (Tipo Tangencial-Full Cortador Lateral)                 | <b>E375</b>   |
| <b>TAHCB</b>    | Cortador Lateral (Tipo Tangencial-Cortador Medio)                        | <b>E376</b>   |
| <b>TAHCP</b>    | Cortador Lateral (Tipo Tangencial-Cortador Medio)                        | <b>E376</b>   |
| <b>TB</b>       | Insertos para Herramientas multifuncionales (Herramientas para Ranurado) | <b>C49~52</b> |
| <b>TB</b>       | Herramienta Cementada (Taper bits)                                       | <b>H13</b>    |
| <b>TBC</b>      | Herramientales (TBC)   | <b>I 63</b>   |
| <b>TBGT</b>     | Insertos para Torneado_Positivo (Barras Compactas)                       | <b>B78</b>    |
| <b>TBGW</b>     | Insertos PCD_Positivo  | <b>B103</b>   |
| <b>TBH</b>      | Herramientas multifuncionales (Herramientas para Ranurado)               | <b>C53</b>    |
| <b>TB-M</b>     | Insertos para Herramientas multifuncionales (Herramientas para Ranurado) | <b>C49~52</b> |
| <b>TBMT-VL</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)                   | <b>B78</b>    |
| <b>TC</b>       | Herramientales   | <b>I 21</b>   |
| <b>TCA</b>      | Herramientales (Adaptador para Machuelo)                                 | <b>I 42</b>   |
| <b>TCGT-AK</b>  | Insertos para Aluminio_Positivo (Sistema con tornillo)                   | <b>B95</b>    |
| <b>TCGT-AR</b>  | Insertos para Aluminio_Positivo (Sistema con tornillo)                   | <b>B95</b>    |
| <b>TCGT-KF</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)                   | <b>B79</b>    |
| <b>TCGT-VP1</b> | Insertos para Torneado_Positivo (Sistema con tornillo)                   | <b>B79</b>    |

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| <b>TCMT</b>     | Insertos PCD_Positivo   | <b>B103</b>   |
| <b>TCMT-C25</b> | Insertos para Torneado_Positivo (Sistema con tornillo)  | <b>B80</b>    |
| <b>TCMT-HMP</b> | Insertos para Torneado_Positivo (Sistema con tornillo)  | <b>B79</b>    |
| <b>TCMT-MP</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)  | <b>B80</b>    |
| <b>TCMT-VF</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)  | <b>B79</b>    |
| <b>TCMT-VL</b>  | Insertos para Torneado_Positivo (Sistema con tornillo)  | <b>B79</b>    |
| <b>TCMT-VP1</b> | Insertos para Torneado_Positivo (Sistema con tornillo)  | <b>B79</b>    |
| <b>T-CNMA</b>   | cBN Insert_Negative(Regrinding)   | <b>B101</b>   |
| <b>TCRS</b>     | Drill (Chucking Reamer)   | <b>G118</b>   |
| <b>T-DCGW</b>   | Insertos para cBN_Positivo(Reafilables)   | <b>B101</b>   |
| <b>TEC(E)N</b>  | Insertos Fresado (Turbo Mill)   | <b>E26</b>    |
| <b>TEEN</b>     | Insertos Fresado (Turbo Mill)   | <b>E26</b>    |
| <b>TER</b>      | TER adaptador para machos   | <b>I 43</b>   |
| <b>TFCN</b>     | Insertos Fresado (Mill-Max)   | <b>E26</b>    |
| <b>TFE</b>      | Cortador-T  | <b>E343</b>   |
| <b>THE</b>      | Tank Mill   | <b>E299</b>   |
| <b>TM</b>       | Insertos para Roscado en Fresado (ISO Métrico)  | <b>D44~49</b> |
| <b>TM</b>       | Cen-mill  | <b>M04</b>    |
| <b>TMRS</b>     | Drill (Rimas Cónicas)   | <b>G118</b>   |
| <b>TNGA</b>     | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B53</b>    |
| <b>TNGG</b>     | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B53</b>    |
| <b>TNGG-SC</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B53</b>    |
| <b>TNGG-VP3</b> | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B53</b>    |
| <b>TNGN</b>     | Insertos para Torneado_Negativo (Porta Cerámico)  | <b>B54</b>    |
| <b>TNMA</b>     | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B54</b>    |
| <b>TNMA</b>     | Insertos para cBN_Negativo(Reafilables)   | <b>B101</b>   |
| <b>TNMG-B25</b> | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B57</b>    |
| <b>TNMG-GR</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B58</b>    |
| <b>TNMG-HA</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B55</b>    |
| <b>TNMG-HM</b>  | Insertos para Torneado_Negativo   | <b>B56</b>    |
| <b>TNMG-LP</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B55</b>    |
| <b>TNMG-LW</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B57</b>    |
| <b>TNMG-MK</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B56</b>    |
| <b>TNMG-MM</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B56</b>    |
| <b>TNMG-MP</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B56</b>    |
| <b>TNMG-RK</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B58</b>    |
| <b>TNMG-RM</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B58</b>    |
| <b>TNMG-VB</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B54</b>    |
| <b>TNMG-VC</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B55</b>    |
| <b>TNMG-VF</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B55</b>    |
| <b>TNMG-VL</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B55</b>    |
| <b>TNMG-VM</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B57</b>    |
| <b>TNMG-VP2</b> | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B55</b>    |
| <b>TNMG-VP3</b> | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B57</b>    |
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| <b>TNMG-VR</b>     | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B58</b>    |
| <b>TNMG-VW</b>     | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B55</b>    |
| <b>TNMM-GH</b>     | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B59</b>    |
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| <b>TNMX</b>        | Insertos PCD_Negativo   | <b>B102</b>   |
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| <b>TOEH</b>        | Insertos para Torneado_Positivo   | <b>B80</b>    |
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| <b>TP2PS-LN14</b>  | TP2P  | <b>E307</b>   |
| <b>TP2PS-LN17</b>  | TP2P  | <b>E308</b>   |
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| <b>TPD</b>         | Inserto de Brocas (TPDB-H)  | <b>G47</b>    |
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| <b>TPDB(4D)</b>    | Brocas (TPDB-H)   | <b>G49</b>    |
| <b>TPDB(5D)</b>    | Brocas (TPDB Plus)  | <b>G40</b>    |
| <b>TPDB(8D)</b>    | Brocas (TPDB Plus)  | <b>G41</b>    |
| <b>TPDB(8D)</b>    | Brocas (TPDB-H)   | <b>G50</b>    |
| <b>TPDBP(3D)</b>   | Brocas (TPDB Plus)  | <b>G39</b>    |
| <b>TPDC(10D)</b>   | Brocas (TPDC)   | <b>G33</b>    |
| <b>TPDC(12D)</b>   | Brocas (TPDC)   | <b>G33</b>    |
| <b>TPDC(3D)</b>    | Brocas (TPDC)   | <b>G32</b>    |
| <b>TPDC(5D)</b>    | Brocas (TPDC)   | <b>G32</b>    |
| <b>TPDC(8D)</b>    | Brocas (TPDC)   | <b>G32~33</b> |
| <b>TPGB</b>        | Insertos para cBN_Positivo (Reaflables)   | <b>B101</b>   |
| <b>TPGB</b>        | Insertos PCD_Positivo   | <b>B103</b>   |
| <b>TPGH</b>        | Insertos para Torneado_Positivo   | <b>B81</b>    |
| <b>TPGN</b>        | Insertos para Torneado_Positivo   | <b>B81</b>    |
| <b>TPGN</b>        | Insertos PCD_Positivo   | <b>B103</b>   |
| <b>TPGR-F</b>      | Insertos para Torneado_Positivo (Sistema de Brida)  | <b>B81</b>    |
| <b>TPGR-M</b>      | Insertos para Torneado_Positivo (Sistema de Brida)  | <b>B81</b>    |
| <b>TPGT</b>        | Insertos para Torneado_Positivo (Sistema con tornillo)  | <b>B82</b>    |
| <b>TPGT</b>        | Insertos PCD_Positivo   | <b>B103</b>   |
| <b>TPGW</b>        | Insertos PCD_Positivo   | <b>B103</b>   |

## T

|                |  |             |
|----------------|--|-------------|
| <b>TPGX</b>    | Insertos PCD_Positivo                                    | <b>B82</b>  |
| <b>TPKN-MU</b> | Insertos Fresado (Mill-Max)                              | <b>E27</b>  |
| <b>TPKN-SU</b> | Insertos Fresado (Mill-Max)                              | <b>E27</b>  |
| <b>TPKR-MX</b> | Insertos Fresado (Mill-Max)                              | <b>E27</b>  |
| <b>TPMR-F</b>  | Insertos para Torneado_Positivo (Sistema de Brida)       | <b>B82</b>  |
| <b>TPMR-M</b>  | Insertos para Torneado_Positivo (Sistema de Brida)       | <b>B82</b>  |
| <b>TPMT-MP</b> | Insertos para Torneado_Positivo (Sistema de Brida)       | <b>B83</b>  |
| <b>TPMT-VF</b> | Insertos para Torneado_Positivo (Sistema de Brida)       | <b>B83</b>  |
| <b>TPMT-VL</b> | Insertos para Torneado_Positivo (Sistema de Brida)       | <b>B83</b>  |
| <b>TPUN</b>    | Insertos para Torneado_Positivo                          | <b>B83</b>  |
| <b>TSDM</b>    | Top Solid drill  | <b>G102</b> |
| <b>T-VNMA</b>  | Insertos para cBN_Negativo(Reaflables)                   | <b>B101</b> |
| <b>TWX-KC</b>  | Insertos Fresado (Herramienta multifuncional de chaflán) | <b>E27</b>  |

## V

|                 |  |                 |
|-----------------|--|-----------------|
| <b>VBGT</b>     | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B84</b>      |
| <b>VBGT-AK</b>  | Insertos para Aluminio_Positivo (Sistema con tornillo) | <b>B96</b>      |
| <b>VBGT-AR</b>  | Insertos para Aluminio_Positivo (Sistema con tornillo) | <b>B96</b>      |
| <b>VBGT-KF</b>  | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B84</b>      |
| <b>VBGT-KM</b>  | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B84</b>      |
| <b>VBGT-VP1</b> | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B84</b>      |
| <b>VBMT</b>     | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B85</b>      |
| <b>VBMT</b>     | Insertos PCD_Positivo                                  | <b>B103</b>     |
| <b>VBMT-HMP</b> | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B85</b>      |
| <b>VBMT-MP</b>  | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B85</b>      |
| <b>VBMT-VB</b>  | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B84</b>      |
| <b>VBMT-VF</b>  | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B84</b>      |
| <b>VBMT-VL</b>  | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B85</b>      |
| <b>VBMT-VP1</b> | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B85</b>      |
| <b>VBMW</b>     | Insertos para cBN_Positivo (Reaflables)                | <b>B101</b>     |
| <b>VCET-KF</b>  | Insertos (Auto Tools, Tipo ISO)                        | <b>B86, 120</b> |
| <b>VCET-KM</b>  | Insertos (Auto Tools, Tipo ISO)                        | <b>B86, 120</b> |
| <b>VCGT-AK</b>  | Insertos para Aluminio_Positivo (Sistema con tornillo) | <b>B97</b>      |
| <b>VCGT-AR</b>  | Insertos para Aluminio_Positivo (Sistema con tornillo) | <b>B97</b>      |
| <b>VCGT-KF</b>  | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B86</b>      |
| <b>VCGT-KM</b>  | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B86</b>      |
| <b>VCGT-MS</b>  | Insertos (Auto Tools, Tipo ISO)                        | <b>B120</b>     |
| <b>VCGT-VP1</b> | Insertos (Auto Tools, Tipo ISO)                        | <b>B86, 120</b> |
| <b>VCGX-VP1</b> | Insertos (Auto Tools, Tipo ISO)                        | <b>B87, 120</b> |
| <b>VCKT-MA</b>  | Insertos Fresado (Pro-A Mill)                          | <b>E27</b>      |
| <b>VCMT</b>     | Insertos PCD_Positivo                                  | <b>B103</b>     |
| <b>VCMT-HMP</b> | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B87</b>      |
| <b>VCMT-MP</b>  | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B87</b>      |
| <b>VCMT-VF</b>  | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B87</b>      |



## V

|                    |  |                 |
|--------------------|--|-----------------|
| <b>VCMT-VL</b>     | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B87</b>      |
| <b>VCMT-VP1</b>    | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B87</b>      |
| <b>VDKT-MA</b>     | Insertos Fresado (Pro-A Mill)                          | <b>E27</b>      |
| <b>VETR</b>        | Inserto para Roscado (Porta Verticales)                | <b>D33</b>      |
| <b>VFE4000</b>     | V-Endmill (Plano)                                      | <b>F16</b>      |
| <b>VNGG-HA</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B60</b>      |
| <b>VNGG-VP3</b>    | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B60</b>      |
| <b>VNMA</b>        | Insertos para cBN_Negativo (Reaflables)                | <b>B101</b>     |
| <b>VNMG-HA</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B60</b>      |
| <b>VNMG-HM</b>     | Insertos para Torneado_Negativo                        | <b>B61</b>      |
| <b>VNMG-LP</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B60</b>      |
| <b>VNMG-MK</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B61</b>      |
| <b>VNMG-MM</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B61</b>      |
| <b>VNMG-MP</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B61</b>      |
| <b>VNMG-RM</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B61</b>      |
| <b>VNMG-VB</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B60</b>      |
| <b>VNMG-VC</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B60</b>      |
| <b>VNMG-VF</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B60</b>      |
| <b>VNMG-VL</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B60</b>      |
| <b>VNMG-VM</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B61</b>      |
| <b>VNMG-VP3</b>    | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B61</b>      |
| <b>VNMG-VQ</b>     | Insertos para Torneado_Negativo (Sistema Multi-trabe)  | <b>B61</b>      |
| <b>VNMX</b>        | Insertos PCD_Negativo                                  | <b>B102</b>     |
| <b>VPET-KF</b>     | Insertos (Auto Tools, Tipo ISO)                        | <b>B88, 120</b> |
| <b>VPET-KM</b>     | Insertos (Auto Tools, Tipo ISO)                        | <b>B88, 120</b> |
| <b>VPGT-VP1</b>    | Insertos para Torneado_Positivo (Sistema con tornillo) | <b>B88</b>      |
| <b>VPGT-VP1</b>    | Insertos (Auto Tools, Tipo ISO)                        | <b>B88, 120</b> |
| <b>VTH</b>         | Porta Verticales                                       | <b>D33</b>      |
| <b>VZD-LA, LBA</b> | Vulcan Drill   | <b>G90</b>      |
| <b>VZD-MA, MBA</b> | Vulcan Drill   | <b>G89</b>      |

## W

|                  |   |             |
|------------------|---|-------------|
| <b>WBG</b>       | Insertos para Torneado_Positivo (Barras Compactas)  | <b>B89</b>  |
| <b>WCMT-C20N</b> | Inserto de Brocas (WPDC)  | <b>G04</b>  |
| <b>WCMT-C21N</b> | Inserto de Brocas (WPDC)  | <b>G05</b>  |
| <b>WDKT-MH</b>   | Insertos Fresado (HRM)  | <b>E27</b>  |
| <b>WFSB(M)</b>   | Wind Mill_Tipo saliente   | <b>E384</b> |
| <b>WFSP(M)</b>   | Wind Mill_Tipo plano  | <b>E385</b> |
| <b>WNGG-VP3</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B62</b>  |
| <b>WNGX-MA</b>   | Insertos Fresado (Rich Mill)  | <b>E28</b>  |
| <b>WNGX-ML</b>   | Insertos Fresado (Rich Mill)  | <b>E28</b>  |
| <b>WNGX-MM</b>   | Insertos Fresado (Rich Mill)  | <b>E28</b>  |
| <b>WNMA</b>      | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B62</b>  |
| <b>WNMG-B25</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B64</b>  |

## W

|                  |   |             |
|------------------|---|-------------|
| <b>WNMG-GR</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B64</b>  |
| <b>WNMG-HA</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B62</b>  |
| <b>WNMG-HM</b>   | Insertos para Torneado_Negativo   | <b>B63</b>  |
| <b>WNMG-LP</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B63</b>  |
| <b>WNMG-LW</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B64</b>  |
| <b>WNMG-MK</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B63</b>  |
| <b>WNMG-MM</b>   | Insertos para Torneado (Save Turn)  | <b>B105</b> |
| <b>WNMG-MM</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B63</b>  |
| <b>WNMG-MP</b>   | Insertos para Torneado (Save Turn)  | <b>B105</b> |
| <b>WNMG-MP</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B64</b>  |
| <b>WNMG-RK</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B65</b>  |
| <b>WNMG-RM</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B65</b>  |
| <b>WNMG-VB</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B62</b>  |
| <b>WNMG-VC</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B63</b>  |
| <b>WNMG-VF</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B62</b>  |
| <b>WNMG-VL</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B62</b>  |
| <b>WNMG-VM</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B64</b>  |
| <b>WNMG-VP2</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B63</b>  |
| <b>WNMG-VP3</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B64</b>  |
| <b>WNMG-VP4</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B65</b>  |
| <b>WNMG-VQ</b>   | Insertos para Torneado (Save Turn)  | <b>B105</b> |
| <b>WNMG-VQ</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B63</b>  |
| <b>WNMG-VR</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B65</b>  |
| <b>WNMG-VW</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B62</b>  |
| <b>WNMM-B25</b>  | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B65</b>  |
| <b>WNMX-MF</b>   | Insertos Fresado (HRMDouble)  | <b>E28</b>  |
| <b>WNMX-ML</b>   | Insertos Fresado (HRMDouble)  | <b>E28</b>  |
| <b>WNMX-MM</b>   | Insertos Fresado (HRMDouble)  | <b>E28</b>  |
| <b>WNMX-SH</b>   | Insertos para Torneado_Negativo (Sistema de Palanca, Sistema Brida Amplia, Sistema Multi-trabe) | <b>B65</b>  |
| <b>WNMX-SR</b>   | Insertos para Torneado_Negativo   | <b>B65</b>  |
| <b>WPDC-5D</b>   | Brocas (WPDC_Normal)  | <b>G55</b>  |
| <b>WPDC-5D</b>   | Drill (WPDC Cartucho C/2 placa)   | <b>G56</b>  |
| <b>WPDC-5D</b>   | Drill (WPDC Cartucho C/1Placa)  | <b>G56</b>  |
| <b>WPDC-6.5D</b> | Brocas (WPDC_Normal)  | <b>G55</b>  |
| <b>WPDC-6.5D</b> | Drill (WPDC Cartucho C/2 placa)   | <b>G56</b>  |
| <b>WPDC-6.5D</b> | Drill (WPDC Cartucho C/1Placa)  | <b>G56</b>  |
| <b>WPDC-8D</b>   | Brocas (WPDC_Normal)  | <b>G55</b>  |
| <b>WPDC-8D</b>   | Drill (WPDC Cartucho C/2 placa)   | <b>G56</b>  |
| <b>WPDC-8D</b>   | Drill (WPDC Cartucho C/1Placa)  | <b>G56</b>  |
| <b>WS</b>        | Cortador Lateral  | <b>E381</b> |
| <b>WTENN</b>     | Portainsero (Sistema Brida Amplia)  | <b>B167</b> |
| <b>WTJNR/L</b>   | Portainsero (Sistema Brida Amplia)  | <b>B167</b> |
| <b>WTXNR/L</b>   | Portainsero (Sistema Brida Amplia)  | <b>B167</b> |
| <b>WWLNR/L</b>   | Portainsero (Sistema Brida Amplia)  | <b>B168</b> |

# N Índice por denominación

## X

|                |  |            |
|----------------|--|------------|
| <b>XCET-KC</b> | Insertos Fresado (Herramienta para Chafán) | <b>E29</b> |
| <b>XDET-MA</b> | Insertos Fresado (Pro-V Mill)              | <b>E29</b> |
| <b>XEKT-MA</b> | Insertos Fresado (Pro-X Mill)              | <b>E29</b> |
| <b>XEKT-ML</b> | Insertos Fresado (Pro-X Mill)              | <b>E29</b> |
| <b>XNCT-MA</b> | Insertos Fresado (Rich Mill)               | <b>E29</b> |
| <b>XNKT-ML</b> | Insertos Fresado (Rich Mill)               | <b>E30</b> |
| <b>XNKT-MM</b> | Insertos Fresado (Rich Mill)               | <b>E30</b> |
| <b>XOET-ND</b> | Inserto de Brocas                          | <b>G05</b> |
| <b>XOMT-LD</b> | Inserto de Brocas                          | <b>G05</b> |
| <b>XOMT-PD</b> | Inserto de Brocas                          | <b>G05</b> |
| <b>XOMT-RD</b> | Inserto de Brocas                          | <b>G05</b> |
| <b>XPMT-MM</b> | Insertos Fresado (HAVE)                    | <b>E30</b> |

## Z

|                  |   |             |
|------------------|---|-------------|
| <b>ZBE2000</b>   | Z Endmill (Esférico)                            | <b>F23</b>  |
| <b>ZDMT-R-MM</b> | Insertos Fresado (BRE)                          | <b>E30</b>  |
| <b>ZFE2000</b>   | Z Endmill (Plano)                               | <b>F20</b>  |
| <b>ZFE4000</b>   | Z Endmill (Plano)                               | <b>F21</b>  |
| <b>ZPBE2000</b>  | Z+ Endmill (Esférico)                           | <b>F83</b>  |
| <b>ZPBE4000</b>  | Z+ Endmill (Esférico)                           | <b>F84</b>  |
| <b>ZPET-MM</b>   | Insertos Fresado (GBE)                          | <b>E31</b>  |
| <b>ZPFE2000</b>  | Z+ Endmill (Plano+B1334:B1344 type)             | <b>F75</b>  |
| <b>ZPFE3000</b>  | Z+ Endmill (Plano)                              | <b>F82</b>  |
| <b>ZPFE4000</b>  | Z+ Endmill (Plano)                              | <b>F78</b>  |
| <b>ZPFE6000</b>  | Z+ Endmill (Plano)                              | <b>F82</b>  |
| <b>ZPLBE2000</b> | Z+ Endmill (Esférico largo)                     | <b>F84</b>  |
| <b>ZPLFE2000</b> | Z+ Endmill (Plano corto)                        | <b>F76</b>  |
| <b>ZPLFE2000</b> | Z+ Endmill (Flauta larga)                       | <b>F77</b>  |
| <b>ZPLFE4000</b> | Z+ Endmill (Plano Largo)                        | <b>F80</b>  |
| <b>ZPLFE4000</b> | Z+ Endmill (Flauta larga)                       | <b>F81</b>  |
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| <b>ZPLRE4000</b> | Z+ Endmill (Largo radio)                        | <b>F88</b>  |
| <b>ZPMT-MM</b>   | Insertos Fresado (Herramientales BT, Tank Mill) | <b>E31</b>  |
| <b>ZPMT-R-MM</b> | Insertos Fresado (BRE)                          | <b>E31</b>  |
| <b>ZPMT-R-MR</b> | Insertos Fresado (BRE)                          | <b>E31</b>  |
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| <b>ZPRE4000</b>  | Z+ Endmill (Radio)                              | <b>F87</b>  |
| <b>ZPSFE2000</b> | Z+ Endmill (Plano Largo)                        | <b>F76</b>  |
| <b>ZPSFE4000</b> | Z+ Endmill (Plano Corto)                        | <b>F79</b>  |
| <b>ZSBE200</b>   | Endmill (Endmills Cementados_Esférico)          | <b>F122</b> |
| <b>ZSE200</b>    | Endmill (Endmills Cementados_Plano)             | <b>F118</b> |
| <b>ZSE300</b>    | Endmill (Endmills Cementados_Plano)             | <b>F118</b> |
| <b>ZSE400</b>    | Endmill (Endmills Cementados_Plano)             | <b>F119</b> |
| <b>ZSE600</b>    | Endmill (Endmills Cementados_Plano)             | <b>F119</b> |

## Z

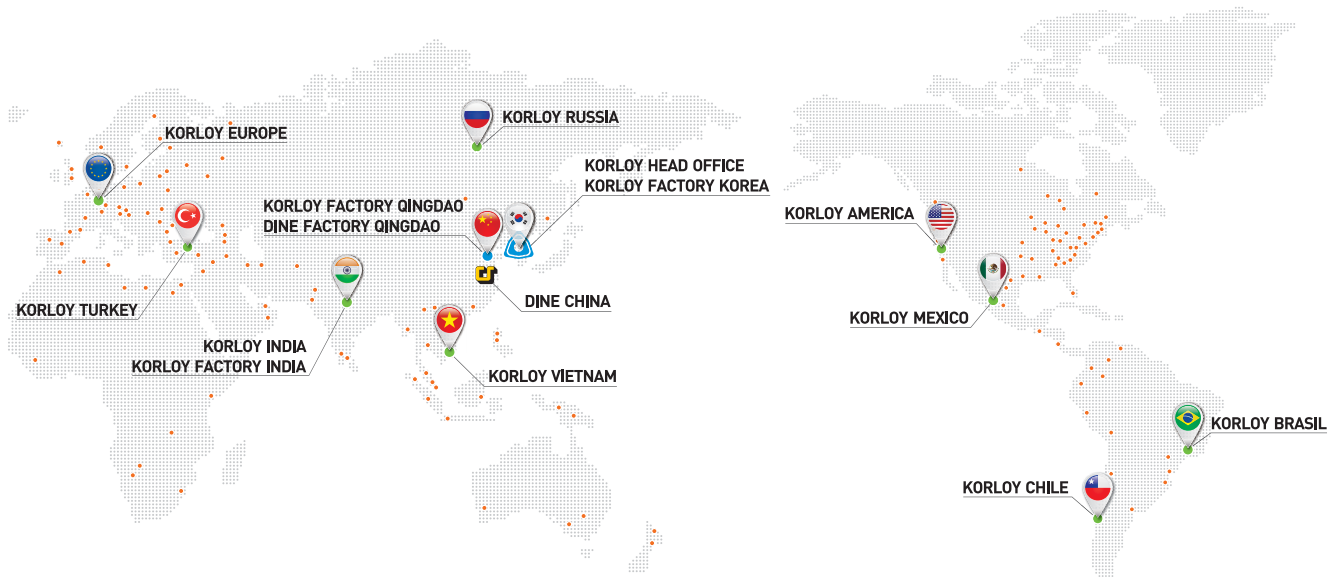
|                 |   |             |
|-----------------|---|-------------|
| <b>ZSEA200</b>  | Endmill (Endmills Cementados_Plano)       | <b>F120</b> |
| <b>ZSEL200</b>  | Endmill (Endmills Cementados_Plano Largo) | <b>F121</b> |
| <b>ZSEL400</b>  | Endmill (Endmills Cementados_Plano Largo) | <b>F121</b> |
| <b>ZSEXL200</b> | Endmill (Endmills Cementados_Plano Largo) | <b>F121</b> |
| <b>ZSFE2000</b> | Z Endmill (Plano corto)                   | <b>F22</b>  |
| <b>ZSFE4000</b> | Z Endmill (Plano corto)                   | <b>F22</b>  |





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